

# HONORS COLLOQUIUM

SPRING 2023



This program showcases abstracts for Honors Thesis Projects submitted by undergraduate students completing the USD Honors Program in May 2023.

Saturday, May 6, 2023  
Learning Commons  
University of San Diego

## **SCHEDULE AT A GLANCE**

9 a.m. Student Presentations (Block A)  
10:35 a.m. Student Presentations (Block B)  
11:55 a.m. Lunch  
1 p.m. Student Presentations (Block C)  
2:15 p.m. Student Presentations (Block D)

*The full schedule of presentations is listed on page 5.*

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## Schedule of Thesis Presentations

	LC 103	LC 104	LC 105	LC 202	LC 204
BLOCK A 9:00 a.m.	Eiswerth (BUSN)	Name (ECON)	Arrasmith (LEAD)	Whitcomb (ARCH)	Makowski (BIOL)
	Angst (EOSC)	Ichiyama (EOSC)	Ferruzza (THRS)	Shaeffer (NEUR)	Anton (IBSN)
	Tulolo (ENGR)	DeSantis (PSYC)	Low (BIOL)	Baha (COMP-PHIL)	Pena (NEUR)
	Preble (ENGL)		Tillu (NEUR)	Lem (FINA)	Tate (HIST)
10:20 a.m. - BREAK					
BLOCK B 10:35 a.m.	Sienko (IBSN)	Wagner (HIST)	Monroe (COMM)	Eason (PSYC)	Reamer (MGMT)
	Sutton (ENGL)	Dempsey (BIOC)	Wunsch (NEUR)	Harris (IBSN)	Berube (COMP)
	Kier (BIOC)	Gideon (COMP)	Redfern (MKTG)	Tsuji (ARCH)	Stark (BIOL)
	Yap (PSYC)	Winslow (FINA)		Corley (EOSC)	Castanon (ENGL)
11:55 a.m. - LUNCH					
BLOCK C 1:00 p.m.	Stevens (COMM)	Castro (NEUR)	Kulbacki (COMP)	Elie (CHEM)	Van de Grift (REAL)
	Abd El-Latif (ECON)	Jager-Story (REAL)	Guinn (REAL)	Flory (ENGL)	Fourroohi-Martin (COMM)
	Clark (POLS)	Marbach (BIOL)	Torres-Taylor (POLS)	Thomas (NEUR)	Ingrey (COMP)
2:00 p.m. - BREAK					
BLOCK D 2:15 p.m.	O'Hearn (PSYC)	Caggiano (REAL)	Hubka (NEUR)	Avery (BUSN)	Cacnio (COMP)
	Dietrich (POLS)	Medina (BIOL)	Tennyson (PSYC-BUSN)	Van Saun (SPAN)	Lynn (COMM)
	Burr Harris (MKTG-ISBN)	Lampert (POLS)	Perez (POLS)	Pantis (NEUR)	Etiel (BIOC)

### 4/28 Mini Colloquium Schedule

	LC 102
BLOCK A 1:00 p.m.	Miller (CHEM)
	Ghibardo (SOCI)
	Beal (ENGL)
2:00 p.m. - BREAK	
BLOCK B 2:10 p.m.	Ertwine (FINA)
	Fehrenbach (SOCI)
	Holt (CHEM)

# ARCHITECTURE

## VANESSA TSUJI

Thesis Advisor: Dr. Can Bilsel

### *From Industry to Community: Rethinking Storage Spaces as Living Spaces*

The consequences of consumerism and overconsumption have created vast urban landscapes, including export processing zones, warehouses, and distribution and fulfillment centers, shifting the purpose of architecture from housing people to housing people's goods. As the housing unit continues to decrease in size, tenants are utilizing external public storage units as an extension of their homes. In order to humanize these vast industrial landscapes and turn them into livable neighborhoods, a new architectural typology cross-programming living and storage spaces may be considered to reframe the design objectives from storing goods back to dwelling people. This project will explore the relationship between commercial industry and architecture by critically examining the case of Otay Mesa, an area located in the southern region of San Diego near the U.S.-Mexico Border, as an extreme example of warehouse spaces taking over the city. The production of waste and the growing presence of consumerism that characterizes Otay Mesa are not unique to this area but are symptomatic of larger issues that can offer insight into the nature of our society. Through a combination of literature review and analysis of case studies, this project will address the current unsustainable housing models to prompt new architectural typologies within the city. Addressing the precarity of housing through the reimagination of existing typologies requires a comprehensive approach that considers the interconnected nature of people and their belongings and promotes sustainable and equitable development practices.

## JILLIAN WHITCOMB

Thesis Advisor: Dr. Can Bilsel

### *AESTHETICS EXPLAINED: The Decisive Intersection of Architecture and Philosophy*

Architecture is a discipline that presents two ranges of thought in correlation to aesthetics in the Western tradition: one being the inherent importance of beauty in composition, and the other the need for form & function to be paramount in design decisions. But where do these ranges of thought stem from? As the literature is often not studied, education in the discipline lacks the ability to explain *how*, *why*, and *where* aesthetics come from, and furthermore, their substantial contribution to the field as a whole. The point of this project is to add to the discourse that connects architecture, particularly the two frames of thought between aesthetic importance and form as function, to their philosophical counterparts. Through a series of analysis on Vitruvius' *De Architectura* in correlation to classical philosophy, and E.E. Viollet-le-Duc's *Dictionnaire Raisonée* to Vuvier's organicist influence, this thesis examines the history of the divide in western architectural theory as influenced by the respective concepts. The transition between the two frames of thought occurs due to the influence of the natural sciences and Vuvier's classifications of functional systems within species. Therefore this thesis will connect how differing theories of aesthetic importance coexist within the discipline, but also are the product of a slow and gradual history. The implications of this project go beyond the scope of the architectural field - rather, they will contribute to the individual's understanding of how design in architecture works, and the ways in which architectural theory dictates the environments we see.

# BIOCHEMISTRY

## CIARA DEMPSEY

Thesis Advisor: Dr. Jenna Nyholt de Prada

### *Transcatheter Aortic Heart Valve Innovations*

Over 200,000 people are diagnosed with aortic stenosis every year in the United States. This is the calcification of the largest heart valve causing restricted blood flow, which left untreated results in heart failure and ultimately death. The primary treatment option for severe, symptomatic aortic stenosis is valve replacement, with approximately 80,000 valve replacements taking place annually. As the patient population for this procedure expands, there is an increase in younger and lower risk recipients. Procedural and valvular innovations avoid limitations of the current devices, such as patients outliving their valves and an increased need for access to the coronary artery, which is blocked by the valve skirt. This literature review examines the current innovations of transcatheter aortic valve replacement (TAVR) using clinical trial data, manufacturer design changes, and peer-reviewed articles to address their role in overcoming these setbacks. The procedural advancements of TAV-in-TAV replacement, structural changes allowing for coronary artery access, and optimized delivery systems are at the forefront of technological advancements for TAVR. These innovations aim to expand the patient population who can benefit from the device and procedure in order to optimize their quality and duration of life.

## DANIELLE ETIEL

Thesis Advisor: Dr. Jessica Bell

### *Minimal Site Phosphorylation Induced Quaternary State Dictates SIKE Interaction Partners*

The immune system is a vital component of the human body and comprises the adaptive and innate immune systems. In adaptive response, after a pathogen is recognized, the body generates an antibody with specific fit to its corresponding pathogen-associated antigen. This process takes three to five days, and in that time, the innate immune system is hard at work, initiating signaling pathways and defense mechanisms to shield the body from foreign pathogens. Protein-protein interactions (PPIs) are a crucial part of these interactions. The “rules” for specificity and/or selection of a PPI are not completely understood, but protein modifications, such as phosphorylation, have been implicated in this process. Suppressor of IKKepsilon (SIKE), protein in the innate immune system, is associated with multiple, distinct proteins including cytoskeletal proteins tubulin and actinin. Although SIKE’s function is not fully defined in these complexes, phosphorylation has been observed in SIKE at six different serine residues.

Co-immunoprecipitation revealed that the tubulin interaction was enhanced with phosphomimetic SIKE. For the SIKE phosphomimetic mutant, size exclusion chromatography and chemical crosslinking studies showed a monomeric species, whereas native SIKE separated as a dimer. We hypothesize that the quaternary state of SIKE, regulated by phosphorylation, dictates SIKE PPI formation, however, the amount of serines that must be phosphorylated to achieve this change remains unknown. Crosslinking and size exclusion chromatography (SEC) show quaternary changes as a result of single or double-site mutations. This work advances our understanding of the role that phosphorylation-induced changes in quaternary state play in regulating PPI’s.

## **EMMA KIER**

Thesis Advisor: Dr. Laura Rivard

### *An End to Silent Suffering: Identifying Weaknesses that Prevent Proper Menopause Symptom Management Options*

Menopause is a process that marks the transition from the reproductive to post-reproductive stages of life for women. The transition leading up to menopause, called perimenopause, is a period of irregular hormone fluctuations that may cause a variety of side effects including vasomotor symptoms (hot flashes), increased depression and anxiety, cognitive decline, sleep deterioration, loss of bone mass, genitourinary symptoms, and decreased libido. Perimenopause lasts, on average, for 4-5 years. But nearly a quarter of perimenopausal women battle symptoms that can interfere with quality of life for as long as a decade. Despite the widespread impact of the menopause transition, symptom management can still be a challenge.

Through a review of available literature, surveys, and editorials, this project aims to identify gaps in the healthcare system that act as barriers to receiving adequate treatment for managing menopause symptoms. Reasons for physician hesitancy in prescribing hormone therapy to control symptoms will be explored, as will the education regarding menopause during both medical school and residency training programs. This project raises awareness of a traditionally taboo topic, identifies existing barriers, and proposes solutions to improve the quality of life during the menopause transition.

## **COOPER MILLER**

Thesis Advisor: Dr. Lauren Benz

### *Post-Synthetic Exchange in UiO-66 via Ball-Milling*

Metal Organic Frameworks (MOFs) are highly porous crystalline solids comprised of metal secondary building units (SBUs) and organic molecules binding them together. MOFs are of interest for use in a multitude of applications, such as gas capture, storage, drug delivery, and catalysis. These applications are essential to address issues such as climate change and advance techniques in the field of medicine. Before MOFs can be used to solve larger scale problems, the scientific community must first understand how they can be modified for specific purposes. Post-synthetic exchange (PSE) is one method of modifying the organic or metal components of synthetically preformed MOF nanoparticles to incorporate additional functionality or control surface chemistry. Typically, PSE is performed in a solution of chemically distinct but related ligands, and PSE time and temperature are adjusted to achieve the desired degree of incoming ligand incorporation. Herein, ball-milling is used as a physical means to achieve PSE in UiO-66 MOF nanoparticles. Ball-milling combines both solid forms of the MOF and new ligand in a small metal container along with zirconium or steel balls. Forceful collisions between the two components and the balls is what drives PSE of the new ligand. Ball-milling is more environmentally friendly because it reduces excessive chemical waste, while achieving more efficient post-synthetic exchange. The findings in this study demonstrate the feasibility of using ball-milling as a more sustainable and efficient method of PSE in comparison to traditional methods.



# BEHAVIORAL NEUROSCIENCE

## VIVIANA CASTRO

Thesis Advisor: Dr. Jena Hales

### *The Role of The Endocannabinoid System in Elapsed Time Memory*

Our sense of time is a fundamental ability that humans use to judge the duration of events, temporally organize experiences, and decide when to initiate actions. In addition, research has shown that the hippocampus is critical for the processing and estimating elapsed time duration. Interestingly, Cannabinoid Type-1 (CB1) receptors are found in the hippocampus and CB1 activation by binding of endogenous or exogenous cannabinoids regulates neural signaling. It is known that Cannabis acting at these receptors ‘speeds up’ an organism's internal clock, meaning that time intervals are perceived as longer than they actually are. However, it is unknown exactly how these receptors are involved in time discrimination in the hippocampus. To investigate this question, we trained rats on a behavioral task called the Time Duration Discrimination Task. Once rats performed the correct learned response, rats underwent stereotaxic surgery and bilateral guide cannulas were implanted into the CA1 region of the hippocampus. After recovery, rats performed the task under a series of intracranial infusions. After these manipulations rats underwent a satiety and LiCl devaluation procedure to test for habitual responding. Following this, histological procedures were done and tissue from five different brain regions were collected. The hippocampal tissue was stained with cresyl violet to localize the cannula placement. Immunohistochemistry procedures were performed on five different brain regions to measure and localize the expression of the immediate early gene, Cfos, to find all active cells during the time of the task.

## RACHEL HUBKA

Thesis Advisor: Dr. Jennifer Wenzel

### *Social and neurological considerations in the causes and treatments of ADHD*

Attention-deficit/hyperactivity disorder (ADHD) is a complex, neurodevelopmental disorder which is highly prevalent in the United States. Patients with ADHD display symptoms of inattention, impulsivity, and hyperactivity, which may affect the quality of patients’ lives. Although significant research on the disorder has been conducted, there is currently no universally accepted cause in either neuroscience or sociology. This review will consider the different theories surrounding the causes and treatments of ADHD and will discuss neurological mechanisms of the disorder in rat and human brains. Issues of gender and race, and their relation to diagnosing ADHD, will also be explored in depth. Furthermore, the relationship between the medicalization of ADHD and the broader United States healthcare will be examined. Along with these perspectives, this project will apply a multifaceted approach to facing the current public health concern that ADHD poses, including its chronic nature, significant impact on patient lives, and cost. This review will consider the fields of public health, neuroscience, and sociology, and utilizing this holistic approach may further illuminate potential causes of the disorder. Implementing a more interdisciplinary approach to diagnosis and treatment may provide optimal relief for patients with ADHD.

## **SOFIA PANTIS**

Thesis Advisor: Dr. Elisabeth Walcott

### *Demystifying the Mind-Body Connection: The Neuroscience Behind How Thoughts Impact Physical Health*

The beliefs, emotions, and experiences that constitute a mindset shape numerous aspects of one's reality, but in particular, health. Health is defined by not only the physical state of one's body, but also the content of one's mind. The integration of the mind and body is often associated with naturopathic medicines or pseudoscience, and thus is usually left out of Western medicinal practices. This review aims to demystify the mind-body connection in health and wellness by introducing it within an empirical, neuroscientific landscape. This research supports the hypothesis that "mind over matter" rings true even at the biochemical level. Activation of the immune system and the autonomic nervous system as well as changes in gene expression and connections between neurons modulate the body's physical responses to mindsets. Concepts like stress, the placebo effect, mind-body therapies, and somatic symptom disorder are discussed in relation to their neuroscientific mechanisms and resulting effects on bodily health. This review finds that many of these concepts share overlapping biochemical mechanisms that turn positive thoughts into healthier bodies, and vice versa; this research elevates the status of mindsets as powerful determinants of health that should be more heavily prioritized in Western medicine.

## **DANIELLE PEÑA**

Thesis Advisor: Dr. Veronica Galvan

### *The Expansion of Optogenetic Techniques to Learning and Mood Disorders such as ADHD, Anxiety, and Depression*

In the field of neuroscience, new techniques are continuously being developed with the intention of use in therapeutic and rehabilitative settings. One emerging technique is optogenetic stimulation as a therapeutic approach to neurodegenerative diseases such as Alzheimer's and Parkinson's. This method allows researchers to use light to manipulate neuronal activity in large general networks, while also providing precise control over specific brain circuits that impact Alzheimer's and Parkinson's Disease. As learning and mood disorders become increasingly more prevalent, it is important to look into alternative treatments for such differences. This literature review is an examination of experimental studies related to optogenetic usage in neurodegenerative diseases and how such techniques may be expanded to ADHD, Anxiety, and Depression. I will also discuss current ethical barriers in moving optogenetic stimulation beyond preclinical animal models to human patients.

## **MIA SHAEFFER**

Thesis Advisor: Dr. Anne Koenig

### *Body Image Gaps in Male and Female Student-Athletes: Effects of Gender and Alignment of Body Ideals in Sport and Society*

In athletes, body satisfaction may be different in sport and social settings, which can result in “confidence gaps” (differences in body satisfaction across contexts). This project seeks to assess how these “confidence gaps” may vary depending on participants’ gender and perceptions of which aspects of appearance are important in sport and society. Past research surrounding body image in athletes has often been conducted with only female participants, while this project also included respondents with other gender identities. In this study, student-athletes responded to questions that assessed their body image in both sports-specific and daily life contexts. They also shared whether they believe that their sport aligns with society with regard to the emphasis placed on leanness and muscle mass. After analyzing survey data, I found a marginally significant effect of gender, wherein male student-athletes had slightly higher body satisfaction than female student-athletes across both contexts. However, the interaction effect of context and gender was not significant. Body image in sport and daily life was highly correlated, and thus confidence gaps were small overall. When the emphasis placed on muscle mass by society aligned with that of the sport, both men and women reported confidence gaps that were significantly different from zero. Although these results do not support my initial hypotheses, the results may be skewed due to the small number of respondents. Fewer male student-athletes than female student-athletes participated. Furthermore, the student-athlete participant pool at USD may be more different from participant pools in past research than was initially expected.

## **MYCHAELA THOMAS**

Thesis Advisor: Dr. Elisabeth Walcott

### *Deficits in the social transfer of pain in mouse models of Autism Spectrum Disorder*

Empathy is an essential component of the human experience, which requires understanding others' emotional states. Individuals with Autism Spectrum Disorder (ASD) have been described as exhibiting atypical empathy behaviors, but the neuromechanisms are poorly understood. It is crucial to understand the underlying neural mechanisms for the deficits in empathy in individuals with ASD. The social transfer of pain in mice has been developed as a model of empathy, such that pain can be transferred between a "primary" animal subjected to inflammatory pain and a “bystander” exposed to social and olfactory cues. The current study used two mouse strains that exhibit phenotypic behaviors characteristic of ASD (BTBR and Balb/c) and examined differences in nociceptive and affective behaviors as measured by tests for mechanical sensitivity and behavioral despair of bystander mice following a one hour interaction with a mouse given an injection of complete Freund's adjuvant (CFA) to induce inflammatory pain. Balb/c mice did not display the social transfer of pain, given that the bystander group failed to acquire mechanical sensitivity or behavioral despair following the social interaction. Interestingly, male BTBR mice injected with CFA did not demonstrate mechanical hypersensitivity, though females did. Neither male nor female bystanders demonstrated the social transfer of pain. These results indicate that mouse models of ASD demonstrate empathy deficits that can inform our understanding of the neuromechanisms of empathy in humans and lead to pharmacological initiatives for disorders that modify the pain experience.

## **ANICA TILLU**

Thesis Advisor: Dr. John de Belle

### *Adaptive Physical Activity: Case Studies*

Physical activity is essential for leading a healthy life, as it is shown that physical activity improves brain health and mobility for everyday functions. However, individuals with disabilities lack the resources to do physical activities, even given the possibility that exercise can alleviate adverse symptoms. In general, the weightlifting community offers specific programs designed to help individuals reach their goals. Similarly, patients can participate in exercise programs that are made to aid their disability. The present case studies were conducted using SDSU's Adaptive Fitness Clinic, where patients were put through exercise regimens catered to their specific disabilities. Patient 1 was a 58-year-old Caucasian male diagnosed with atypical parkinsonisms including bradykinesia, micrographia, gait and sleep issues, and eyelid apraxia. Patient 2 was a 45-year-old Mexican male diagnosed with cerebral palsy, tetraparesis, and tendonitis. Both patients completed two 75-minute exercise sessions a week for 8 weeks. Patients detailed experiences, happiness levels, and whether their specific goals were met or not. For Patient 1, his overall balance and gait were improved. For Patient 2, mobility and strength, as well as assisted walking abilities were improved.

## **CHASE WUNSCH**

Thesis Advisor: Dr. John de Belle

### *The Effects of Ketamine on Treatment Resistant Depression*

Major depressive disorder (MDD) is highly prevalent, affecting millions of individuals around the globe each year. Antidepressant drugs, like SSRIs and SNRIs, are widely used to treat the symptoms of MDD. Despite the presence of classic antidepressants, a considerable number of people with MDD do not achieve remission or any significant improvement in symptoms. These individuals suffering from treatment-resistant depression are often left struggling with their symptoms with few viable options remaining. Ketamine, an analgesic drug, has emerged as a promising treatment. In particular, ketamine's rapid and sustained antidepressant effects signify that it may be particularly effective for treatment-resistant depression. The current research, however, fails to fully understand the mechanistic action ketamine takes in the body while treating MDD. In this review, I will provide a comprehensive overview of the understanding of the neurobiological mechanisms underlying ketamine's antidepressant effects. Specifically, I discuss the roles of N-methyl-D-aspartate (NMDA) receptor inhibition, alpha-amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid (AMPA) receptor upregulation, mammalian target of rapamycin (mTOR) signaling pathway activation, and ketamine metabolites. I will also offer a review of the research on alternative drug therapies to ketamine, potential drug combinations with ketamine, and the efficacy of repeated dosages. This research provides information about a potential new therapy that may be very efficacious in treating treatment-resistant depression.

# BIOLOGY

## TAYLOR LOW

Thesis Advisor: Dr. Steven Morrison

### *A Sticky Situation: Determining the Biochemical Composition of Mucilage in the carnivorous plant *Drosera capensis**

In many carnivorous plants like Cape sundew, *Drosera capensis*, a sticky substance known as mucilage is excreted from modified leaf structures to form an adhesive “glue” able to trap insect prey. Biochemistry of the mucilage has been studied since the mid-twentieth century, and recent studies suggest fatty acids are the sources of the adhesive property of mucilage. Free-floating fatty acids are highly toxic to plants, so they are transported through the plant via lipid transfer proteins (LTPs) or direct membrane-to-membrane contact. Results from an RNA sequencing experiment using fed and unfed *Drosera* leaves revealed 35 different LTP genes that were upregulated up to 1000 times in fed tentacles thereby supporting the important role of lipids in tentacle metabolism and function. This work confirms and extends data on the presence of lipids and LTPs and their role in the synthesis, bioenergetics, and function of mucilage in tentacles. We hypothesize that fatty acids and triacylglycerides are synthesized in neck cells and stored in lipid bodies until they are ready to be mobilized. They move through various cells before export into the mucilage. It is energetically expensive to move fatty acids throughout the plant, so investigation into the location and movement of LTPs can help explain why plants allocate energy to this process.

## GENEVIEVE MAKOWSKI

Thesis Advisor: Dr. Callen Hyland

### *Tissue stretching induces formation of new tentacles and heads in *Hydra**

*Hydra* are a genus of small, freshwater cnidarians that live in a variety of environments around the world. They are valued in science as a model organism often used in developmental studies due to their incredible ability to regenerate their entire body from even just a small fragment of the body column. This is due to the three main developmental organizers *Hydra* have: a head organizer at the top of the body column, a foot organizer at the base of its body column and tentacle organizers in a ring around the head. However, this regenerative ability sometimes acts in unexpected ways that raise new questions about how *Hydra* develop and organize their body structure. I discovered that when a *Hydra*'s head is stretched, additional tentacles and head can form depending on how long they're stretched out. I will use a mathematical model for the formation of features in the head area of *Hydra* to determine whether the existing model accounts for the growth of new tentacles that I observed in the lab. This shows that stretching tissues can influence the formation of developmental organizers, giving us new insights into the mechanisms of development.

## **JUSTINE MARBACH**

Thesis Advisor: Dr. Richard Gonzalez

### *Pass the Salt: Effects of Silver and Role of Calcium in Ion Regulation of Rio Negro Fish*

The Rio Negro, a tributary of the Amazon river, is incredibly unique due to its abnormally low salt concentrations and acidic waters. North American fish cannot survive in these conditions, yet this river has over 2,800 species. Fish need salt in their body, making ion regulation through the gills essential. Previous research exploring the effects of acidic waters on ion regulation found that it causes an overall salt loss. However, fish native to the Rio Negro are tolerant of these acidic levels. Silver toxicity has effects similar to low pH and is increasingly present in the Amazon due to mining along the river. Silver is a highly toxic pollutant, yet most knowledge of its effects is on North American fish species, such as trout. This project provides more information about silver toxicity in other species and examines the role of calcium in ion regulation to determine if it has protective measures against silver. This research focused on two species native to the Rio Negro: Black Neon Tetras and Blackskirt Tetras. The fish were tested by looking at the change in sodium concentrations due to different treatments of either high and low concentrations of silver or high concentrations of calcium. These experiments found that both species are more tolerant to silver toxicity than North American fish and that calcium plays a role in ion regulation and has protective measures against silver. With this knowledge, more work can be done to explore calcium's role in ion regulation and can be applied to the increasing danger of pollutants in freshwater rivers.

## **THERESA MEDINA**

Thesis Advisor: Dr. Curtis Loer

### *Identifying and analyzing temperature sensitive functions of cholinergic signaling in *Pristionchus pacificus**

The nervous system is the master of the body and is responsible for much of the complex communication that occurs among and between organ systems. Acetylcholine is one of the chief signaling molecules, or neurotransmitters, responsible for delivering the signals generated by the nervous system. Specifically, acetylcholine is the primary neurotransmitter of the parasympathetic nervous system where it controls muscle contraction. Irregularities in acetylcholine synthesis result in neuromuscular deficiencies. Choline acetyltransferase (ChAT) is the enzyme responsible for synthesizing acetylcholine and thus is essential in generating movement. Much of the research used to understand complex processes like movement is conducted in nematodes which are microscopic worms whose simple nervous system can be used to study the processes that are foundational to nervous system function. A recent study suggests that cholinergic signaling (signaling that uses acetylcholine) is a process that is potentially sensitive to changes in temperature (Duerr, 2021). In order to further explore this potential feature, this study examined movement in acetylcholine mutants of *Pristionchus pacificus*, a species of nematode. In *P. pacificus*, acetylcholine mutants do not produce proper levels of acetylcholine and thus have various levels of movement incapacity. This study observed the movement capabilities of these mutants and wild type animals at high temperatures (26°C and 30°C) compared to room temperature (23°C). Cholinergic neurons were then stained using fluorescent antibodies to visualize the molecular signaling responsible for behavioral differences. By studying the specific factors that influence the functionality of acetylcholine signaling, this research project seeks to understand the mechanisms that could contribute to neuromuscular deficiencies.

## **SAMANTHA STARK**

Thesis Advisor: Dr. Geoffrey Morse

### *Exploring the Ethical Implications of Biopharma Advertising on Healthcare Access*

Since its emergence in the late 1900s, the biopharmaceutical industry has revolutionized modern medicine, becoming an essential part of medical and biological advancement. While biotechnology and pharmaceutical products have enabled substantial progress in the pursuit of treatments for nearly all diseases, such products are ultimately commodities of large, for-profit companies, some of which are the wealthiest in the world. This raises ethical questions about the implications of the techniques used for marketing and selling biotechnology and pharmaceutical products from a moral and socioeconomic standpoint. It is essential to consider the ethical implications of biopharma sales and marketing strategies, especially in countries like the US, where the lack of universal healthcare can lead to disparities in medical access based on socioeconomic status. To better anticipate possible ramifications of this influential industry, it is essential to examine the ethical considerations of biopharma advertising and the aspects of this unique sector that render it vulnerable to potential moral and ethical dilemmas. In this thesis, I explore the relationship between advertising efforts in this industry and the impacts that they may have on affordable healthcare. Doing so will reveal whether such advertising practices contribute to an increasing gap between socioeconomic classes in terms of medical access and whether implications could be mitigated by stricter regulations.

## **BUSINESS ANALYTICS**

### **KATIE EISWERTH**

Thesis Advisor: Dr. Alison Sanchez

### *Lack of Data and Undeveloped Information Exchange Systems as a Barrier to Accessible Healthcare for Foster Youth*

Physical, mental, and developmental health is a monumental unmet need for foster care youth. The absence of relevant health data and developed electronic information sharing systems inhibit the accessibility and quality of healthcare for foster youth. When used effectively, technology and digital tools can facilitate communication and care coordination among the many stakeholders involved in the care and wellbeing of a foster child. This study investigates the technical barriers on the storing and sharing of health information in order to identify gaps and inadequacies in current information exchange systems and provide recommendations for improvements. Five in-depth interviews were conducted along with a thorough review of prior literature. This study hypothesizes that the design, implementation, and wide-spread adoption of effective information exchange systems would contribute to improving the accessibility, quality, and timeliness of healthcare for foster youth and children. The findings support this hypothesis. It was found that technical barriers include lack of interoperability and siloed systems, outdated paper-based systems, lack of data recording and transmitting standardization, privacy policies and patient consent management, incompatible technological components, patient identification and matching, and the inconsistencies in education and practice. In essence, closing the information sharing gap depends on utilizing the right data in the right way at the right time.

# CHEMISTRY

## ELENA ELIE

Thesis Advisor: Dr. James Bolender

### *Eucalyptus Biomass as a Substrate for the Sorption of Heavy Metals*

Clean drinking water is critical for human health. The United Nations (UN) has recognized the pivotal role water plays in shaping the future of our world in two of its 17 Sustainable Development Goals (SDGs). However, generating this resource in a sustainable and cost-efficient manner is challenging. This project explores using chemically treated eucalyptus wood for water purification. The concentration of heavy metals was recorded over the course of each of the water treatment trials. The data was analyzed to determine the effectiveness and the kinetics of the purification reaction. The results of this study will inform whether this is a viable technique for the removal of toxic metals from drinking water. Considering eucalyptus is cheap and easily accessible throughout the world, this remediation strategy is especially applicable in low-resource settings. This gives the technique the capacity to improve global public health equity.

## MACEY HOLT

Thesis Advisor: Dr. Lauren Benz

### *Creation and Quantification of Defects in Metal Organic Framework UiO-66 via Ball Milling*

Due to the impacts of climate change caused by increased emissions of carbon dioxide, scientists look to metal organic frameworks (MOFs) as a potential solution. MOFs have many possible applications due to the numerous possible combinations of metal ions and organic linkers. Some of the applications include gas storage, which could potentially combat climate change as MOFs could be used to capture carbon dioxide from the atmosphere. Defects in metal organic frameworks (MOFs) are known to influence adsorption properties, and are thus critical to the ultimate success of MOFs in industrial applications. The type and distribution of defects depends on the synthesis conditions. Herein, we explore the use of low-energy ball-milling, a physical method, to intentionally create defects in UiO-66 nanoparticles. UiO-66 is a thermally and chemically robust MOF comprised of zirconium oxide clusters connected with benzenedicarboxylate linkers. Below a threshold energy level during ball-milling, the nanoparticles appear intact by SEM (Scanning Electron Microscopy), however, evidence suggests the presence of impact-induced defects. We utilize a combination of methods, including TGA (Thermogravimetric Analysis) and DSC (Differential Scanning Calorimetry) to quantify these impact-induced defects.



## COMMUNICATION

### SOFIA FOUROOHI-MARTIN

Thesis Advisor: Abdulaziz Muqaddam

#### *Product Endorsement by Influencers on TikTok: A Quantitative Content-Analysis Study*

As social media has become embedded in our culture, “Social Media Influencers” have emerged as a new form of celebrity, gaining their fame online. Tiktok is a relatively new social media platform, launched in 2014. The limited pre-existing research on Tiktok focuses on the psychological effects of the app on its users. There is a gap in research on the persuasive power of Tiktok influencers, as most past studies on social media influencers have not looked specifically at Tiktok. This study aims to fill that gap by asking the question: Does the endorsement of a clothing or beauty item by a female Tiktok influencer living in the U.S. with over 450,000 followers increase the popularity of those items on tiktok? Influencers being looked at include users: AlixEarle, TinyJewishGirl, KingKendall, Aliyhsinterlude and TayHage. This project examines their endorsement of a clothing item or beauty product in a Tiktok video they have uploaded, looking at the item’s popularity on the app after being endorsed, analyzing what effects the endorsement had. The study adopted a quantitative content-analysis approach, coupled with examining post’s analytics on TikTok. This article concludes by discussing implications for social media researchers and practitioners that work with Tik Tok influencers.

### WHITNEY LYNN

Thesis Advisor: Dr. Bradley Bond

#### *Archival Analysis of Political Propaganda during the Yugoslav Wars*

News media shapes public opinion and constructs reality, making propaganda the most powerful and dangerous weapon leaders possess. Propaganda campaigns are essentially a performance with an ordered plot, cast of characters, attributable motivations, and lessons for the future. Although the beginning of the Yugoslav Wars is typically marked by Croatia and Slovenia’s declarations of independence from Yugoslavia in June of 1991, the war began in the media years prior. This study maps the consolidation of news media under the regimes of Croatia’s President Franjo Tuđman and Serbia’s President Slobodan Milošević and their subsequent manipulation of public perception through these news publications. Both leaders stoked ethnic tensions and intentionally misrepresented the truth to achieve their political and militaristic goals at the cost of 140,000 lives and the displacement of another 4 million people. This study expands on previous research into Yugoslavia’s victim centered propaganda by focusing specifically on select government controlled print newspaper publications from Croatia and Serbia through a textual analysis that enabled the identification of patterns, phrases, and diction used by state controlled print media publications in Yugoslavia.

## **MEGAN MONROE**

Thesis Advisor: Dr. Esteban Del Rio

### *Media Communication and Catholic Identity: The Lived Experience at the University of San Diego*

For almost 300 years, American Catholic higher education has been forming, educating, and sending out students into society. Today, Catholic universities continue to promise a holistic education grounded in the Catholic Intellectual Tradition; an education that forms students to be individuals of faith and intellect. In an increasingly digital world, there is a necessary relationship between these universities and the media channels and messages they use to portray their core values and mission. For Catholic institutions specifically, the emphasis on institutional mission suggests that universities portray their Catholic identity in ways that are congruent with the student experience. However, if there are inconsistencies between the identity depicted through media messages and the faith-formation experience of students, faculty, and staff, there is a problem. Drawing on cultural studies, I argue that audience research can illuminate any continuity or disjunctures among messages and experiences regarding Catholic identity at USD. This project will consist of a literature review and a cultural studies analysis of USD's contemporary messaging. By conducting a focus group and interviews with students and faculty/staff at USD this project will analyze their experiences and answer the following question: Is USD's media communication surrounding Catholic identity consistent with the experience students have with Catholicism at the university? This analysis will continue to shed light on the relationship between media portrayal and faith formation experience in Catholic higher education and hopefully provide suggestions to contribute to the creation of a more cohesive experience for Catholic-identifying students at USD.

## **LEAH STEVENS**

Thesis Advisor: Dr. Carole Huston

### *Selling Sustainability: A Rhetorical Analysis of Sustainable Narratives from Automobile Energy Sectors*

The word "sustainable" is plastered on products all over the superstore, and consumers are more inclined than ever to shop for the label and its perceived benefits for the environment. Companies that historically have high stakes in fossil fuels, such as energy suppliers for the auto industry, are taking note and issuing sustainability reports and goals that address how they are doing their part in this pressing environmental situation. How do these companies communicate sustainability to their consumers, and in doing so, how do they position themselves in the discourse of climate change and sustainability? This essay engages these questions by using rhetorical forms within a narrative analysis of two major automobile energy companies, ConocoPhillips and Ganfeng Lithium Group Co. How the companies frame themselves in light of the climate crisis will be revealed by examining the tropes, metaphors, and themes in the narratives of each respective company's sustainable reports. The individual sustainability reports will be critiqued by understanding the core concept of sustainability, how and why this term is important, and the parameters companies use to communicate this to consumers. It concludes by comparing the individual company's discourse on sustainability and how that compares to their perceived risk on the environment.

# COMPUTER SCIENCE

## **KATRINA BAHA**

Thesis Advisor: Dr. Jennifer Tillman

### *Algorithmic Bias: Causes and Effects on Marginalized Communities in Healthcare*

Individuals from marginalized backgrounds face different healthcare outcomes due to algorithmic bias in the technological healthcare industry. Algorithmic biases, which are the biases that arise from the set of steps used to solve or analyze a problem, are evident when people from marginalized communities use healthcare technology. For example, many pulse oximeters, which are the medical devices used to measure oxygen saturation in the blood, are not able to accurately read people who have darker skin tones. Thus, people with darker skin tones are not able to receive proper health care due to their pulse oximetry data being inaccurate. This research aims to highlight the ethical implications of marginalized communities facing different healthcare outcomes and provide suggestions on how to prevent algorithmic bias from appearing in healthcare. In order to do this, this paper will first give examples of algorithmic bias, then discuss the ethical implications of those biases, and lastly provide solutions that may help prevent algorithmic bias. It is unethical that marginalized communities are being misread, misdiagnosed, and mistreated due to algorithmic biases. Additionally, the technological healthcare industry must be diversified in order to prevent algorithmic biases from arising in their medical technologies.

## **BENJAMIN BERUBE**

Thesis Advisor: Dr. John Glick

### *Breaking the Bubble: Towards Public Interest Algorithms for Social Media Platforms*

This work focuses on the development of public interest algorithms for social media platforms to counter the negative effects of current content delivery procedures on platforms such as Instagram, Twitter, and TikTok. Social media algorithms significantly impact the content users see, the information they consume, and the way they engage with others. However, these algorithms are usually proprietary, opaque, and profit-driven, leading to harmful effects such as misinformation, filter bubbles, and polarization. Proposed public interest algorithms prioritize users' needs and interests while minimizing negative effects. They prioritize transparency, accountability, and diversity. Transparency allows users to understand how the algorithm works and how it impacts their experience on the platform. Accountability ensures the algorithm promotes user well-being rather than maximizing engagement or profit. Diversity ensures users are exposed to a range of content rather than trapped in filter bubbles.

This thesis explores the technical challenges of developing public interest algorithms, including data collection and processing, machine learning, and user interface design. The thesis also examines ethical and legal implications such as privacy, free speech, and the role of government regulation. While the work does not produce any proprietary or open-source software, it proposes landmark criteria necessary for developing combative software that addresses harmful social media usage. These criteria are meant to aid in the future development of public interest software as the growing need for it continues to increase.

## **SAMUEL GERARD CACNIO**

Thesis Advisor: Dr. Charles Pateros

### *Dice Reading App using Image Recognition*

The task of adding up many rolled dice tends to be the most tedious part of tabletop games. Rolling dice, checking the results, and reviewing what those results mean can interrupt the flow of a game and push away potential players who feel intimidated by the math involved. As a programmer and avid tabletop gamer, I see demand for an easier, more fluid gaming experience and a way to fulfill it using my skills. Automating dice counting can enhance the overall gaming experience by reducing time spent adding numbers, allowing for more player-to-player interaction. I believe the best way to implement this automation is to create a mobile application so that users can use their phone cameras to read dice into an image recognition model. This project outlines use cases and the development of this mobile application.

## **CHRISTIAN GIDEON**

Thesis Advisor: Dr. Jennifer Olsen

### *Creating a Speech Learning Dashboard for Guardians of Children with Autism*

Parents and guardians of young children may be uninformed about their child's learning progress if not given "good feedback" from teachers, therapists, or other care providers. More specifically, guardians of children with autism spectrum disorder in the process of learning speech skills need more support through feedback to properly adapt to the needs of their child. However, there is a lack of specificity around what "good feedback" concretely means in the eyes of caretakers. As a result, there is a lack of real-world applications that accurately represent these data. Thus, this research study will investigate two questions. First, what information do guardians of children with autism find important for their child's speech development when learning in school and/or therapy? And second, how can these values be translated into technological feedback (in the form of a dashboard) for guardians whose children learn through digital means? From these two prompts, a learning dashboard will be created based on data from a survey of guardians who have autistic children learning speech in school or therapy; this dashboard aims to accurately represent feedback guardians desire about their child's learning. Ultimately, this feedback has the potential to help guardians stay further in-touch with their developing child and to allow guardians to raise their children more effectively.

## **CLAIRE INGREY**

Thesis Advisor: Dr. Charles Pateros

### *Computer Science Ethics & the Gap in USD's Curriculum*

This research project aims to address the gap in the University of San Diego's computer science curriculum by exploring the importance of ethics education in computer science. Through an examination of current ethical issues and case studies of past issues, this project highlights the critical role of ethics in shaping our technological future. Specifically, this project argues that USD has a responsibility to produce ethically aware computer science graduates who can navigate complex ethical challenges in the field. To do this, the paper looks at what other universities are doing to educate their students on ethics and proposes a solution to the gap in USD's curriculum. This project aims to foster a culture of ethical awareness among computer science students and prepare them for the challenges they will face in the field.

## **ROBERT KULBACKI**

Thesis Advisor: Dr. John Glick

### *Comparing the .com bubble to the cryptocurrency bubble: Blockchain Technology*

This research paper aims to compare the .com bubble to the current blockchain/cryptocurrency bubble, identifying similarities and differences in the market dynamics, underlying technologies, and investor behaviors. The study conducts a comprehensive analysis of the historical events, economic factors, and technological innovations that led to the emergence and eventual burst of the .com bubble, and compares them to the current trends in blockchain and cryptocurrencies. One key similarity is that both bubbles were driven by new technologies that were not yet fully understood by investors or the general public. However, there are also some differences each of the technologies driving each bubble. While the internet was a revolutionary new technology, it was largely directed by private companies and individuals. In contrast, blockchain technology is based on decentralized networks and consensus algorithms, which could potentially have far-reaching implications for a wide range of industries, from finance to healthcare to supply chain management. Through a critical evaluation of both bubbles and an exploration of the potential of blockchain, this paper intends to contribute to a better understanding of the mechanisms and implications of emerging technologies on financial markets and the broader economy.

# ECONOMICS

## HANA ABD EL-LATIF

Thesis Advisor: Dr. Adriana Vamosiu

### *Are Exchange Rates associated with Net Foreign Direct Investment Inflows in Emerging Economies Between 1999-2018?*

Emerging economies are increasingly attractive to Multinational Enterprises (MNEs) looking for high growth potential and opportunities to penetrate new markets. However, these economies are often characterized by political and economic volatility, making risk mitigation key to investment decisions. Exchange rates can pose both a risk and reward to MNEs since investment projects have long-term horizons that are not initially liquid. Hence, both the initial investment and final profits are contingent upon exchange rates. Nevertheless, the precise magnitude and relationship between exchange rate fluctuations and Foreign Direct Investment (FDI) inflows has been a source of debate by economic researchers. This research project investigates the effect of exchange rates on net FDI inflows in emerging economies. The sample includes the most recent data set in the field, which contains panel data on ten emerging economies between 1999 and 2018. The primary variable of interest is the official exchange rate, which benchmarks local currency to the United States dollar. It is hypothesized that an increase in the value of the United States dollar relative to the local currency will increase net FDI inflows. Control variables include inflation, real change in the gross domestic product, and various democracy indexes. The results reveal that the official exchange rate is statistically significant and positively correlated with net FDI inflows. Hence, currency devaluation, which lowers the cost of investment relative to the United States dollar, attracts FDI inflows. These findings are consistent with the hypothesis and can be crucial to policymaking incentivizing FDI.

## FERNANDA NAME

Thesis Advisor: Dr. Alyson Ma

### *Tourism Revenue Variability*

This paper examines the variation of Tourism Revenue across countries. Gross Domestic Product is used to measure the success of a country. A big portion of a country's GDP is about Tourism Revenue, therefore exploring the factors that affect it might help countries improve their economy. The main focus is to explore economic factors, such as price changes. Additional factors considered are the number of historical landmarks, political stability, and accessibility. I predict that the richer a country's culture is and the more developed, the higher the tourism revenue it will have. Also, I predict that politically stable and accessible countries will have higher tourism revenue than those countries with less stability. Knowing what factors affect tourism revenue will help countries grow their economy by focusing on the factors that the country has to offer and what specific policies they could implement in order to increase their revenue.

## ENGINEERING

### AMANDA TULOLO

Thesis Advisor: Dr. Melissa Gibbons

#### *Can mentorship strengthen one's engineering identity and lead to higher retention rates of women in the professional engineering industry?*

While the number of women graduating with an engineering degree has increased, this growth in education rates has not been reflected within the professional industry as retention post graduation has decreased. Various forms of mentorship and support have been implemented within engineering education through the access to professors, connections with fellow peers, and membership in student organizations. However, access to these forms of mentorship are not always present when one enters the professional workforce. Though there are many factors that can contribute to the fewer number of women in the industry, I hypothesize that an increase in mentorship within the workforce can reduce internal feelings of imposterism, increase self-efficacy, and strengthen one's engineering identity, all resulting in better retention of women working in engineering. By conducting a critical literature review of these internal factors and current mentorship models with an integration of my own personal experiences as a woman in engineering, this project will provide suggestions for a mentorship program that can be implemented into the professional engineering industry. This analysis will continue to bring light to the retention of women engineers through the lens of mentorship and hopefully contribute to a more diverse workplace.

## ENGLISH

### GRACE BEAL

Thesis Advisor: Dr. Stefan Vander Elst

#### *Values of Ethnogenesis within Migration Literature: US Westward Expansion versus European Migration*

Using ethnogenesis, the process in which a group of people becomes ethnically distinct, this project explored what values were maintained and lost as a group forms an ethnic identity. Because ethnicity is defined as shared sociocultural characteristics, backgrounds, and/or experiences, the creation of ethnicities and the process of ethnogenesis is highly dependent on the actions and values of these people and why they began to value certain traits over others. This project critically analyzed various migration literature sources from two different periods: the migration and colonization of Europe, primarily of nomadic tribes in the 6th century, and the European migration and development of the American identity in the 19th century. The periods may be vastly different, but each group is seen to depend on or reject some of their cultural norms and values to assimilate into the new environment successfully. An evaluation of these works demonstrated that the authority of religion, political involvement, and freedom of creative outlets greatly influenced the creation of an ethnicity. The closing of an ethnic categorization happens between settling and movement; thus, migration redefined a people and led to self-identification.

## **MIRIAM CASTANON**

Thesis Advisor: Dr. Ivan Ortiz

### *Motherhood in Gothic Literature: Toni Morrison's Reinvention of Absent Mother Tropes and The Struggles for Ownership*

Toni Morrison's adoption and adaptation of the inadvertent absent mother trope from 18th-19th century Gothic literature in her book *Beloved* marks a shift in the genre tradition. Whereas the European foundational Gothic texts created the trope of missing or dead mothers in fiction due to an emphasis on male interest and concerns with legacy, Morrison is one of the writers who place the focus back on issues of women in connection with motherhood and their rights under the law. Being well-versed in the genre, Morrison's text not only brings the trope into the new setting of North American slavery, but reinvents it by having the horror emanate from the mother's presence rather than her absence. *Beloved* becomes a text in conversation with those from Mary Wollstonecraft and serves to extend criticism of the patriarchy present in early British Gothic literature and brings it into a new context of a black mother's struggle for ownership under slavery. The construction of identity for women as mothers and as individuals becomes complicated then when they are constricted on many sides. This inquiry will delve into the way Toni Morrison and Mary Wollstonecraft's texts express a horror based on the reality of women's conditions in society and in the law through the freedom to write and use the tropes of Gothic fiction.

## **MEI FLORY**

Thesis Advisor: Dr. Atreyee Phukan

### *Made in China: Analyzing the Cultural Context and Consequences of Transnational Adoption*

Transnational adoption is a legal process in which individuals born in one country are adopted within a family living in another country. China is notorious for their role in this international process, due to their One Child Policy (1979 – 2015). During this time, over 80,000 Chinese girls were transnationally adopted into the U.S., including myself.

Through the lens of postcolonial theory, I examined how transnationally adopted individuals interpret their place in between cultures and how this affects their psychological well-being. The Asian American experience is complicated by the nature of transnational adoption; discussing how this process impacts cultural authenticity and identity is critical in dismantling harmful Western attitudes towards Asia, especially in the face of racism in the U.S. during the COVID-19 pandemic. Paired with an in-depth analysis of biculturality, this thesis explores the overarching consequences of China's One Child Policy, and it raises the importance of identifying and understanding the differences between the cultural environment that raises us and the culture we adoptees are told to return to.



## **OLIVIA SUTTON**

Thesis Advisor: Dr. Maura Giles-Watson

### *The Monstrous and the Angelic: Femininity in Sir Gawain and the Green Knight*

In the medieval manuscript *Sir Gawain and the Green Knight*, the audience follows King Arthur's most courteous knight, Sir Gawain, through multi-layered moral challenges involving a giant green knight, his wife, and the cunning designs of the sorceress Morgan le Faye. What is at stake is not only Sir Gawain's head and chastity, but also the honor and chastity of Arthur's queen, Guinevere. This paper explores the inner workings of gender in these character trials, arguing that such tests position the questing knight as the moral proxy for a cold war between polarities of femininity: a monstrous sorceress and an angelic queen. Sandra Gilbert and Susan Gubar's essay "The Queen's Looking Glass," from *The Madwoman in the Attic* (1984), offers an interpretive framework for analyzing the gender issues that emerge in *Sir Gawain*. I apply their scholarship as a lens to explore issues central to gender studies discourses, such as seduction, female agency, Original Sin, gender binaries, homoeroticism, and intersectionality.

## **ENTREPRENEURSHIP**

### **SYDNEY AVERY**

Thesis Advisor: Dr. Helder Sebastião

### *The Bell Rings for Recess: A Reinvented Coffee Shop*

San Diego is saturated with nearly identical coffee shops on every block. Most of these coffee shops are commonly used as a place to work or study. However, few coffee shops cultivate a culture that encourages people to turn away from work or studies and enjoy the company of friends without the presence of laptops. My research indicates that people wish coffee shops would serve as more than just a place to work or a place to study. They seek a place to gather with friends and forget about the responsibilities and demands of life. Recess is a vision for a coffee cafe with an emphasis on bringing recess - a period of time in which an organized activity such as study or work is temporarily stopped - to the customer. Recess will revolve around wholesome fun - a space to play nostalgic board games or enjoy the company of others without the pressure to work. The business plan for Recess provides a comprehensive, clear-cut projection of the viability of the concept, a market and competitive analysis, operations plan and financial projections.

## ENVIRONMENTAL AND OCEAN SCIENCES

**MARIA ANGST**

Thesis Advisor: Dr. Drew Talley

*Interannual Variation of Ichthyofaunal Utilization of a Man-Made Salt Marsh Creek in Mission Bay, California*

Marsh restoration and creation are increasingly being used to mitigate Southern California's wetland's drastic decline due to human activities. This study used minnow traps to resample the ichthyofauna of a created marsh (Crown Point Mitigation Site; CPMS) and an adjacent natural marsh (Kendall Frost) in Mission Bay, California, 26 years following the marsh creation. Data from this study were compared to data collected immediately after marsh creation from 1995-1998, and data from 2021. Fishes captured included *Fundulus parvipinnis*, *Gillichthys mirabilis*, *Acanthogobius flavimanus*, *Ctenogobius sagittula*, and *Mugil cephalus*. Species richness and dominance measures were higher in the natural relative to the created marsh. The size-structure of *F. parvipinnis* populations in the natural marsh were skewed towards larger sizes relative to those in the created. These size differences were similar to 2021 but were opposite of those noted in the years immediately following marsh creation, suggesting long-term changes rather than inter-annual variability. The changes in size-structure appear to arise from differences in creek morphology between the created and natural systems, with the created marsh having become shallower through time. To determine nutrient (nitrate and phosphate) concentrations, surface water samples were collected, filtered, and analyzed with a SEAL Analytical AQ400. No significant difference in nutrients was detected between the marshes. The differences in ichthyofaunal communities between the created and natural systems suggest that marsh/creek geomorphology may be affecting the suitability of habitat for resident fishes and should be more carefully considered when designing marsh restoration projects.

## **CAROLYN CORLEY**

Thesis Advisor: Dr. Michel Boudrias

### *Solutions to the invasion of lionfish in Utila, Honduras: science, education, food, and jewelry*

Lionfish (*Pterois sp.*) are invasive species capable of devastating coral reef ecosystems due to their lack of predators, large appetites, generalist diet, high fecundity, and rapid spawning rates. As lionfish have expanded their distribution across the Caribbean, many conservation groups have taken it upon themselves to systematically remove these predators from environments where they are threatening native species. However, few have involved the community the way I observed while interning with the Whale Shark and Oceanic Research Center in Utila, Honduras. Protecting coral reefs is extremely important, especially in small communities like Utila, where the majority of people's livelihoods depend on diving tourism. In my project, I examined the different steps in the lionfish abatement efforts in Utila, how different community members are involved throughout this process, and what challenges they are facing. This process included educating the public on the negative impacts of these species, certifying divers to hunt them, hunting for the lionfish, and bringing them back to a lab for dissection and data collection. Hunting for conservation allows the community to use the collected fish to create economic opportunities while still helping preserve the reefs. By continuing to increase efforts to educate members of the community and allowing different groups to benefit from increasing lionfish removal efforts, Utila will be able to better control the threat they pose to reefs. Using Utila as a case study, it is my goal that this model of community involvement can be replicated in other tropical regions where lionfish are invasive.

## **ISABEL ICHIYAMA**

Thesis Advisor: Dr. Bethany O'Shea

### *Understanding the Connection Between Gypsum Blooms and Human Health at the Salton Sea*

The Salton Sea is a closed hypersaline lake in Southern California that has been receiving little input over the past few decades, leading to desiccation that is rapidly increasing every year. This large-scale evaporation of the sea has led to increased dissolved solutes, high salinity, and gypsum blooms. Gypsum blooms, the precipitation of gypsum ( $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ ) in the sea, have been a prominent facet of the sea and their distribution is well known. However, much of their chemistry and potential health hazards are still undetermined. Potential health effects from gypsum salt, an atmospheric dust particle present at the sea, have known reports of respiratory illness as well as eye and nose irritation. It is also possible that airborne gypsum may incorporate metals into its structure which could lead to more unforeseen health consequences for the population surrounding the sea. A key to understanding this phenomena could be in the major ion ( $\text{Na}^+$ ,  $\text{Cl}^-$ ,  $\text{Ca}^{2+}$ ,  $\text{K}^+$ ,  $\text{Mg}^{2+}$ ,  $\text{SO}_4^{2-}$ ,  $\text{HCO}_3^-$ ) composition of the sea, but that has not been quantified for over twenty years, since 2002. The current project attempts to understand the sea's gypsum chemistry using a current record of major ions collected in the Fall and Winter of 2022 and Spring of 2023 as well as comparing it to the last major ion survey two decades prior. This study helps give important context into the changes of Salton Sea chemistry in the past two decades and help unravel the mystery of the potential health hazards of gypsum blooms.

## FINANCE

### CARSON ERTWINE

Thesis Advisor: Dr. William Beggs

#### *The Effect of Inflation Announcements on Standard & Poor's Index Performance: A Cumulative Abnormal Return Analysis*

The previous year has been categorized as having uncharacteristically high inflation. This paper will examine the impacts of inflation announcements of 2022 on the performance of different sectors of the United States stock market. The various sectors of the S&P are represented by the SPDR exchange-traded funds (ETF) that track each sector separately. Inflation will be measured through the Consumer Price Index (CPI). I examine the impacts of the CPI announcements and calculate the cumulative abnormal returns (CAR) for each sector of the S&P during a five-day window before and after the announcement. The hypothesis is that the defensive sectors, consumer staples, utilities, health care, and consumer durables, will outperform the cyclical sectors (under what conditions will they outperform, higher inflation?). The results will shed light on the impact of this previous year's inflation announcements on sector performance. In particular, the results will show which sectors performed better during this period of inflation, in order to identify the current state of the markets and what potential trades could be made in similar periods.

### JASPER LEM

Thesis Advisor: Dr. Priya Garg

#### *Financial Literacy in College Today: Is It Needed?*

Californians are facing several financial crises, headlined by 4.5 million Californians falling below the poverty line, a 4.2% unemployment rate, and the fall of Silicon Valley Bank in early March 2023. In the face of these perilous circumstances, it is worth asking if California's education system could be improved to accommodate more financial literacy classes. Currently, the Golden State does not mandate a financial literacy course in any level of education, kindergarten through senior year of college. Previous research indicates that financial literacy courses would be more effective if mandated in college courses rather than high school. However, there has been no extensive research performed in an accredited California college or university regarding the financial literacy levels of enrolled students. This study aims to determine the level of financial literacy that students at the University of San Diego possess. Utilizing a survey distributed via a QR code or a link, participants are asked a series of demographic questions, questions about previous financial literacy courses they have potentially taken, and a series of personal finance classes. The data will then be organized via Stata and T-tests to efficiently organize the results. After data analysis, a recommendation may be made for the University of San Diego to add financial literacy courses to the general education curriculum. These results may ultimately lay the foundation for future California colleges and universities to expand their general education to include financial literacy.

## **MAYA WINSLOW**

Thesis Advisor: Dr. William Beggs

### *Female CEOs and their limited involvement in the investment industry*

For decades, the world of finance has proven to be a man's domain. Many firms, however, after the latest wave of female empowerment, set out to make their employee demographics more representative of the global population. This project aims to analyze the vague, yet pro-female promises made by financial firms. Ultimately striving to uncover the truth about the role of women in the investment industry by identifying and comparing the number of female CEOs in 2012 and 2022. After noticing a disappointing improvement, the paper dives into the kinds of firms that these women manage and where they are located (within the United States). Are women being trusted to lead large hedge funds or are they more likely to lead small, private wealth firms? What is the AUM (assets under management) of female-led firms and how does it compare to their male counterparts? Is there an optimal location in the United States where women are more likely to rise through the ranks? These questions work to demystify the (often) hidden struggles of women attempting to climb the corporate ladder.

When it comes to finance, will women ever rule; or is cash always meant to be king?

## **HISTORY**

### **RYAN TATE**

Thesis Advisor: Dr. Ryan Abrecht

### *The Interconnectedness of a Region expressed through Trade - The Baltic Sea in the 1600s*

The trade networks in the Baltic Sea were instrumental in developing and rising major powers such as the Netherlands, England, and Sweden. The grain from Poland fed the Dutch economy and contributed to the Dutch Golden Age, naval supplies from Sweden and Finland helped build the strength of the English navy, and the Danish Sound Tolls were a source of debate throughout Northern Europe for over three hundred years. However, there is a general lack of knowledge concerning the details of the trade network in the Baltic Sea region, especially on who were the people who moved these goods throughout the region and maintained regional commerce. This project will explore the various human and organizational actors that were instrumental in the promulgation of various trade goods throughout the Baltic Sea that enabled the prosperity and development of the various states of the Baltic Sea and North Western Europe. The goal of this research is to write a narrative that combines fact with fiction so that a general audience can enthusiastically consume this media and come out with a good picture of the historical nuances of the commercial situation of the Baltic Sea. Understanding the details of any trade network, especially one that contributed to the rise of so many global powers, is helpful in recognizing the implications and significance of modern trade networks.

## **CLAIRE WAGNER**

Thesis Advisor: Dr. Yi Sun

### *Navigating Spaces of Protest: Feminism in the Egyptian Arab Spring*

This project is an exploration of the degree to which feminism was influential in Egypt's Arab Spring and how feminist organizations negotiated ideologies such as Pan-Arabism, Islamism, and the goals of decolonization before, during, and after January 2011. While women are often excluded from conversations about the historical roots of the Arab Spring, this project emphasizes the role of women and feminism in the Arab Spring in navigating and negotiating both physical and ideological spaces. Women in Egypt fought for their place in the physical square of protest, in politics, and conceptually in the development of a new Egyptian government. Feminist organizations were essential in communicating information and supplying protestors, formulating policies and proposals, galvanizing the public, and advocating for the broad goals of the Arab Spring: economic prosperity, an end to imperialism, self-government, and justice, legal and social. The Arab Spring as a series of revolutions in Tunisia, Egypt, Syria, and Yemen represented the continuation of shared identity and Pan-Arab ideas decades after decolonization. It will be argued that even after 2011, questions of justice, leadership, and shared identity remain central to Egypt and beyond. In particular, evaluations of the Arab Spring and the negotiations between feminist organizations, religious organizations, and youth organizations in the development of a post-Arab Spring government is particularly relevant in light of the protests over the death of Mahsa Amini in Iran in 2022.

## **INTERNATIONAL BUSINESS**

### **DANIELA ANTON**

Thesis Advisor: Dr. Eileen Daspro

### *Becoming Fashionably Sustainable: Leading Practices in the Fashion Industry*

The fashion industry is one of the world's largest and most influential manufacturing sectors. As a contributor to about ten percent of the world's total carbon dioxide emissions, the fashion industry's carbon footprint is among the most extensive. Furthermore, the "fast fashion" industry has grown tremendously in recent years due to its rapidly changing styles and low costs, which have shown to be an attractive option for consumers. Concurrently, the industry is responsible for producing over \$500 billion in waste due to the underutilization of clothing items which can be credited to the emergence of "fast fashion". Sustainability has become a focal point of policy discussions due to the increased awareness of the environmental, social, and economic consequences of "fast fashion" among both suppliers and consumers. Thus, as social awareness rises, fashion brands are beginning to prioritize sustainable policies within their company. The purpose of the research is to highlight the best practices of sustainability leaders in the fashion industry. The methodology includes various case studies on six fashion companies ranked highly on various sustainability indexes: Fashion Transparency Index, Good on You Rating, and BCorp Certified. Policies relating to governance, traceability, production, supply chain, and various spotlight issues will be examined. Through the identification of innovative and sustainable practices across an array of fashion brands, alternative companies can benchmark their own practices and work towards industry-wide change and impact.

## **KATHERINE HARRIS**

Thesis Advisor: Dr. Alan Gin

### *Aging China: An Investigation of the Microeconomic Factors Behind China's Low Fertility Rate*

Low fertility rates have become a pressing concern worldwide due to their far-reaching implications for population growth. As China's population continues to age, questions about the ramifications of demographic changes become increasingly urgent as the economic outlook of the world's most populous nation faces significant challenges. This paper investigates the microeconomic factors that are contributing to China's low total fertility rate and examines the economic consequences of demographic changes resulting from this trend. Using a regression analysis, this paper identifies which factors have a significant correlation with total fertility rate. The methodology includes a time-series analysis of fertility rates in China over the last 50 years and a regression equation that considers independent microeconomic variables such as GDP per capita, urbanization, and education rates. The findings could provide insights for any future policy interventions to address China's demographic challenges.

## **NINA REAMER**

Thesis Advisor: Dr. Eileen Daspro

### *Climate Action Toolbox: A Synthesis of Best Practices by Developed and Developing Nations*

Carbon neutrality by 2050 is one of the world's most pressing issues. According to the United Nations, fossil fuel emissions must decrease by six percent yearly between 2020 and 2030 to maintain a rising temperature below 1.5°C. This may seem impossible as the world becomes increasingly globalized and interconnected via energy usage and offtake due to globalized supply chains; however, both developed and developing countries can mitigate these issues by utilizing their state's natural resources, policies, and financial capabilities. Researched nations were chosen via a cross reference of Human Development Indexes and the percentage of renewable energy consumed in relation to total energy in each country (International Energy Agency, 2019). Through this research it is evident that the developed nations of Portugal, Iceland, and New Zealand are privy to certain actions that set them apart from other countries. These tools mainly stand to be the following: strategic plans, financial programs, and framework legislation. In contrast, developing nations such as Indonesia, Guatemala, and Paraguay, also lead the charge on fossil fuel mitigation and renewable energy development. The emerging markets possess the following tools: strategic plans, grants and subsidies, and regulation. The pertinent need for renewable energy in the face of the global climate crisis is only augmenting. This research culminates in a holistic "toolbox" for businesses and companies, in both developed and emerging markets, which is essential in reaching the UN Sustainable Development Goal of zero-emissions by 2050 and an international renewable economy.

## **ANNA SIENKO**

Thesis Advisor: Carlton O’Neal, JD

### *Does Chinese Collectivist Culture Impact the Hyper-Consumption of Luxury Goods?*

Since Confucian times, China has been a highly collectivist culture. Chinese collectivism refers to a cultural value that emphasizes the importance of group harmony and collective well-being over individualism. It shapes many aspects of Chinese society, including family relationships, business practices, and political systems. This paper will seek to combine and analyze literature in order to answer the question: how does Chinese collectivist culture drive hyper-consumerism? This will be done through an examination of consumer behavior as it relates to luxury goods. Furthermore, it argues that a positive correlation exists between the purchase of luxury goods and perceived social status in Chinese culture. The research explores the emergence of a new middle class in Chinese society and the desire for those outside this “neo-middle class” to assimilate by purchasing luxury items. As one of the largest consumer markets in the world, it is critical for businesses to have an awareness of Chinese buying patterns. This paper offers suggestions for international marketers so they can better promote and modify their products for the Chinese audience.

## **LIBERAL STUDIES**

### **GRACE PREBLE**

Thesis Advisor: Dr. Maura Giles-Watson

### *The Visit: A Children’s Book Supporting Character Formation and Identity Development in Young Readers*

Stories have the power to shape the way people think, and this is especially true in children. The books children read inform the way they view themselves and the world around them. Young readers absorb both the explicit and implicit messaging in stories and incorporate this understanding into their own personal paradigms. While many teachers and parents alike are aware of the role of media on development, I am specifically concerned with how children’s literature impacts young people’s sociomoral, identity, and empathy development. Although research examining the relationship between reading and development exists, little information discussing how specific literary choices can contribute to intersectional identity formation is available. In my project I create a children’s book designed for young readers ages six to nine. To inform my stylistic and contextual decisions in this book, I conduct survey field research measuring children’s reading preferences, and perform literature analysis exploring the impact of stories on sociomoral and identity development. My book, *The Visit*, serves as a model of the type of content that can be used in the classroom to promote students’ socio-emotional learning. This project demonstrates that when teachers and authors focus on identity formation when choosing and writing books for the classroom, their intentional choices foster affirmative identity development beyond purely academic ends.



# MARKETING

## **SOLOMON BURR HARRIS**

Thesis Advisor: Dr. Andrea Flynn

### *Breaking Barriers: Exploring the Role of Diversity in Social Media Marketing Strategies of Beauty Brands*

Representation and diversity matters in everything in life, social media marketing is no exception. Numerous pieces of evidence suggest that the beauty industry, in particular, lacks this representation. This thesis aims to examine the impact of adding diverse representation in social media marketing campaigns in the beauty industry. By analyzing case studies, completing a literature review, and conducting interviews, the study highlights the different approaches taken by beauty brands to incorporate diversity in their marketing campaigns, and the effects of such efforts on consumer behavior. The importance of this project lies in the growing demand for diversity and inclusivity in marketing campaigns across all industries, especially the beauty industry. However, there is still a gap in our knowledge regarding the effectiveness of such marketing efforts and their impact on consumer behavior. This thesis fills that gap by providing insights into the strategies employed by beauty brands to showcase diversity in their marketing campaigns and their effectiveness in reaching a wider audience.

## **TAYLOR REDFERN**

Thesis Advisor: Dr. Kenneth Bates

### *Utilizing TikTok to Increase Attention Economies: How to Use It and Why It's Vital to Successful Business Today*

TikTok has fundamentally changed the digital marketing landscape and, beyond that, the speed at which we observe trend cycles go from introduction to obsolescence. The app is barely understood by anyone over the age of 25, and many companies today ignore or invalidate the unprecedented utility of TikTok. With over thirty million active users in the U.S. alone, delaying or refusing the adoption of this tool would undoubtedly mean missing out on millions of dollars and significant market segments. Because the app is so new, only now has research been able to reinforce what Gen-Z and Millennial-users know to be true about TikTok. This project aims to summarize this new data in a way that conceptualizes how to effectively utilize TikTok's algorithm and engrained social norms to become and stay relevant as a business in this post-TikTok era of marketing. Additionally, interviews with creators in the health and wellness space on TikTok reveal if more or less success can be found by either intentionally or accidentally applying the principles found in research to be effective. While there are many nuances that can contribute to sustained attention economies on TikTok, research suggests it comes down to subtle algorithmic manipulation, understanding certain social theories and how your business can cater to them, and constructing authenticity through/with consistency. Quick and full adoption of TikTok as a marketing tool can be what leaves your business in the past or establishes its place in the future.

## NONPROFIT LEADERSHIP

### HANNAH ARRASMITH

Thesis Advisor: Dr. Suzanne Stolz

#### *Redefining Disability: A Short Film Exploring Ableism*

We must pose the question, “Who’s invited?” when navigating everyday spaces and amusements. Unless one is directly impacted by the inaccessibility of our world, it can be difficult to identify the roadblocks that people with disabilities may face in daily life. This short film explores how ableism impacts an individual's routes, routines, and relationships. My uncle, who is a quadriplegic, inspired my research in disability studies. His experiences with our inaccessible world and ableist societal norms have been my catalyst in advocating for disability access. My goal for this creative project is to use an effective form of advocacy, highlighting individual lived experiences and the real implications that people face. The short film explores the harm caused by the medical model of disability and how communication surrounding disability can impact laws, physical structures, standard practices, and attitudes – particularly within activities. I hypothesize that ableism is fervent within our communities and that, by understanding how language shapes behavior, we can promote accessibility. Concluding that our world and its current structures can be ostracizing, the film offers advice on how to create a more inclusive world for all bodies.

## POLITICAL SCIENCE

### DANIELLA CLARK

Thesis Advisor: Dr. Karen Shelby

#### *Grasping for Power: State Policy and Women’s Lives in India and Iran*

Recent events in Iran have highlighted women’s activism in challenging the exercise of state power. These events have once again highlighted how women’s bodies often become the battleground for political confrontation. This project will examine Iran and India as two specific case studies of how women were treated following the establishment of new governments attempting to consolidate socio-political control. This project will examine data related to the lives of women in these two countries in order to develop a quantitative analysis of the impact of government policy. Such data include women’s life expectancy, average age of marriage, rates of femicide/feminicide, women’s literacy rates, and occurrence of sexual violence and domestic abuse. By contrasting these statistics over time this project examines development in the treatment of women. Additionally, qualitative research in the area of women in politics will give context to the data analysis. It will reveal ways in which governments weaponize laws and policies against women as a means of asserting state power.

## **KATHERINE DIETRICH**

Thesis Advisor: Dr. Karen Shelby

### *Tube Tied and Tongue Tied: A Comparative Look at the Development of Forced Sterilization and Reparational Efforts in the United States and Czech Republic*

Throughout the twentieth and twenty-first century hundreds of thousands of women were robbed of their wombs by their governments. While it may be assumed that the Nazi regime was the worst perpetrator, the United States was a larger assailant against reproductive rights on their minority populations. This study explores the development of forced sterilization as well as reparational actions taken by state governments. It investigates how these minority populations have been ‘othered’, how this has led to the wide-spread permissibility of basic rights violations, and how governments have attempted to correct these wrongs.

Both eugenic and neo-eugenic ideologies have largely been used in the wider social framing of forced sterilizations in the United States. Further, forced sterilization follows a pattern of proliferate use of dehumanizing rhetoric toward the targeted group, legitimization through fiscal discourse, and male assumption of female reproduction in a form of ‘social savior’ narrative.

These acts are government-sanctioned direct attacks on minority populations with intentions ranging from racially purifying the nation to decreasing access to federal funding.

The United States, as with many other cases of historical injustices, has remained largely silent and ineffective in reparational efforts. With cases of forced sterilization occurring on U.S. soil as recently as 2020, it is clear that this is a problem that needs to be solved. I argue that if these wrongs are not properly addressed or acknowledged, then our country is bound to continue and repeat this gross abuse and miscarriage of justice.

## **KATE LAMPERT**

Thesis Advisor: Dr. Casey Dominguez

### *Defending the Bench: Judicial Backgrounds as they Affect Case Outcomes*

Each year the Supreme Court of the United States receives thousands of petitions for criminal procedure cases and plays a critical role in defining criminal law and upholding the constitutional rights of defendants. However, in its history, 54% of justices on the SCOTUS held legal backgrounds working in prosecution. With the appointment of Justice Ketanji Brown Jackson in 2022, she became the first former federal public defender, and the first Black woman, to serve on the SCOTUS bench. In an age of intense political polarization and a spotlight on the precedent-setting power of the Supreme Court, judicial diversification stands as a topic worthy of further study.

This project aims to analyze the ways that judges’ professional backgrounds affect case outcomes. Previous research on judicial backgrounds suggests that judicial behavior is affected by key variables such as gender, race, ideology, and identity of appointing president. The paper offers original research on the effect of professional practice on justices as seen in their rulings and written opinions. Specifically, the project delves into the area of criminal law and evaluates how experience in prosecution versus public defense affects a judge’s decision-making and application of the law to ultimately highlight that diversity in the judiciary promotes justice and equality for all.

## **NICOLE PEREZ**

Thesis Advisor: Dr. David Shirk

### *Latin America: The Rise of the Left*

Throughout the last 20 years, the political left has made a significant rise within Latin American politics. Known as the Pink Tide, many scholars have attributed this to a variety of reasons, however, run-off elections, as well as the prominence of the indigenous movement, have been overlooked as potential contributors for this phenomenon. This project will fill these gaps by examining whether or not run-off elections and the indigenous movement are additional contributing factors to the rise of the left. This paper will examine primary and secondary sources regarding the left in Latin America, collect data on presidential elections throughout the region, and analyze how these findings contribute to the research already known about the rise of the left and the power it has amassed over the last two decades. Additionally, this project will conduct a case study analysis of four Latin American countries to see a detailed picture of the political shift that has taken place, as well as further illustrate whether these factors are contributors to the leftist shift the region as a whole is experiencing. One will find that run-off elections and indigenous movements are in fact additional factors that have allowed the left to continue to rise, and the elections of leftist presidents have paved the way for progressive policies to take a bigger role in the region's political agenda. These findings are crucial to understanding how Latin America as a whole will govern in the future and illustrates the power behind institutional and social forces.

## **SAMANTHA TORRES-TAYLOR**

Thesis Advisor: Dr. Evan Crawford

### *The Influence of Children's & Young Adult Fiction on Political Worldview*

The importance of reading is often impressed upon children as soon as they start school, but do certain books impact their political beliefs? This project explores the link between nonacademic literature—from Harry Potter to the Hunger Games—and political worldview. The hypothesis is that when children and teenagers read novels with shared themes, it shapes their understanding of the world as adults. Specifically, if themes of current children's and young adult fiction are increasingly aligned with progressive activism, it fosters the generation's dedication to equality, environmental justice, and more. In addition to a literature review on politics in literature and the known variables of socialization, this project features an original survey asking young adults (approximately ages 18-25) about the books they've read and the extent to which they agree with varied general belief statements. The analysis of both will contribute to our greater understanding of how beliefs are formed and of the importance of reading.

# PSYCHOLOGY

## JENNIFER DESANTIS

Thesis Advisor: Dr. Michael Ichiyama

### *Special Topics in Psychology: Trauma Informed Care Through the Lifespan*

Trauma Informed Care (TIC) is the practice of delivering care services rooted in empathy and sensitivity to others' previous lived experiences in order to minimize the risk of additional trauma being inflicted. While this concept is taught in many health care and graduate school settings, this information has yet to breach the undergraduate level of psychological education. This thesis explores the most up to date research and existing literature regarding TIC in various trauma rehabilitation settings. This project will culminate in a course proposal consisting of in-depth explanation of TIC and trauma as well as a completed undergraduate upper division course syllabus examining TIC at four main stages of life: childhood, emerging adulthood, adulthood, and older adulthood. This project illuminates the importance of teaching TIC in undergraduate psychology curriculum in order to further the applicability of psychological science degrees to assist others in a more holistic way and prepare undergraduate students for future careers in service and health care.

## SAMANTHA EASON

Thesis Advisor: Dr. Laura Getz

### *The Impacts of Top-Down Processing on Speech Perception*

Cognitive psychologists believe that our brain does not simply interpret auditory information received from the environment as-is (this is called bottom-up processing), but that we actually use our existing knowledge and expectations to subconsciously change what we hear through top-down processing. In this two-part study, we began with a behavioral pilot test, investigating how various top-down factors would affect reaction times when participants heard auditory word pairs consisting of a prime (either an 'association' prime or a 'neutral' prime) and a target, with some of the target words having manually-altered voice onset times (VOTs). In addition to manipulating VOTs of the targets, we also varied the word frequency (how often the word appears in everyday speech), neighborhood density (how many other words rhyme with it), and lexical status (whether it is a word or a nonword). We found that responses were most impacted by lexical status, meaning participants were more likely to perceive ambiguous targets as words rather than non-words. For associated primes, responses differed based on expected voicing (an ambiguous VOT between b/p was perceived as /b/ in the context of bunk BEDS, but as /p/ in amusement PARK). In the second part of the study, we used electroencephalography (EEG) technology to collect brainwave data that more definitively explained the neurological mechanisms behind, and the time course of, speech perception. This study contributes to the literature by analyzing speech perception at a neural level and may have implications for understanding speech-related disorders.

## **MEGHAN O’HEARN**

Thesis Advisor: Dr. Sara Appleton-Knapp

### *The Importance of Accommodations for Students With Learning Disabilities in Early Education*

Students with learning disabilities often struggle to deal with insufficient accommodations and support in early education. Accommodations for young children with learning disabilities in school are necessary because they can help these students achieve academic success, build self-confidence, and develop social skills. When students with learning disabilities are provided with appropriate accommodations, such as extended time on tests or access to assistive technology, they are better able to access the curriculum and demonstrate their knowledge and abilities. This can help to prevent academic frustration and failure, and instead foster a positive and engaging learning environment. This study examines the mental, emotional, and psychological effects on students resulting from their experiences with accommodations. Through a combination of qualitative and quantitative questions, the unique experiences of students who grew up with learning disabilities were collected. These data present a range of the short and long-term effects of accessibility to accommodations. This study shows that accommodations are a critical component of ensuring that all students have access to inclusive education and equal opportunities as their peers.

## **KATHERINE TENNYSON**

Thesis Advisor: Craig Barkacs, MBA, JD

### *Happiness in Higher Education: The Urgent Need for Integrating Positive Psychology into University Curriculum to Combat the Decreasing Mental Health of Students*

The escalating mental health crisis among university students is a pressing issue, as heightened stress, anxiety, and depression levels are further exacerbated by the added challenges of a global pandemic. Although the pursuit of well-being and life satisfaction is a commendable objective for universities in the United States, numerous obstacles hinder its realization, including a significant shortage of available mental health services for students. Positive psychology, a relatively new branch of psychology, offers a strengths-based perspective on mental health, in contrast to a solely pathological perspective. Rather than concentrating solely on the treatment of mental illness and dysfunction, positive psychology emphasizes strengths and well-being through the promotion of the positive aspects of human life. This comprehensive literature review examines the potential of utilizing a required course in positive psychology as a solution to mitigate the mental health crisis as a preventative approach of well-being, drawing insights from existing research in the field. Through an integration of these principles into university curriculum, universities can cultivate resilience, enhance well-being among students, and expect an increase in academic success while concurrently minimizing the risk of mental health issues. This paper underscores the potential impact that a positive psychology course can offer to all university stakeholders by analyzing existing studies and literature reviews on mental health and the influence of positive psychology.

## **AMANDA YAP**

Thesis Advisor: Dr. Nadav Goldschmied

### *Do the language of state law as well as other extraneous variables impact the outcome of Change of Venue Motions?*

According to the Sixth Amendment of the US Constitution, all citizens have the right to an impartial jury; however, the same amendment also instructs that all defendants must be tried in the county where the crime occurred. These two requirements can conflict, and if defendants and their attorneys feel that they can not get a fair trial usually because of negative media coverage, they can motion for a Change of Venue (CoV) to move court proceedings to another county. First, the current investigation examines each state's criminal CoV statutes and identifies common themes as well as differences. Second, we assess the relationship between the language of the law and the number of granted and denied CoVs based on appellate state court decisions of murder trials from 2000 to 2020. Third, this study evaluates how various factors such as race, political ideology, state murder rate, and when the defendant is a policeman impact CoVs' outcomes. The findings of this research should highlight some of the extraneous factors that may impact the decisions made in court, which may in turn support the concept of a fair and impartial trial or alternatively undermine this core principle of American jurisprudence.

## **REAL ESTATE**

### **KATHERINE CAGGIANO**

Thesis Advisor: John Demas, JD, LLM

### *The Missing Middle: A Viable Solution to the Affordable Housing Crisis*

Housing is not only a commodity that provides value to humans, but also a necessity for shelter and comfort. However, today in the United States, there is a shortage of over 7 million affordable homes for the over 10.8 million extremely low-income families, 70% of whom are severely cost burdened, paying over half of their income on rent. Various solutions have been introduced by the government in an attempt to combat this crisis – LIHTC, Section 8 vouchers, and FHA regulations– but overall have been unsuccessful and incredibly flawed. There needs to be a more viable solution that properly accommodates low-income households. The missing middle refers to a group of housing structures that, if developed, would add to the supply of affordable housing in a productive manner, giving a more stable environment and shelter to low income households and individuals, while also supporting walkability, education, safety, job rates, and comfort. Missing middle type homes are developments considered to be a happy medium between the single family home, which tend to be far too expensive to rent for a low-income household, and a mid-rise, which tend to be incredibly competitive for low income households and also tend to be built in lower income neighborhoods that do not contain the necessary public services and safety necessary for these families and individuals to improve their situations. By developing the missing middle, the supply of desirable affordable housing increases and the lives of low-income individuals and families can improve in a way that typical affordable housing can't achieve.

## **MAXWELL GUINN**

Thesis Advisor: Roger Simsiman, MS

### *Applying Vienna's Social Housing Principles to Address San Diego's Affordable Housing Crisis*

This thesis examines the social housing principles in Vienna and explores their potential to alleviate the housing crisis in San Diego. The project uses quantitative research to compare demographics, policies, and programs and identify funding opportunities. The project's significance lies in the critical need to increase the affordable housing stock in San Diego, where growing numbers of individuals and families struggle to find and afford decent housing. By examining Vienna's successful and innovative housing policies, insights will offer potential political and practical levers for replication. The aim is to arm policymakers with evidence-based recommendations to increase the number of affordable and sustainable housing units regionally.

## **BRANDT JAGER-STORY**

Thesis Advisor: John Demas, JD, LL.M

### *Exploring Public Housing and AI: Protecting Privacy and Data in Real Estate*

We exist at a critical time where the advances and streamlining of deep learning algorithms, technological models of human cognition, are causing artificial intelligence (AI) to be ever further integrated into our daily lives. Oftentimes, policy and public opinion does not keep up with the rate of growth of new technologies. It is critical to understand how we further integrate AI and deep learning into our lives while still respecting privacies and individual freedoms. This is especially important with regards to our own homes. This issue of data privacy becomes even more critical with regards to public housing, where residents may not have a choice as to whether or not they live there, and subsequently how their data is or is not used. This project posits that there must be steps taken to address potential data abuses that can come from these AI systems being integrated into public housing. It will further explore legal and ethical data usage concerns for public housing and potential solutions to prevent the abuse of those systems going into a future where 'smarthomes' may likely become commonplace.



## **SEAN VAN DE GRIFT**

Thesis Advisor: Dr. Charles Tu

### *Real Estate Investment Trusts: A Global Comparative Analysis of Policy and Regulation*

Since the 1960s, real estate investment trusts (REITs) have become a popular form of public real estate in markets in over 40 countries worldwide. REITs are entities, public or private, that own and operate income-producing real estate across a variety of sectors. Essentially, public REITs are securitized ownership in real estate. While some similarities exist between REIT structure and operation across markets, each country has its own guidelines and regulations pertaining to REITs set in legislation. Each country sets its own standards for various aspects of REIT operation such as capital requirements, tax advantages, or distribution and dividend requirements. While many of these aspects have been studied and have found implications for investors, a more in-depth study is warranted as it pertains to the operators of public real estate. This study will examine the qualitative and quantitative characteristics of REITs from a select group of markets across the globe. The findings will aim to determine how these specific characteristics define the attractiveness, operation, and performance of a REIT in its respective market. An examination of these variables will lead to a stronger understanding of their implications for public real estate sector in markets around the world.

## **SOCIOLOGY**

### **CLARA FEHRENBACH**

Thesis Advisor: Dr. Julia Cantzler

### *Not Taking Responsibility in Corporate Social Responsibility*

Companies promote their sustainability, their philanthropic contributions, their diversity, equity, and inclusion protocols, and other initiatives that make their operations look responsible, ethical and worthy of support. But are these companies actually doing good? Corporate Social Responsibility (CSR) encompasses all of the activities a business engages in that aim to integrate environmental and social concerns into their operations. Studies on CSR typically aim to determine its economic benefits to corporations; however, this study puts profit aside and investigates whether companies are mitigating the social issues they claim to address effectively. An analysis of interview data from CSR professionals and corporate websites demonstrates that CSR initiatives are failing to meaningfully address social issues because they do not confront the ways in which the company itself perpetuates inequality in the global capitalist system. A sociological theory that takes a critical approach to the free market, neoliberal framework that drives corporate decision-making in the United States is applied to illuminate deficiencies in current CSR practices. This paper concludes by highlighting opportunities for corporations to move forward in ways that more effectively increases equity and sustainability in the global economy.

## **AMANDA GHIBAUDO**

Thesis Advisor: Dr. Thomas Reifer

### *Vulnerability of Juveniles to False Confessions*

In criminal proceedings, confessions have long been recognized as the gold standard of evidence. Understandably, many people question why someone would willingly confess to a crime that they did not commit. However, in the event of an interrogation, police often use psychologically coercive interrogation techniques that may make suspects, especially juveniles, more susceptible to false confessions. This paper intends to assess the vulnerability of juveniles to false confessions and the legal implications of such confessions. The reality is that false confessions ruin innocent lives. Synthesizing existing literature on relevant U.S. Supreme Court cases, juvenile interrogation procedures, and the dispositional vulnerabilities of juveniles, this paper is written with the understanding that children are among the most vulnerable members of society. Juveniles are commonly known to neither think nor behave like adults, yet they still are subject to the same manipulative interrogation techniques as adults. Many states also trust juveniles to waive their Miranda rights without the consent of a parent, a guardian, or an attorney, though they still cannot vote, watch R-rated movies, or drive. With their brains still developing, many children lack the ability to advocate for their own interests and protect themselves from preventable harm. Considering the prevalence of juvenile false confessions in the U.S., actors in the criminal justice system and the public at large should recognize that juvenile suspects require extra protections during an interrogation beyond those granted to adults.

## **SPANISH**

### **EDEN VAN SAUN**

Thesis Advisor: Dr. Julia Medina

### *"Loving the Creature": Reshaping ecological ontologies through animales indeseables*

What's so bad about hurting an ant? Squashing a spider? There are millions of them, aren't there? My project pushes past conventional definitions and expectations of the 'human,' to encounter such 'undesirable animals'— animals the West views as 'other' and abject, like ants, scorpions, vultures, and mosquitos— as they appear in contemporary Central American literature. In portraying these animals in their fiction, authors such as Victor Montejo, Quince Duncan, Maria del Carmen, and Rodrigo Rey Rosa intentionally subvert Western expectations and demands for the roles these animals typically have. Instead, they explore the 'often messy,' discordant, but equally beautiful relationships we have with these forms of the nonhuman. My project therefore centers around these four authors, noting the variety of identities they encompass and the diverse countries of their origin: Guatemala, Costa Rica, and Nicaragua. These authors critique anthropocentrism and the logic of species preference and instead pose a distinct way of 'being-with' these so-called undesirable animals. In investigating how these authors utilize 'animales indeseables' in their fiction writing, I show how these depictions can help us have a larger conversation about the role these 'animales indeseables' ought to play in our lives here in the West. Ultimately, I seek to recast our understanding surrounding 'other' creatures and explore new ways of caring about the animals we think about least. How we treat the nonhuman can affect ecology on a planetary scale; 'loving the creature' can be one way to restore this current imbalance.

# THEOLOGY AND RELIGIOUS STUDIES

**BRANDON FERRUZZA**

Thesis Advisor: Dr. Emily Reimer-Barry

## *The Injustices of College “Hookup Culture”: Feminist Christian Sexual Ethics*

Hookup culture is a dominant social norm on college campuses, defined as a one-time, sexually intimate experience with another without any further commitment. According to surveys and interviews with sexual ethicists, many students report dissatisfaction with the expectations of hookup culture. Hookup culture involves hidden inequalities and power dynamics that foster male dominance and devalue women. Additionally, the role of alcohol in the hookup script can lead to inadequate exchanges of consent and rape culture. Hookup culture’s objectification of others and rejection of emotional connection are opposed to love and human flourishing. Through the lens of Christian and feminist sexual ethics, this paper will uncover the misleading and unjust expectations of hookup culture. I advocate for a more transparent conversation surrounding the desires and values behind sexual intimacy. I suggest a sexual ethic that rejects the treatment of people as disposable or mere physical objects and rather upholds justice, equality, human dignity, reciprocity, commitment, and self-care. Universities can promote this conversation and foster responsible relationships among students by investing in student organizations, residential learning communities, and seminar-style classes or events. People are in need of merciful accompaniment while they navigate the integration of their sexuality.