

SRC 2024 Abstracts

Listed alphabetically by first author last name

Sheena Adolphus, Melissa Hudson, and Anita Kapila-Ramirez

Is Alcohol Recovery Identity Predictive of Outcomes Among Help and Non-Help Seeking Heavy Drinkers?

Qualitative research indicates that alcohol recovery identity, or the extent to which an individual perceives themselves as being in recovery, is an important part of the recovery process. The current study examined explicit and implicit alcohol recovery identity as predictors of alcohol-related outcomes (e.g., alcohol frequency, quantity, and consequences) among help (n = 213) and non-help (n = 154) seekers who reported engagement in heavy drinking. Explicit (e.g., Alcohol Recovery Self-Concept Scale) and the implicit (i.e., Alcohol Recovery Implicit Association Test) recovery identity were examined as predictors of alcohol-related outcomes in the linear hierarchical regression analyses. Results from the study indicated that explicit recovery identity was predictive of alcohol frequency ($B = -2.04$, $p < .001$), quantity ($B = -2.46$, $p = .012$), and consequences ($B = -1.33$, $p < .001$), but only when help seekers were examined. Implicit recovery identity was, however, only predictive of alcohol-related consequences when help seekers were examined ($B = -4.61$, $p = .001$). As predicted, higher levels of explicit/implicit recovery identity were generally found to be predictive of lower levels of alcohol-related outcomes. These findings were mostly replicated in the hierarchical regression analyses when covariates were added to the models (e.g., age, sex, and income). Given that help seekers may be more actively engaged in the recovery process compared to non-help seekers, these findings were expected. Study findings lend empirical support for the examination of whether the strengthening of an individual's recovery identity may serve as a protective factor against relapse.

Ricardo Aguayo

Spatial Analysis of Solar Energy Distribution in Los Angeles County's Disadvantaged Communities

The drive towards sustainable and renewable energy has experienced significant momentum in the past decade, prompting increased initiatives from both government agencies and public utilities. These efforts aim to motivate consumers, both commercial and residential, to transition from conventional power sources to renewable solar energy. However, Disadvantaged Communities (DAC) in the South Bay and Harbor areas face challenges, including heightened industrial pollution and limited access to renewable energy resources, impeding the adoption of sustainable infrastructure. This study applied ArcGIS' Deep Learning Solar Detection software to assess and identify the prevalence of solar panels on buildings within these communities. We verified this data by using the California Public Utilities Commission (CPUC) and GRID Alternatives resources implemented under California's Senate Bill (SB) 535. Preliminary data from 2022 reveals semi-annual reports detailing applications under review, confirmed installations, and connected systems. In the first half of the year, 215 low-income homeowners had solar panels installed, with the second half seeing a notable increase, totaling 315 households. Utilizing Geographic Information Systems (GIS), the study aims to ascertain the proportion of these installations situated within the DACs of the South Bay and Harbor area, correlating the findings with the boundaries outlined by SB 535. Through this research, we anticipate contributing to the broader discourse on sustainable energy adoption, especially in communities facing environmental and socio-economic challenges.

Jessica Alvarez

School Counselors Leadership

In response to the update of California's standards for the Pupil and Personnel Services credential to highlight school leadership, this phenomenological study explores how current California school counselors describe their own school counselor leadership in schools. The change in standards focuses on future counselors, however the profession as a whole is still expected to step into their leadership. School

counselor leadership literature is limited, and it centers on how other stakeholders, particularly administrators impact the role of the school counselor. Hence, this study addresses how school counselors describe their role and leadership, their collaborations with school stakeholders, and the level of encouragement to take initiative at their school sites. Preliminary findings indicate that school counselors describe their leadership as advocacy for the community that they serve through professional development and collaboration with different stakeholders. Findings for the study will inform how school counselor training programs may bolster leadership preparation to meet demands of the profession and education overall.

Gisela Alvarez

Mathematical Analysis of the Biophysical Response of in vitro Epigallocatechin Gallate (EGCG) treated Hyperglycemic Human Microvascular Endothelial Cells (HMEC-1) and Epithelial Rat Osteosarcoma (UMR 106) Cells Using Electric Cell-Substrate Impedance Sensing (ECIS) Technology

Despite being an energy source, increased glucose levels, or hyperglycemia, may lead to endothelial dysfunction and compromised bone cell metabolism which poses a risk for those with chronic health conditions, such as diabetes melitus (DM). In this study separately cultured in vitro hyperglycemic Human Microvascular Endothelial Cells (HMEC-1) and Epithelial Rat Osteosarcoma (UMR 106) Cells were monitored for membrane resistance, spread rate, and attachment time after being exposed to Epigallocatechin Gallate (EGCG). The feedback to these parameters was gathered by Electric Cell-Substrate Impedance Sensing (ECIS) Technology. The following mathematical formulas were derived from the data: 1) $dR/dt = kR(1-R/L)$, 2) $R(t) = L/(1 + be^{-kt})$, and 3) $\ln(\bar{R}/1 - \bar{R}) = kt - \ln(b)$, (where dR/dt =rate of spreading, $R(t)$ =cell membrane resistance at any time point, L =maximum resistance, k =rate constant, $b=(L-R_0)/R_0$, t =time in hours, and $\bar{R}=r(R(t)-R_0/L)$). A one tailed correlation analysis also found that increased glucose concentration decreased cell membrane resistance, spreading rate, and attachment time. The predictive value shown by these formulas indicate that ECIS technology is a valuable tool for analyzing biophysical responses.

Maria Amador

The Impact of Racial/Ethnic Discrimination on Adolescent Mental Health

Abstract Racial/ethnic discrimination can influence the psychological wellbeing of adolescents. The following study examines how experiencing racial/ethnic discrimination in different contexts impacts mental health among diverse adolescents. It was hypothesized that experiencing racial/ethnic discrimination would be associated with poorer mental health, measured by psychological distress and emotional well-being. Participants included 92 late adolescents (94.6% women). Participants self-reported their race/ethnicity and included 70.7% Hispanic/Latino, 17.4 % White, 10.9% Asian, 8.7 % African American/Black, 3.3% Native Hawaiian or other Pacific Islander, and 1.1% American Indian or Alaska Native. Data were collected via an online survey using convince sampling. Participants reported a relatively high level of experiencing racial/ethnic discrimination ($M = 3.18$). Multiple regression was used to examine the effect of racial/ethnic discrimination on mental health, controlling for race/ethnicity. The results indicated that racial/ethnic discrimination did not significantly predict adolescent mental health ($b = .29$, $p = .20$). Differences based on race/ethnicity and different contexts in which racial/ethnic discrimination took place will be further explored. The implications of this work will be discussed.

Gabriella Amaya, Kaitlyn Do, Krista Hernandez, and Mark Gazmen

Experiences of undergraduate college students with ADHD and their Perception of

Accommodations Disability support services mandated by section 504 of the Rehabilitation Act of 1973 states that a qualified student with a disability must be provided with appropriate academic adjustments and services that allow for an equal opportunity to participate in school (Protecting Students With Disabilities, 2023). For students with Attention-Deficit/Hyperactivity Disorder (ADHD) the process to access support services can be challenging due to the symptoms experienced, such as executive dysfunction. The research question explored how college students with ADHD perceived their transition

from high school to college and how they navigated school with or without accommodations. Methods included a qualitative design, narrative approach, and semi-structured interview. The qualitative thematic analysis yielded four themes. Recruitment of participants was achieved through convenience sampling, and included participants who are between the ages of 18 and 35 years old with ADHD, and any students currently in any college or have graduated from any college within the last ten years with a final total of six participants. It was found that there are environmental supports and hindrances to seeking accommodations such as family support and complicated multi-process to obtain services, a range of thoughts on the process of gaining accommodations such as some thinking the process was simple while others expressed inconsistent communication with staff, and many forms of support used by participants for academic success aside from school accommodations such as body-doubling and peer support. OTs do not have much presence as a healthcare service on college campuses, but one thing we could do is work to collaborate with disability services to support students with ADHD in advocating for support, initiating and following through with onboarding, and communication. Furthermore, disability service centers can collaborate with OTs to develop clear and streamlined steps to accommodate the onboarding process for students with ADHD.

Diana Arceo

Wellness among College Students

This research explores the relationship between first-generation and non-first-generation college students, exploring their impact on wellness across various dimensions. The study draws insights to inform strategies promoting equal academic and personal success opportunities, emphasizing challenges to both groups within the wellness dimensions and highlighting the roles of social and emotional dimensions in the college experience. Socially, students' interactions significantly contribute to well-being, with positive engagement encouraging belonging and enhancing emotional stability. Challenges in forming meaningful connections may interfere with emotional well-being and with developing a supportive community. The study underlines the need for comprehensive support systems to address first-generation and non-first-generation students' unique social and emotional needs. Early preparation is crucial for encouraging a smooth transition, particularly in facilitating social connections. Targeted interventions promoting emotional intelligence and social skills contribute to a more positive college experience. The study investigates how wellness influences college students' academic, financial, and personal adjustment. The research questions for the study were: Does emotional wellness influence overall well-being among college students, and is there a noticeable impact on their reported levels of wellness? To what extent does the financial dimension of wellness contribute to the overall well-being of college students?

Ana Arvizu

POST-ROE V. WADE: UNCOVERING ABORTION ATTITUDES

This research analyzes abortion attitudes in the US at two points in time, 1973 and 2021, utilizing data from the General Social Survey (GSS). In 2022, Dobbs v. Jackson Women's Health Organization challenged the Gestational Age Act, and the Supreme Court found that the Constitution does not mean a right to an abortion; thus, the case was overruled. Since the Dobbs ruling, one out of five women have had to travel out of state to have an abortion or receive abortion care (Guttmacher Institute, 2023). Therefore, it is crucial to analyze abortion attitudes in 1973, when Roe v. Wade was ruled, and in 2021, right before Dobbs vs. Jackson Women's Health Organization. Thus, I conducted a secondary data analysis to examine the relationship between gender and political affiliation and abortion attitudes in 1973 and 2021. I used a 3-way chi-square test to compare differences in abortion attitudes. The GSS asked respondents a series of questions about supporting abortion based on different scenarios. There was a small difference in abortion attitudes between men and women in 1973 and 2021, with women being more supportive of abortion. Another finding from 2021 was that there were higher approval rates from men when it came to answering choices like, strong chance of serious defect, a woman's health is in danger, and rape. Nonetheless, gender and political affiliation did not play a significant role in abortion attitudes in 1973,

but in 2021, both variables played a significant role in abortion attitudes. The takeaway from this study is that there is a disconnect between abortion laws and the majority of society's abortion attitudes.

Fayola Autry

APPLICATION OF GEOSPATIAL TOOLS FOR MONITORING WETLAND DEGRADATION IN RWANDA

Wetlands provide a variety of ecosystem services fundamental for the well-being of individuals, communities, and the national economy. Wetlands serve as 'water towers' for Rwanda's diverse ecosystems. They reduce the risk of flooding during the rainy season, replenish rivers and streams during the dry season, and protect water quality, year-round. Wetlands are fundamental for biodiversity, as healthy catchment areas provide a critical habitat for a variety of wildlife and indigenous vegetation. Rwanda has 860 wetlands (278,536 ha) representing nearly 11 percent of the country's total surface area. While wetlands play a pivotal role in the sustainability of Rwanda's ecosystems, they are facing increasing anthropogenic pressures from unsustainable agriculture, peat mining, industrial waste, urban settlements, infrastructure development, dam construction, and sand mining activities. An estimated 53 percent of wetlands in Rwanda are currently under cultivation. Agriculture is the main economic activity in Rwanda with 70 percent of the population engaged in the sector, and approximately 92,000 hectares of wetlands being used for traditional subsistence farming. Large wetland irrigation schemes can alter the water balance of the entire catchment. This study seeks to create a robust tool for wetland management and water quality risk assessments by coupling geospatial data on wetland distribution in Rwanda with data on: (1) agricultural activity in irrigated wetlands and buffer zones; (2) incidence of water borne illnesses within catchment areas; (3) water quality parameters such as dissolved inorganic nitrogen, dissolved inorganic phosphorus, dissolved oxygen, pH, salinity, *Escherichia coli* and turbidity. We hope to provide recommendations to catchment management teams that will enhance the sustainable utilization of wetlands for the overall development of Rwanda.

Junior Bail

How is topography controlling the vegetation pattern in Los Angeles National Forest?

Topography plays a pivotal role in shaping the distribution and composition of vegetation. In this research work we are investigating how topography influences vegetation patterns in the Los Angeles National Forest. Specifically, we will assess the relationship between topographic variables (elevation, slope, aspect, and curvature) and vegetation distribution, and analyze how topography influences vegetation types and species diversity. We will utilize remote sensing imagery and Geographic Information Systems (GIS) to create detailed topographic maps and vegetation classification maps for the Los Angeles National Forest. We are also planning to use open access GIS and RS data to identify important topographic variables that influence specific vegetation types and species diversity. The outcomes of this study will have practical implications for the management and conservation of the Los Angeles National Forest. Understanding the role of topography in vegetation patterns can inform forest management strategies, aid in biodiversity conservation efforts, and contribute to the sustainable use of forest resources. Despite how big the Angeles National Forest, the two study areas will be North Etiwanda Preserve and Vincent Gulch Divide because these two have a vast difference of vegetation and elevation making it a perfect area to analyze.

Omar Barahona

The significance of a seashell collection.

When looking at humanity we gather and collect a collection of things and preserve them. Whether it comes to artifacts, fossils, paintings, dead animals, seashells etc. We collect things to give an insight of the species or organism that it correlated to. We also have collections to give us an understanding of what kind of species of organisms are present in a certain region of location. Our shell collection provides us a valuable lesson in showing us the taxonomy and the evolution of these different seashells. It provides us with an insight into the field of conchology. Conchology is the study of shells and just like every other

organism so much is not known and still waiting to be discovered. This seashell collection also allows us to get a closer look at these organisms and allow us to understand how they developed, if there is a common ancestor or genus, they all derived from, and a better understanding of how seashells form their beautiful patterns and shapes. In addition this seashell collection we have also helps us understand the biodiversity that occurs in the ocean. As we know biodiversity is the variety and variability of life on earth.

Biodiversity is important to all life on earth because it portrays to us how different organisms coexist with one another and how a healthy ecosystem is dependent on this vast range of organisms all working with one another. In this research we take a tray of seashells and provide an insight in the biodiversity that this tray has within it. All the shells in my tray come from New Zealand so this tray provides us an insight at what kind of life the oceans of New Zealand have and how these different seashells interact with each other.

Loren Barbosa

Emergency Preparedness in Under-Resourced Communities

People who live in under-resourced communities are at a higher risk of post-disaster effects. This study explores how residents who live in under-resourced communities are prepared for disasters and why some residents are not prepared. This is a study using qualitative research methods through surveys. The survey will be 17 questions long consisting of questions that pertain to emergency preparedness and post-disaster response. Study participants are residents who live in the public housing developments in the City of Los Angeles. The participants will be sourced by reaching out to the resident advisory council (RAC) members who serve as liaisons between the Housing Authority of Los Angeles (HACLA) and the residents who live at housing developments. The resident advisory council (RAC) members will notify the residents of a survey study being conducted during their monthly meetings and once the RAC members notify the residents, at a subsequent meeting, the primary researcher will disseminate the survey to the willing participants. After data collection has concluded it will be analyzed through SPSS and converted for public dissemination.

Susana Barrera

Understanding Barriers Faced by Students on Academic Probation, Progress Probation, and Dismissal at a California Community College

The priorities of many California Community Colleges includes a focus on increasing retention rates and matriculation of students. Because of this, there is a large emphasis on providing resources and interventions that assist the most vulnerable students, such as students on academic probation, progress probation, and dismissal. According to a study, students who perform below academic standards are less likely to complete an associate degree or return to community college (Huerta & Martinez, 2022). These students face barriers that make it difficult to continue their education, which helps explain why less than 36% of students will complete studying at a California Community college within six years (Weissman, 2021). Using a needs assessment, this study aims to learn more about the barriers that are faced by students on probation or dismissal as identified by counselors at a California Community College. Data from the study will be used to develop an action plan amongst counselors in this California Community College to increase retention rates and matriculation for students on academic probation, progress probation or dismissal.

Areli Barrera-Ramírez

La Danza del Tecuani

My grandfather was a performer of a traditional Mexican dance: la danza de los tecuanes, a major event during the celebration of the day of San Miguel on September 28 in the state of Guerrero, Mexico. La danza de los tecuanes is in reality the continuation of an ancient hunting ritual, featuring a masked jaguar and hunters, accompanied by a chirimía (high pitched reed flute) and a small drum. A poster presentation will focus on a basic explanation of the origin, depiction of costumes, and cultural importance of the present enactment of the dance in my hometown of Cocula, Guerrero. A number of photos and

illustrations will focus on 1) the geographical location of Cocula, 2) its ethnic Nahuatl background, 3) the dance's pre-Columbian origin with drawings from Aztec codices, and 4) photos of the masks and costumes. In addition, a performance of the dance, recorded in Youtube, will also be played on a laptop, and two masks will be on display. This presentation would be of great interest to scholars and students in Spanish, Chicano Studies, Art, Dance, Folklore, and Anthropology. CSUDH is a Hispanic Serving Institution; the presentation would be relevant to students with similar family customs as well as give a voice to indigenous traditions. Information will be based on personal experience and insights and research under the guidance of Dr. Miguel Domínguez (MLG) who teaches Mexican folklore and collects Mexican folk art.

Michelle Belmontes, Marelin Marquez, Jesus Figueroa, and Kayla Leon
Did Gratitude and self-esteem help protect well-being during the pandemic

Research finds that gratitude was a protective factor for college students' well-being during the COVID pandemic (Bono et al., 2020). Self-esteem was also found to safeguard their well-being during the pandemic (Shu et al., 2020). Finally, research shows that self-esteem helps explain the relationship between gratitude and well-being (Lin, 2015). The current study will examine if gratitude mediates self-esteem's prediction of well-being longitudinally among college students during the pandemic, providing a replication of Lin (2015). We use longitudinal data collected from undergraduate students (N=284) during the height of the pandemic. Specifically, data was collected at the beginning and end of the fall 2020 semester for one sample and of the spring 2021 semester for another sample. The overall sample consisted mostly of females (74%), ranging from age 18-60 ($M = 21.26$, $SD = .91$), made up of Hispanic (72.9%), African American (9.9%), Biracial (4.1%), or other ethnicity (1.8%). Correlational analysis showed that trait gratitude at T1 was associated with self-esteem at T1 and T2 ($r_s = .50$ and $.37$, $p_s < .001$) and life satisfaction at T1 and T2 ($r_s = .50$ and $.38$, $p_s < .001$) and that self-esteem at T2 was associated with life satisfaction at T2 ($r = .61$, $p < .001$). This provides preliminary support for our hypothesis. However, for the current study multiple linear regressions will also be performed to test if self-esteem at T2 mediates the relationship between gratitude at T1 and life satisfaction at T2. Implications for how college students' well-being can be better supported in the wake COVID pandemic.

Alicia Bennett-Smith

Assessment of Commercial Fragrance Compounds for Compliance to IFRA Standards

Commercial and natural product fragrances are complicated, multi component substances. Even something as simple as eucalyptus leaf extract contains more than one compound. Some fragrance compounds are skin sensitizers, respiratory allergens, or even carcinogens. While some of these compounds are regulated by laws (California Proposition 65), most of them are regulated by trade association recommendations (International Fragrance Association). This project used gas chromatography to separate, identify, and quantify a select set of regulated fragrance compounds in retail products. The analytical results were assessed for compliance with the regulations and trade association recommendations.

Mark Blan

Connecting Communities: Strategies and successes in closing the digital divide

The digital divide, a significant global issue, refers to the gap between individuals or communities who have access to modern information and communication technologies (ICT) and those who lack such access. The divide is multifaceted, encompassing not only access to technology but also factors like affordability, digital literacy, and the relevance of online content. Its implications are far-reaching, affecting education, employment, healthcare, and overall socio-economic development. To address this divide, various strategies are proposed. These include expanding infrastructure to provide internet access to underserved areas, implementing policies to make devices and services more affordable, and investing in digital literacy programs to equip individuals with the skills needed to navigate and utilize technology effectively. Additionally, public-private partnerships play a crucial role in closing the digital gap.

Collaboration between governments, non-profit organizations, and private sectors can facilitate innovative solutions and resource allocation to bridge the divide. Closing the digital divide is not merely about providing access but ensuring equitable access to opportunities and resources. This paper emphasizes the importance of holistic approaches, considering socio-economic disparities and cultural contexts, to create inclusive and sustainable solutions for a digitally connected world.

Florencia Bravo

"Frailty, thy name is woman": Examining Female Infidelity, Chastity, and Consent, in Rowley and Middleton's *The Changeling* and Heywood's *A Woman Killed with Kindness*

One of the most famous lines from William Shakespeare's *Hamlet*, "frailty, thy name is woman" (1.2.150), does not necessarily aim to label women as simply the "weaker sex" but rather speaks to the perceived notion that female affection was considered inconsistent and disloyal. Other early modern English dramas of infidelity, specifically William Rowley and Thomas Middleton's *The Changeling* and Thomas Heywood's *A Woman Killed with Kindness*, use pairings of "good" and "bad" women to enable audiences to quickly distinguish virtuous women as those remain loyal to their husbands. However, in both plays, lines of consent are often blurred, and when looked at from a feminist perspective, it is clear that the female characters cannot be so easily labeled. At the conclusion of each plot, it does not matter to the husbands if their wives rejected the men pursuing them or if the suitors forced themselves on the women: the female characters are only allowed to keep their honor and reputation if they succeeded in remaining chaste. This paper will show how these plays reflect the contradictions of the so-called "woman problem" in early modern England. The "woman problem" referred to the examination and questioning of women's roles in society and was seen in the conflicting expectations for women. Though women were limited to domestic roles and instructed to be somewhat submissive to the men in their lives (mainly their fathers and husbands), Queen Elizabeth's role as the leader of the country suggested different. Ultimately, through their pairs of good and bad women, the two plays seem to enforce this time period's strict ideas on female submission, infidelity, chastity, and consent. However, Rowley, Middleton, and Heywood are unable to form a perfect, admirable model of womanhood because they stereotype women and perpetuate misogynistic ideals of women's inherent "frailty."

Florencia Bravo

What Makes a Man: Exploring Male Stereotypes, Machismo, and Toxic Masculinity in Gabriel García Márquez's Novels

Ideas of machismo and toxic masculinity are still prevalent in Latin American societies today. Even with modern feminist movements and newer ways of thinking, both men and women find themselves trapped within patriarchal structures. Gabriel García Márquez challenges these values and ideals in his novels, *Love in the Time of Cholera* and *Chronicle of a Death Foretold* by questioning men's roles in the family and society. By depicting his male characters as one of three stereotypes: a womanizer, a provider, or a dictator, he challenges what is considered to be the perfect Latino man. Furthermore, these cycles of machismo and toxic masculinity plague families across generations, and those who stray away from the status quo can fear being ostracized or worse. The two womanizers, Florentino Ariza and Santiago Nasar, mistreat and use women while also being sexually objectified themselves. Ultimately, they prove to be unable to hold healthy romantic or platonic relationships with women. Similarly, the providers, Bayardo San Román and Dr. Urbino are often seen more as banks or financial resources than actual men. They are admired for their status and held up to an unachievable standard. Lastly, the dictators, Lorenzo Daza and the Vicario Twins are not only portrayed as patriarchal leaders but protectors. These three characters are blind to their own hypocrisy and are obsessed with their families' legacies and reputations being tarnished. García Márquez uses these three stereotypes to criticize all these standards that objectify, trap, and fetishize Latino men to this day, completely challenging the way Latin America still values these dated and sexist machista standards.

Irvin Bui

Privacy Awareness and Its Impact on Online Learning

Although privacy is a vague concept, its lack in the modern digital world is very noticeable. The challenge to privacy is growing as a result of the enormous rise in surveillance capabilities of software and hardware, storage capacity, processing power, and improvement in data science technologies. Privacy has been researched across a variety of digital settings, situations, and platforms. It was discovered that the students' privacy worries and perceived privacy risk had an impact on their non-self-disclosure actions. Lastly, the findings demonstrate how students' views of privacy threats and privacy controls influence their level of trust. The study's findings help explain how students' privacy concerns, trust, and non-self-disclosure behaviors relate to one another in the context of online learning. The primary outcome of the research is that students must be assured that their online learning activities are secured from potential privacy issues. There are a number of pertinent ramifications for the development of privacy-enhancing methods in higher education and the design of online learning systems.

Alexandria Calderon

The Role of YobD in Escherichia coli's Ability to Survive Long-Term Stationary Phase

Escherichia coli has the ability to survive stressful conditions for long periods of time in what is known as Long-Term Stationary Phase (LTSP). This ability is likely dependent on many genes, each of which may contribute to the cells' ability to adapt to these stressful conditions. We can replicate these conditions in the laboratory in order to probe the role of these genes. We hypothesized that certain genes, which were identified in a genetic screen, can affect the cell's ability to survive into LTSP. We tested this hypothesis by competing E. coli with a deleted gene, $\Delta yobD$ with the wild type E. coli which still contains the gene. The mutant ($\Delta yobD$) and wild type were inoculated into test tubes containing growth media and were aged for ten days. We observed the growth of both strains to determine how each strain grew during incubation to LTSP. We found that the strain missing $\Delta yobD$ did not survive LTSP and died off fairly quickly. We plan to further characterize the mutation of $\Delta yobD$ to understand what key role it may play in the cells' inability to survive into LTSP.

Joanna Campos

Sustainability Initiative at the Disneyland Resort: Avengers Campus

This project focuses on advancing sustainability within Disneyland's Avengers Campus, with a primary emphasis on zero waste efforts by cast members. A comprehensive analysis of current waste patterns highlighted the significance of reducing single-use plastics. Visitor surveys provided valuable insights into attitudes toward sustainability, guiding the project's trajectory. A pivotal component involves the establishment of a dedicated team to empower and guide cast members towards achieving a zero waste goal. Collaborative efforts with cast members and park management are underway to implement sustainable practices, particularly in reducing and managing single-use plastics. Educational campaigns within Avengers Campus are being developed to foster environmental awareness among employees and eventually with park guests. The initiative seeks to create a culture of sustainability, where cast members actively contribute to minimizing waste. Through ongoing monitoring, targeted interventions, and regular evaluations, the project aims to present Disneyland with a comprehensive plan for achieving zero waste in Avengers Campus. This endeavor not only aligns with the Resort's commitment to sustainability but also positions Avengers Campus as a trailblazer in sustainable practices within the theme park industry.

Ana Castillo

It's Complicated. Contraceptive Use on College Campuses: Attitudes and Beliefs on Safe Sex

Young adults ages 18-24 are susceptible to sexually transmitted infections (STIs) and unintended pregnancies. Previous studies suggest that the effective and consistent use of contraceptives like condoms and long-term reversible birth control methods can reduce those risks. The current research study explores potential factors that prevent young adults from practicing safe sex. The working hypothesis suggests that personal attitudes and beliefs influenced by pop culture cause college students to refrain from contraceptive use. This study uses a quantitative method approach consisting of structured questions

through Qualtrics, an online survey, to examine what barriers prevent college students from using contraceptives during sexual encounters. The 49 participants are college students with a range of ages, and genders, from the California State University of Dominguez Hills campus during the Fall 2023 Semester. Initial findings indicate that personal beliefs about whether it is proper to use contraceptives are central factors affecting decision-making when it comes to engaging in sexual activity. Participants are also overwhelmingly likely to initiate a conversation with their partner about contraceptives prior to becoming involved sexually but are unlikely to use contraceptive products provided by the university health services. The analysis of data in this study allows for a nuanced understanding of attitudes and beliefs that affect the reproductive health of marginalized young adults.

Alex Cavazos

Campus Canopies in Crisis? Tracking Tree Distribution Changes at CSUDH

Tree distribution plays a vital role in combating the negative effects of urbanization such as the heat island effect. As urbanization continues to expand, green spaces within universities face difficult challenges, with trees often falling victim to infrastructural development. The expansion of campus infrastructure often leads to the removal of trees. This as a result can lead to impacts on campus ecosystems and biodiversity. The purpose of this study was to investigate the tree distribution from the past decade and compare it to recent years. This analysis will help show if there is a significant diminishing of tree distribution at CSUDH. Furthermore, this investigation is important for understanding the changes and possible implications of the campus environment. To gather data, we used geographic information systems (GIS), global position systems (GPS), and aerial photography to assist us in analyzing tree distribution in their respective time frames. These tools were useful for an analysis of tree distribution over different time frames. By comparing tree data with earlier records, we were able to detect spatial trends and observe any significant decline in the number of trees. The findings from this study will help contribute to campus planning and management strategies. If a significant decline in tree distribution were to be found, it could promote the need for more conservative and sustainable development efforts. This analysis should help push for a balance between infrastructure development and tree preservation within CSUDH.

Alexander Centner

Footprint in your coffee cup: A lifecycle analysis of coffee roasted in Southern California

Coffee is the most popular drink in the world with consumption rising (ICO, 2019). Consumers are becoming more aware of making sustainable purchases. To shed insight into coffee's sustainability this study compares the carbon footprint of coffees from farms in Ethiopia, Kenya, and Nicaragua being roasted and purchased in Southern California. Through the use of farmer survey data compiling water use, fertilizer and pesticide use, electricity consumption, and transportation in conjunction with data from local coffee roaster's equipment efficiency a life cycle analysis was conducted for coffee from origin to end consumer. The aim of this study is to provide information to consumers on the sustainability of their coffee purchasing habits. The study finds that transportation of coffee proves to be the largest contributor to greenhouse gases. This suggests that coffee grown closer to where it is roasted provides a lower carbon footprint. The same concept can also be applied to roasted coffee, coffee roasted closer to consumption has a small carbon footprint.

Manuel Cervantes

CSUDH WIN Digital Inequity Research Efforts

Certain areas in and around California State University Dominguez Hills have very slow internet connections. This project set out to find which specific small pockets of areas suffer from lower connectivity levels, as well as the relationship to the population demographic of the affected areas. The goal of this project is to find which specific areas experience slower broadband connections down to small areas within ZIP codes. Specific demographic information regarding income level, education levels and ethnic data was used to find how those statistics correlate to internet access in marginalized

communities in the areas surrounding California State University Dominguez Hills. The goal was to find any and all correlations or patterns between access to and quality of internet services and the economic and social characteristics of people residing in the affected areas. I used data from the American Community Service (ACS) to analyze the relationship between the two factors. There are considerable patterns regarding this phenomena. Communities in Los Angeles County with lower than average household income experience lower internet speeds compared to households with higher than average household income. Although that is not the case 100% of the time, it is a pattern that is prevalent repeatedly. Another notable phenomenon is that in nearby areas with a higher Hispanic and African American population, there are more households without internet subscriptions or with access to internet at subpar broadband speeds than in areas with predominantly Asian or White populations.

Jenica Cezar

Bone marrow stroma modulates expression of immune checkpoints on natural killer cells and multiple myeloma cells

Introduction. Multiple myeloma (MM) is a blood cancer confined to the bone marrow and characterized by accumulation of malignant plasma cells. Immune checkpoints including PD-1/PD-L1 are components of the immune system that regulate the degree of immune responses. In a malignant situation, these immune checkpoints will be exploited by cancer cells in a way that protects them against killing activity of immune cells such as T cells or natural killer (NK) cells. However, it is not clear whether MM cells inactivate NK cells through PD-1/PD-L1 pathway. This study explored whether mesenchymal stromal cells (MSCs) modulated the expression of PD-L1 protein on MM cells, and whether MSCs protected MM cells against killing activity of NK cells. Methods. We used co-culture models using MSCs (HS.5 cell line) and GFP-expressing MM cells to examine the impact of MSCs on expression of PD-L1 on MM cells. MM cells were co-cultured with HS.5 cells in the same well (direct interaction) or were separated by a transwell insert (indirect interaction). Western blotting was used to analyze PD-L1 protein expression in MM cells protein extracts. For cytotoxicity assay, we used GFP fluorescence detection using a fluorescence plate reader. Results. Western blot analysis confirmed that MM cells expressed PD-L1 and that HS.5 cells upregulated PD-L1 in MM cells mostly through direct interaction. Conclusion. Our findings imply that MSCs control expression of PD-L1 on MM cells partly explaining MSC-mediated resistance to immune cells in MM. However, further experiments involving a cytotoxicity assay comprising incubation of GFP-expressing MM cells with NK cells and HS.5 cells (triplet co-culture) are ongoing. We expect to find that MSCs would render MM cells resistant to the killing activity of NK cells, which can be monitored through the degree of GFP expression by MM cells.

Diana Chávez

Stars, Sanctuaries, and Platforms: Investigating the Significance of Spatial Orientation in the Northern Maya Lowlands

At the heart of Maya culture are sacred spaces. These sacred spaces are found and were used throughout Mesoamerica, designed for devotion and communion with the gods. Beyond their intended spiritual usage, these sacred spaces were a powerful tool for the legitimization of political leaders and communal gatherings. This research project aims to investigate the spatial orientation and possible uses of buildings and platforms at Xanab Chak, a small-scale prehispanic Maya archaeological site in the Puuc region of the northern lowlands of Yucatan. One of the main goals of the study is to explore the possible cosmological, ritual, or socio-political reasons behind the fourteen to seventeen-degree east of north alignment. The analysis will focus on identifying patterns and anomalies in the orientations of buildings and platforms while exploring connections between the orientations and other aspects of prehispanic Maya culture. The goal of this analysis is to gain a better understanding of ancient life through material culture, investigating possible trade networks, and ritual sites, and how this affects the social organization of the ancient Maya civilization. Keywords: Spatial Orientation, Maya Civilization, Maya Architecture, Mesoamerican Cosmology, Solar and Lunar alignment.

Brandon Chavez, Stephanie Rauda, Kenia Vidal, Rochelle Johnson, and Bradley Heath
HIV-1 p17 Heparan Sulfate Interaction

Heparan sulfate interactions are known for signaling growth factors, cell adhesion, and enzyme catalysts for human cells. The HIV-1 p17 protein is one of three HIV-1 proteins known to interact with heparan sulfate proteoglycans on the surface of human cells. This known interaction may be one of the deciding factors for disease progression in humans infected with the HIV-1 virus, and disruption of heparan sulfate binding has the potential to prevent infection by the HIV-1 virus. However, to this day the interactions between the virus and the surface of the cell, better known as cell entry, are not fully understood. Here we aim to characterize the structure-specific interaction between heparan sulfate and HIV-1 p17. Microarray screening revealed that HIV-1 p17 demonstrates a preference for binding to 2-O-sulfated heparan sulfate, which may present a target for future drug development. Additionally, the HIV-1 p17 residues involved in binding to heparan sulfate have been identified via NMR titration, which indicate the possibility of multiple heparan sulfate binding sites.

Roxana Chavez, Jorge Hernandez, and Ana Ponce

Dereplication of Marine Fungi Secondary Metabolites using MALDI-TOF Mass Spectrometry

In microbial natural products research, a major blockage is efficiently dereplicating redundant strains in culture collections. The Matrix-Assisted laser Desorption-Ionization Time of Flight Mass Spectroscopy (MALDI-TOF-MS) IDBac platform provides an alternative and effective method for bacterial strain dereplication as opposed to conventional taxonomic methods which require sequencing of barcoding genes and overlook chemical diversity. The IDBac system relies on MALDI-TOF-MS to acquire two distinct types of data - protein and small molecule profiles. However, the IDBac's current platform was developed for bacterial samples and is not applicable to fungal strains, due to differences in cellular structure. While there have been reported methods for taxonomically categorizing environmental and clinical fungal strains based on protein fingerprints, none of these methods take into account the small molecule profiles. This research will build upon the bacterial IDBac system, and establish a new method for rapid dereplication of fungal strains. Our initial methodology was developed using 70 unique fungal strains that produce known metabolites. Various growth and extraction methods, as well as MALDI matrices were evaluated for small molecule recovery efficiency. Once optimized methods had been determined, a library of over 800 fungal strains was evaluated to reduce any redundant strains. This project will aid in streamlining future fungal natural products drug discovery research.

Aysa-Monae Collins

Unveiling the Disparity: Exploring Infant Mortality Among Non-Hispanic Black Women in Relation to Prenatal Care, Diabetes, and Obesity

In recent years, the United States has witnessed an increase in infant mortality rates, notably among marginalized communities. Maternal weight status before and during pregnancy plays a crucial role in influencing factors contributing to infant mortality rates. Previous research has identified that maternal black women are at a higher risk of infant mortality and diabetes complications during pregnancy. Recent studies have emphasized the importance of prenatal care in mitigating this risk. This study examined infant mortality risk factors: the trimester of prenatal care initiation, the number of prenatal care visits, maternal pre-pregnancy weight, the mother's delivery weight, the mother's total weight gain, the identification of pre-pregnancy diabetes, and gestational diabetes. Using the Centers for Disease Control and Prevention, National Vital Statistics System, and CDC WONDER Online Database, 8,066 infant mortality reports in California for 2017-2021 were analyzed for women aged 20-39. Findings unveiled a total of 819 infant mortality reports for non-Hispanic black women. Additionally, there were 600 infant mortality reports for non-Hispanic black women who initiated prenatal care within the initial three months of pregnancy. Furthermore, 43% of non-Hispanic black women exhibited maternal risk factors for diabetes (pre-pregnancy or gestational) and obesity. Statistical data analysis of pre-pregnancy weight and mothers' delivery weight indicated that maternal obesity increases the risk of infant mortality. This study found that early and adequate prenatal care, while important, does not significantly reduce the risk of

infant mortality among non-Hispanic Black women or significantly address the impact of maternal risks of diabetes and obesity.

Brogan Comstock, Janet Trujillo, and Ryne Fuhrmark

Tensile strength testing of bio-polyethylene and recycled polyethylene as alternative materials for ankle foot orthosis fabrication

As of 2018, 35.7 million tons of plastic was generated in the United States in one year (EPA, 2020). The field of orthotics and prosthetics uses a combination of thermoset and thermoforming plastics (Showers & Strunk, 1984) in the creation of devices that support the rehabilitation of individuals with different pathologies. There has been limited research on environmentally friendly materials in P&O (Campbell et al., 2012; Kitila & Wolla, 2022; Kumar & Bhowmik, 2022), though many of the articles discuss green resins and no articles related to bio-plastics were identified. This study used a non-inferiority design, with the interventions being bio-polyethylene and recycled polyethylene compared to the control of petroleum-based polyethylene. Three dog bone samples were tested for tensile strength using the Instron 8502 machines at 2.5 in/min for each plastic material. It was found that the recycled polyethylene had the highest yield strength. However, several limitations including varying thicknesses decreases the applicability of these results. These data show that there are different mechanical characteristics between the three plastic materials. Therefore, the available sustainable materials may be a valid alternative to traditional petroleum based plastics in the fabrication of ankle-foot orthoses or other devices in the field of orthotics and prosthetics. Future research will need to be conducted to address the remaining questions and limitations. As a career field that produces devices from non-recyclable products it is important to research whether environmentally friendly materials are able to provide the same control and support that a patient needs while reducing our carbon footprint. Keywords. plastic, polyethylene, ankle-foot orthosis, strength

Paraskevi Constantinides, Melissa Warden, Zachariah Barber, and Dylan Mungal

Does the Weight of a Prosthesis Impact Balance and Stability in Transtibial Amputees Concerning Spatial-Temporal Variables?

Prosthetic device users often express a primary concern related to the weight of their prostheses, despite the pivotal role these devices play in restoring mobility and independence. This issue significantly impacts various aspects, such as energy expenditure, deviations in gait, and the user's confidence in mobility. In response to this concern, our study aimed to investigate the correlation between spatial-temporal variables, particularly influenced by the load carried, and their impact on deviations from normal gait characteristics. Conducting a double-blind randomized study involving 30 trials with six different weights, we sought to eliminate bias and ensure controlled exertion. The study utilized a Zeno Walkway to accurately identify gait characteristics during a 10-meter walking test (10MWT). Out of the 18 observed gait characteristics in this N1 study, four variables demonstrated significant alterations under the influence of additional weight. These findings hold valuable implications for practitioners in selecting prosthetic components, emphasizing the importance of considering user feedback, especially regarding prosthesis weight. The study focused on observing normal gait patterns, including joint angles, in individuals with at least a K2 level of activity. Following the baseline observation, gait patterns were analyzed with the introduction of additional weight, mimicking the biological weight of the limb or using heavier-duty componentry. Key parameters examined included step length differences between the amputated and sound sides, the center of pressure on the prosthetic side with increased weight, and the overall gait pattern. This pilot study serves as a foundation for future research, paving the way for expanded investigations involving diverse patient groups with varying activity levels and diagnoses affecting their overall strength.

Efrain Contreras

Criticism of Imperialism and Conlonization by Joseph Conrad A Heart of Darkness

This paper looks into the early criticism of imperialism and colonialism through literature. Mainly through Joseph Conrad's novella *A Heart of Darkness*. The paper goes into detail about how *Heart of Darkness* paints the reality created by King Leopold II of Belgium through the rule of Congo. Conrad does this through his characters. Which criticized not only King Leopold but other colonial powers of the time, for example they use the character Kertz to symbolize the British Empire. The book is also used by Conrad to share his personal experience in the Congo and to spread awareness to the world to show the hypocrisy of nationalism and imperialism. The paper also shows the influence of the book and how it inspires other works and how it contributes to the global agenda to end King Leopold rule of the Congo. Overall the book's popularity over time has contributed to the growing condemnation of imperialism.

Hayley Cooper and Elsa Vong

Emotions Affecting Your Diet? A Psychophysiological Investigation on the Impact of Valence and Arousal on Food-Related Inhibitory Control

Inhibitory control is the cognitive ability to withhold instinctual responses to stimuli, including palatable foods, which in turn may help regulate diet. Therefore, it is essential to test what factors may affect food-related inhibitory control, such as emotional responses to food. An emotional response can be defined in terms of its valence (e.g., a positive or negative emotional reaction) and arousal (e.g., the strength or intensity of the reaction). Some research indicates negatively valenced stimuli elicit a stronger inhibitory control response, while others indicate that negative valence may hinder inhibitory control. However, it is unclear if and how emotional responses to food stimuli may affect food-related inhibitory control. To test this, we analyzed data from a publicly available, open-access, de-identified dataset (<https://osf.io/f3cnr>). 147 participants (Mage: 26.37, SDage: 9.79, 53.7% female) completed two food go/no-go tasks (one where responses were withheld to high-calorie food images and one where responses were withheld to low-calorie food images) while electroencephalography (EEG) data were recorded. Participants also completed the Self-Assessment Manikin (SAM), a visual evaluation of valence and arousal towards stimuli. Inhibitory control was quantified by the N2 event-related potential (ERP) amplitude, a negative-going component in the brain's waveform that is larger when more inhibitory control is recruited. Neither arousal ($r = -.12$, $p = .15$), nor valence ($r = -.16$, $p = .06$) ratings towards high-calorie food images were correlated with N2 difference (no-go minus go trials) amplitude towards high-calorie food images. Similarly, neither arousal ($r = .06$, $p = .50$) nor valence ($r = -.03$, $p = .73$) ratings towards low-calorie food images were correlated with N2 difference amplitude towards low-calorie food images. In sum, levels of valence and arousal for high- and low-calorie foods may not affect food-related inhibitory control.

Michelle Crouse

The Experiences of Undergraduate Minority Students in STEM

This qualitative study in the Physics Department examines the experiences of CSUDH undergraduate students who will obtain STEM degrees, with a focus on how their experiences may be impacted by race, gender, and disability. This study will examine the experiences of students with multiple oppressed identities that are pursuing STEM fields, including factors that influenced their decision and the support and barriers they faced. This qualitative study focuses on senior STEM majors at CSUDH to explore barriers and supports experienced by Students of Color and identify effective structures that can be used to promote equity in other institutions. The diversity of experiences that students report will illuminate advantages (and disadvantages) to being at DH. The goal is to highlight the experiences of minority students and provide insight to inform reform efforts for a more equitable STEM education. This study will use a qualitative approach to interview participants for 60 to 90 minutes virtually or in-person. The interviews will focus on participants' pathways into STEM, support networks, racialized and intersectional experiences, and the institutional role. The interviews will be analyzed and coded using holistically and thematically. The study will be guided by Critical Race Theory and Intersectionality frameworks, and all aspects of the research will be reviewed and approved by the IRB. This study aims to identify essential university supports and barriers for diverse students at CSUDH to improve the academic experience for underrepresented students. By identifying these structures, we can better inform future

policy at DH. The research findings will be disseminated through scientific publications, and hopefully benefit STEM minority students across many institutions.

Michelle Crouse

Studying the Dynamics of Combination Drug Therapy on Chronic Myeloid Leukemia

Chronic Myeloid Leukemia (CML) is a type of cancer that begins in the bone marrow and later accumulates in the blood. CML results from an unbalanced translocation where the ABL gene on chromosome 9 is shifted so that it sits next to the BCR gene on chromosome 22 forming what is called the Philadelphia Chromosome. Imatinib €” known in the industry as Gleevec €” is a successful therapy for CML. It is known that quiescent CML stem cells are resistant to Imatinib, about 25% to 33% of CML patients treated with it will become resistant or intolerant to the treatment. Before Imatinib appeared in the market, Interferon was the standard course of treatment for patients with CML. A particular property of Interferon is that it allows Imatinib to fight leukemic stem cells by breaking their dormancy and driving them to enter the proliferating population. In this work, we are going to analyze the dynamics that exists between CML cells and immune cells under the presence of the combined therapy imatinib-interferon with the assistance of a mathematical model. One of our main objectives is to study the imatinib-interferon combination therapies that could serve to maintain remission on CML patients breaking the resistance of CML to Imatinib treatment. This work is important as an initial step to understand better treatments for CML where relapse does not occur, or the average time period of CML remission can be increased.

Gladys Cruz

Equitable Dual Enrollment Recruitment: Fostering Inclusive Pathways

Enrollment of high school students in college courses is escalating. Dual enrollment courses provide students with a jumpstart in college preparedness. Marken et al. (2017) reported that in 2010€”2011, 82% of high schools offered dual enrollment, with approximately 53% of community or 4-year colleges participating in this type of program. Korn (2017) reported that 70,000 high school students in California, 65,000 in Ohio, and 150,000 in Texas were enrolled in dual enrollment programs. In 2022, the California Legislature passed the Dual Enrollment Opportunities Competitive Grant Program (California Education Code (EC) 41585 and Section 119 of AB 181, 2022 providing two opportunities for funding for local education agencies (LEAs) to expand dual enrollment offerings. The purpose of this study is to evaluate how Bryant College offers dual enrollment courses at their partner schools autonomously manage their student recruitment and course selection process. Using a needs assessment, this study seeks to understand how Bryant College's Dual Enrollment partner high schools select their courses and recruit students for their respective dual enrollment program. This exploration seeks not only to identify the current practices, but also to identify opportunities that foster inclusive and accessible pathways. Preliminary data sheds light on disparities in the access and selection of courses among dual enrolled students.

Sophie Davis, Margarita Romero, Christina Hittle, and Kayla Guerrero

Experiences of Gender Non-Conforming People with their Healthcare Practitioners

Background: Research shows that trans and gender non-conforming individuals experience healthcare discrimination (Vupputuri et al., 2020). As a result, many fail to seek medical attention due to insufficient access to quality care, threat of practitioners' conflicting personal views, and fear of mistreatment due to a lack of adequate training on diverse medical and behavioral needs (Vupputuri et al., 2020). Purpose: The purpose of this study is to gain insight into the lived experiences of trans and gender non-conforming individuals and their interactions with healthcare practitioners. By deepening our understanding of these interactions, it is the research team's hope to learn and develop ways of providing inclusive, comprehensive, and quality care to this population. Methods: This qualitative study utilized a narrative approach. We conducted 6 semi-structured interviews and used photo elicitation methods (eligibility criteria: self-identify as trans or gender non-conforming and between 18-64 years old). Triangulation of

multiple methods was used in order to collect data. We identified common patterns and themes amongst participants using a thematic and narrative approach to data analysis. Results: Participants ranged from 23-27 years old and identified as non-binary, non-binary male presenting, and male. Participants were White, Hispanic, or White and Hispanic. Themes of their healthcare experience were identified: (1) gender identity affected experience; (2) quality of care; (3) feelings of fear; (4) an expressed need for inclusive practitioners and environments; and (5) a need for revised and inclusive medical documents. Discussion: Trans and gender non-conforming individuals experience healthcare discrimination and decreased quality of care. The study results have implications for occupational therapists and general healthcare practitioners who serve this population and aim to create accepting healthcare environments through the use of inclusive language and medical documentation.

Gauri Deshpande, Cindy Argueta, Shaey Entezami, and Rachel Kraus-Lee

Meaningful Occupations of Master of Science in Occupational Therapy (MSOT) Students

Engagement in meaningful activities occurs throughout our lives, with the frequency and duration of those devoted to our leisure and well-being changing in accordance with our life circumstances. Graduate school is a time in life when schoolwork can crowd out many other activities. In addition, graduate programs are rigorous and mental health issues among students are on the rise, making wellness a priority. Although studies have followed occupational therapy (OT) students through their daily activities, many researchers have only looked into the reasoning behind the changes that graduate students have made in their use of time. The purpose of our study was to explore the potential changes of MSOT students' engagement in their meaningful activities, including leisure and self-care, as well as overall well-being during their graduate programs. We utilized a qualitative design and the convenience method to recruit participants. Data was collected via focus groups/independent interviews and was analyzed using a qualitative thematic analysis with researcher triangulation, achieved by coding individually before developing themes. Four major themes were found to be 1) governance of time management 2) perceived support system 3) work-life balance and 4) self-care. Results found that a majority of participants felt they had fewer hours allotted for meaningful activities, work-life balance, and self-care which contributed to larger negative associations in their lives. These findings are significant to the field as there is an evident disconnect between the socially supportive culture of the profession and level of perceived support and engagement in graduate programs.

Elizabeth Diaz, Dulce Ornelas, Lara Khedesian, David Dominguez, Diana Moreno, Jennifer Sanchez, Brandon Rodriguez, and Salvador Elizarraraz

Background color and Word type Effects on Working memory

The potential of a college student's working memory efficiency can vary greatly depending on the environment and stimuli an individual is exposed to. The present study sought to assess the effect of emotion (IV1) and color (IV2) on working memory capacity (WMC; DV). Baddeley & Hitch (1974) outlined the model of working memory, which served as the foundation for this study. A two-by-two factorial analysis of variance was conducted to determine if there was a significant difference in recognition, based on the emotional content of words, and the color background that the word was presented on. Participants ($n = 126$) were not affected the way the researchers had hypothesized; there was no significant interaction between the levels of the two variables and their effect on recognition, $F(1,122) = 0.004$, $p = 0.951$, $\eta^2 = .000$. Considerations of environment play a large role in the interactions of undergraduate students and the absorption of the world around them. Extrinsic factors may have been a glaring limitation, and this has implications for the comprehensive collegiate experience.

Chloe Director

Family Secrets: A Qualitative Phenomenological Study about the Experiences of Parents

This research paper explores the complexities of parents revealing donor-conception information, particularly due to the growing use of DNA testing. In today's tech-driven era, consumer DNA test kits have transformed family dynamics, prompting more families to reconsider keeping donor conception a

secret. The study delves into the challenges faced by parents as genetic information becomes harder to keep confidential, especially when some children independently uncover the truth through commercial DNA tests. Situated within the broader context of misattributed parentage, the paper recognizes that DNA testing not only exposes donor-conceived children but also reveals secrets related to affairs, adoption, and clinic mix-ups. Despite these broader considerations, the primary focus remains on parents disclosing donor conception. The research traces the historical and contemporary aspects of donor insemination, emphasizing the recent surge in DNA testing accessibility. Using a qualitative phenomenological approach, the paper organizes inquiries into three categories: Therapist Expertise and Client Experience, The Accessibility of DNA Testing and the Experience of Finding Family Secrets, and Donor Disclosure Experience. The literature review underscores the importance of therapist preparedness and the emotional impact of discovering family secrets through DNA testing. A real-world case example illustrates a woman's journey through infertility, sperm mixing, and eventual disclosure to her child, providing valuable insights. The results highlight the challenges parents face in therapy, concerns about DNA testing accessibility, and the complexities of disclosing donor conception. This research aims to enhance clinicians' readiness to support families in navigating the evolving landscape of donor disclosure, therapy, and DNA testing. It seeks to empower parents choosing third-party reproduction and those unexpectedly discovering family secrets, fostering a more compassionate and informed therapeutic approach.

Jose Dominguez

Unaccompanied & Undocumented: Depictions of Fictive Kinship & Unaccompanied Minors in Film
Migrating from Central America, through Mexico, to the U.S. is an arduous and dangerous quest. Yet, thousands of Central American and Mexican migrants, of all ages, embark on this journey yearly with no guarantee of whether they will ever reach their desired destinations. Although, the plight of unaccompanied migrant children has become a highly debated topic within modern American politics, a less discussed aspect of unaccompanied minor migration is that of fictive kinship bonds that are formed between unaccompanied migrant children and other migrants. In Patricia Riggen's drama film, *Under the Same Moon*, and Rebecca Cammisa's documentary film, *Which Way Home*, we get a glimpse into the experiences of unaccompanied migrant children who form unique bonds with friends, and with other strangers, that reinforce their migration prospects. While the friends and acquaintances that our main characters, Carlitos from *Under the Same Moon* and Kevin from *Which Way Home*, meet along their journeys are denoted as nothing more than secondary and tertiary characters in their respective films, the assistance, and the support that they provide produce tangible evidence that fictive kin relationships are present, constant, and greatly important in transnational migration experiences. In this paper, I argue that the visualizations of the extended family and of fictive kinship practices found in both films juxtapose Talcott Parsons' theory of the diminishing importance of fictive kin and the extended family in modern industrialized societies. In line with David Schneider's critique of kinship studies, I also propose that kinship studies in anthropology must look beyond genealogical connections and relationships derived from reproduction to fully understand what kinship looks like cross-culturally.

Ericka Dunsmore

Utilizing Ordinary Differential Equations to Track the Spread of COVID-19 Throughout California State University, Dominguez Hills

Caused by Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2), the Coronavirus disease of 2019 (COVID-19) pandemic carried over greatly into 2020. By January 26, 2020, two cases of novel coronavirus (2019-nCoV) had been reported in California. In December of 2020, California State University, Dominguez Hills (CSUDH) started registering and sharing the number of people that visited the campus and were infected with COVID-19. In this study, we will be focusing on the infectious spread of the COVID-19 pandemic throughout the campus of CSUDH with the utilization of mathematical modeling in MatLab. We expect that this work can serve for future epidemic occurrences to understand which strategies were successful to minimize infection on campus.

Joanna Echeverria Martinez

Bolstering Support and a Sense of Belonging for EOP&S/CARE Students

The Extended Opportunity Programs and Services (EOP&S) at X City College (pseudonym) is a state-funded program that provides support services to students who have faced or are facing educational and economic disadvantages. The COVID-19 pandemic exacerbated college students' economic and educational disadvantages and negatively impacted campus enrollment (Reed et al., 2021). However, post-pandemic the EOP&S program is experiencing challenges with student enrollment, recruitment, and underutilization of services by students who are facing economic and educational barriers. Between 2018 and 2020, more than 1,000 students were enrolled in the program, but enrollment went down to around 880 students between 2020 and 2023 (California Community Colleges Chancellor's Office - Data Mart, n.d.). Thus, the purpose of this study is to understand and identify the EOP&S/CARE support services and resources that are more meaningful and valuable to students in addressing their needs and fostering their sense of belonging within the program and campus community in the current educational climate. Using a needs assessment, the study seeks to obtain quantitative data to inform how the EOP&S program at X City College may bolster its services, retention, and sense of community among EOP&S students. Preliminary findings indicate that both financial and educational resources and services such as book vouchers, EOP&S counselors, and priority registration are the most beneficial in meeting current EOP&S student needs. However, students are requesting for more financial services and educational services to be provided. When it comes to sense of belonging, most students feel part of a community with the EOP&S program, but there are mixed feelings when it comes to connectedness to other EOP&S students.

Alina Espinoza and Gaby Isabella Almaraz-Roman

Hungry for Money or Candy? Evaluating the Impact of Fasting on Psychophysiological Responses to monetary and Food Rewards

Many dieting individuals withhold food intake, resulting in increased time being in a fasted state. In this fasted state, food may have increased reward salience due to hunger; however, it's unclear how receipt or loss of food rewards is more or less salient than other rewards when fasted. Our goal was to test neural indices of reward receipt (measured by the reward positivity; RewP) towards food and money when individuals are fasting. The RewP is an event-related potential (ERP; scalp-recorded changes of the brain's waveforms measured by electroencephalography [EEG]) that occurs 250 milliseconds after a presented reward and is larger in amplitude towards more salient rewards. 64 fasting participants from a de-identified, publicly available, open access dataset (<https://osf.io/h58en>; Mage=20.41; SDage=2.08; 45% female) completed three door tasks where they received a reward (i.e., candy, money, positive feedback) if the correct door was chosen and lost part of that reward if the incorrect door was chosen. Six paired tests of equivalence (TOST) used in with null-hypothesis significance testing (NHST) were conducted to test for differences in both RewP reward amplitude and difference amplitude (reward minus loss): candy vs money; money vs positive feedback; candy vs positive feedback. Reward amplitude did not differ between candy and money (TOST $p < .001$, NHST $p = .91$) and was larger to money than positive feedback, but the size of the effect was smaller than anticipated (TOST $p < .001$, NHST $p = .04$). The study was not powered enough to detect differences in reward amplitude between candy and positive feedback or any difference amplitude comparisons (TOST $ps > .24$, NHST $ps > .14$). The salience of food and money rewards may elicit similar neural responses when fasting, which has implications for using money rewards to improve diets. However, a larger powered study is needed.

Melissa Estrada, Ana Ponce, Jorge Hernandez, and Edwin Chavez Santana

Identification of Fungal Natural Products that Exhibit Cytotoxic Activity Towards a Brain Cancer Cell Line

Natural products are secondary metabolites produced by living organisms. These small molecule entities are excellent therapeutic drug leads as over 65% of all FDA-approved drugs are either natural products, natural product derivatives, or their pharmacophores are inspired from natural products. The overall goal of this research is to identify novel fungal metabolites that exhibit anti-cancer activity. To initiate this

research over 100 fungal strains were cultured in five different media types and the metabolites they produced were extracted. These extracts were then screened against a brain cancer (U87) cell line using the sulforhodamine B (SRB) cytotoxicity assay. If an extract exhibited activity in the SRB assay, the metabolites were analyzed using Tandem Mass (MS/MS) Spectrometry and evaluated on the Global Natural Products Social (GNPS) Molecular Networking platform. The GNPS platform compares the MS/MS spectra of the metabolites present in the fungal extract to a massive database of known metabolites. Thus allowing for the identification of extracts containing potentially novel compounds. Metabolites from fungal extracts that exhibited cytotoxicity activity in the SRB assay and contained novel compounds after evaluation on the GNPS platform were prioritized for further study. Metabolites in the prioritized extracts were purified using high performance liquid chromatography and their structures were determined using high accuracy MS, NMR, and circular dichroism spectroscopy.

Jesus Figueroa

Exploring the roles of gratitude and grit in the relationship between life event stressors and reports of depression.

Expansion in the field of Positive Psychology has brought constructs such as Grit and Gratitude to the forefront of research as protective factors for the mental health of individuals. Previous research (Liu et al., 2022) has explored the role that grit and gratitude play in the specific relationship between Life Event Stressors and reports of Depression among an international college population. This research was conducted as a replication study of that by Liu and colleagues (2022) to explore the role of mediation that Grit might play in the relationship between life event stressors and depression in addition to the role of moderation that Gratitude might play in the relationship between life event stressors and depression. The sample for this study (N= 515) consisted of a culturally diverse population of undergraduate students attending California State University Dominguez Hills between the ages of 18-24 years (M = 19.3). A large proportion of the sample reported being from a Hispanic racial background (76%) while the next most reported racial group was African American (10%) which was followed by Asian, Biracial, White, and Other racial identities. Results from statistical analysis would suggest a positive and significant relationship between Life Event Stressors and Depression ($r = .405, p < .001$) and that Grit mediated the positive relationship between life event stressors and depression ($\beta = .0002, BCa\ CI [.0001, .0004]$). The construct of Grateful Attitude was found to moderate the relationship between Life Event Stressors and Depression ($\beta = .0003, 95\% CI [.0001, .001], t = 2.52, p = 0.01$) in a fashion that implies the positive relationship between Life Event Stressors and reports of Depression is stronger when Grateful Attitude is included. These findings provide further evidence to research on the constructs of positive psychology and their influence on the mental health of college students from multicultural backgrounds.

Patricia Fischer Morales

An Exploration of the Differences in Medicinal Cannabis Use Among Diverse Californian Communities
This project will consist of an in depth literature review of medicinal cannabis use among diverse populations and an analysis of existing data. Existing data will be collected from public data sources, including but not limited to the Department of Cannabis Control, the California Department of Public Health, and the Centers for Disease Control and Prevention. Information and data collected will serve as a foundation for future proposed research to better understand diverse communities' consumption of medicinal cannabis. The proposed research project will include a quantitative survey of medicinal cannabis consumers aged 18+ (MCC) (N=1000) among diverse populations in California. This project will explore (1) self-reported usage, (2) physical and mental health ailments as well as reasons for the medicinal use of cannabis, (3) and the self-reported types of cannabis products being used for medicinal purposes in California. In addition, this project will explore self-reported mechanisms for obtaining medicinal cannabis. The data will then be analyzed and synthesized in order to identify lessons learned and suggest potential recommendations to address patient access issues to medicinal cannabis in California. Some anticipated outcomes include but are not limited to a better understanding of who is using medicinal cannabis, the reasons for use, which products are most commonly obtained, and how

these products are most commonly obtained in California. These findings will provide important insights and recommendations for patient access to affordable, legal, medicinal cannabis products for diverse populations in California. To address the research question and aims above, the project will include a quantitative survey of cannabis consumers. The short quantitative survey will take approximately 5-10 minutes to complete and will cover the following: self-reported content areas: (a) Cannabis Use, (b) reasons for use, (c) mechanisms of obtaining cannabis products used and reasons for using those mechanisms, (d) demographics.

Azure Fisher

Environmental justice in air quality and warehouses - Empirical evidence of air pollution exposure within a warehouse cluster and adjacent neighborhood in South Los Angeles

Los Angeles is at capacity for warehouse storage and planners are preparing to expand. Areas with high concentrations of warehouses are more vulnerable to increased expansion and warehousing's transportation related air quality exposures. There is limited research of empirical data expressing the spatial and temporal air quality patterns within warehouse clusters, or air quality exposures in warehouse adjacent neighborhoods. This study collected empirical air quality data of warehouse-related air quality exposures in the Dominguez Technology Center warehouse cluster and the Dominguez Northeast Neighborhood adjacent to the warehouse cluster of study. Air quality monitoring took place on a mobile laboratory via bicycle and focused on PM2.5, black carbon, and noise pollution. Interviews of community members were conducted to contextualize empirical data alongside environmental justice. Interviews allow for a greater understanding of the impacted communities' opinions surrounding warehouse related air quality exposures. Both empirical air quality exposure data and interviews may help future management of warehouse-related environmental externalities with coming warehouse expansion in South Los Angeles.

Taylor Galuppi

On the Presence of Parental Education: A Literature Review

Bringing a child into the world is a major life-altering decision, and yet is socially expected of most adults in our society. That being said, this decision is something many adults are poorly prepared for, leading to higher need for Department of Children and Family Services (DCFS going forward) intervention along with higher rates of childhood trauma, along with the trauma of the actual parent, who is likely one poorly advocated for by the state and now is at risk of losing their children. It is also important to note that these parents tend to be lower income POCs, where white mothers are most often given the benefit of the doubt. These at-risk parents who need to receive care and education from the public sector in order to avoid as much harm as possible to both parent and child. The following poster is a reflection of my introductory research into these required programs, and their criticisms. During my research; I also met with the Holistic Family Network, which is a voluntary educational program for new and expecting parents. Comparing these two types of program, I would like to argue for certain mentalities to be brought to DCFS funded programs that often are seen as lacking in empathy. I do wish to bring up the discrepancy in the target demographic of the two types of program as well, as the Network caters to a much more affluent area than many who are court mandated to take a course, and I elaborate on this further in my research. Overall, this project hopes to stress the importance of an individual and holistic approach to motherhood is something that should be welcomed by these programs, along with having more readily available preemptive care that could save families from DCFS intervention, and even family separation.

Janet Garcia

Understanding First-time Community College Student Perspective in English-Transfer Courses

As transfer-level English courses serve as a prerequisite and basis for a college education, it is essential to understand internal and external barriers preventing first-time college students' successful completion. X Community College data indicates low successful completion in transfer-level English courses for first-time students. Using a needs assessment, the study seeks to understand the needs and transitional

challenges of first-year college students in efforts to increase the successful completion of transfer-level English courses and enhancing sense of belonging and retention. Preliminary findings indicate first-time community college students believe mentorship, contextualized English courses, and supplemental English courses will alleviate the transitional challenges of their first year in higher education.

Vick Garcia

A High School Counselor Approach to Affirming College Attainment for Black and Latinx Young Males

The college enrollment data in the Sunshine School District indicates that Black and Latinx student populations have lower college-going rates than the rest of their high school peers. This data mirrors the Black and Latinx student college-going rate at Navigator High School. Using a needs assessment, the study seeks to understand the attitudes that Black and Latinx 11th grade male students at Navigator High School have towards college institutions. Preliminary findings indicate that 11th grade male students have a goal of attending a four-year college, but their confidence to do so is slightly low. Preliminary data also suggest that participants have a lower likelihood of seeking college application support from their counselors during their senior year. Data from the study will be used to develop an action plan for high school counselors to increase student connection and student confidence.

Daniela Garcia, Neena Dosanjh, Bria Newman, and Nancy Perla

Experiences of Cultural Dressing and its Implications for Occupational Therapy Practice

BIPOC individuals who wear cultural identifiers such as braids, turbans, jewelry, or clothing find the practice of physical expression as an essential part of their identity. To outsiders, this act of self-expression may appear one-dimensional. However, various social implications exist. Discrimination based on one's cultural dress or identifiers is still prevalent in America today; BIPOC individuals face exclusion from social spaces by being inhibited from participating fully in day-to-day activities involving employment, leisure, or education. We delved deeper into the experiences of the BIPOC community by analyzing their experiences with an occupational apartheid lens—a model that defines how social factors prevent individuals from participating in their desired meaningful activities. To answer our research question, we utilized a qualitative design with a narrative approach along with semi-structured interviews and photo-elicitation methods to gather a thorough understanding of the experience of seven BIPOC individuals who each felt a strong connection to their cultural identifiers. By using a qualitative thematic analysis method, we interpreted and categorized them into key concepts, including cultural and personal significance, experiences of exclusion and inclusion, assimilation, the importance of representation, and how cultural identifiers are an essential component of an individual's daily routines. The significance of this topic is evident as healthcare research indicates that when individuals face exclusion or discrimination, there are negative health ramifications. Our results are an important contribution to occupational therapy since one of its philosophical pillars is equality amongst all individuals' ability to engage, participate, and be empowered in their daily activities. Therefore, as occupational therapists, we should be aware of discrimination's long-term effects on BIPOC individuals and the importance of wearing cultural identifiers as a routine aspect of an individual's self-care, grooming, and dressing habits to provide more culturally aware and inclusive care.

Levi Gilbert, Mark Angel Castillo, Samantha Silverman, and Jedadiah Santos

Improvement in Upper Extremity Function Through Tactile Feedback

Abstract Studies by Resnik et al (2012) and Salminger (2022) consistently demonstrate rejection rates exceeding 44% among upper extremity prosthesis users, predominantly due to concerns about functionality and cognitive assimilation. Wijk et al. (2015) extensively explore cognitive assimilation, emphasizing its deep correlation between cognition, perception, and the physical body. Residual limbs retaining tactile sensation tend to offer enhanced practicality compared to sensory feedback-lacking prosthetics, where vision and hearing partially compensate for the absence of tactile input in object manipulation. This study aims to determine if tactile sensation improves proprioception and spatial awareness, addressing why many upper limb amputees don't use prosthetics due to a lack of connection

between tactile sensation and the device. A group of 30 participants were recruited, and 24 of them were able to take part in the research study. Employing two forearm apparatuses (intervention and comparison) under two distinct scenarios (eyes open and eyes closed) per device facilitated the generation of four outcomes to assess each participant's performance. Performance, gauged via time-distance, showcases the direct relationship between distance and speed while highlighting the inverse correlation between speed and time. The study also demonstrates a correlation between conditions that have "Eyes Open" with a longer distance traveled, the analysis resulted in key findings of significance in distance, having a p-value less than .05. However, no significance was found in time, having a p-value greater than .05. Despite expecting the intervention device to have an impact, no clear pattern emerged, indicating the condition we were testing wasn't significant. This study concludes that tactile sensation alone may not enhance proprioception and spatial awareness, prompting the need for further extensive investigation in the future. Nonetheless, our findings highlight that the 'Eyes Open' condition, coupled with the intervention device, resulted in greater distance traveled, signifying its potential significance in this context.

Charles Godinez

Antibody Selection for GeoMx Segmentation of Cell Sub-Populations in the Fallopian Tube Epithelial Mucosa

Human BioMolecular Atlas Program (HuBMAP) is an initiative funded by the NIH Common Fund to create a single-cell "Google map" of the human body to understand how various cell subtypes work together as a system and set a baseline of how healthy human cells operate. This would allow us to find critical biomarkers that cause disease. To accomplish this goal, the NIH has organized a consortium of research teams across the United States and internationally, each contributing their areas of specialization to the project. My colleagues and I contributed to this project by mapping tissues from the reproductive organs of pregnant individuals. My work focused on the identification of a peg cell marker. This marker is an antibody that uniquely binds to proteins on peg cells, enabling the spatial transcriptomic study of the fallopian tube mucosal epithelium. The mucosal epithelium of the Fallopian tube is composed of ciliated cells, secretory cells, and peg cells--the peg cells are responsible for the renewal of the ciliated and secretory cells. Our interest in this region is twofold. For one, by finalizing the marker panel for these cell subpopulations, we can contribute spatial transcriptomics data to the overall goals of HuBMAP. In addition, spatial transcriptomics data of this region of the fallopian tube is also of interest, as recent research suggests that ovarian cancer may originate in the distal region of the fallopian tube mucosal epithelium. The antibodies used for our panel effectively allowed us to distinguish ciliated cells (CAPS) and secretory cells by elimination using pan-cytokeratin that stains all epithelial cells. However, the four antibodies tested for peg cells (LGR5, SCUBE2, DCN, CD44) failed to bind uniquely to cell surface proteins on peg cells. Further investigation is warranted to troubleshoot the four antibodies and explore new potential antibodies to distinguish peg cells.

Christopher Gonzalez

Analyzing the Convergence of Multi-Agent Reinforcement Learning for Budget-Constrained Prize-Collecting Travelling Salesman Problem using ILP

The budget-constrained prize-collecting travelling salesman problem (BC-PCTSP) is an extension of the classic traveling salesman problem, where the BC-PCTSP is to traverse a subset of points (or cities) with respect to a budget (total distance that can be travelled), and with an objective to maximize the prize collected from travelling to each point. An application of the BC-PCTSP is an Uber driver trying to maximize the amount of money (prize) gained from driving, with respect to the driver's budget of time and/or fuel. Previous work has been done to try to solve the BC-PCTSP with Multi-Agent Reinforcement learning (MARL), using Q-learning. Although MARL has been shown to compete closely with handcrafted greedy heuristics, there has been no work to show MARL's ability to converge to an optimal solution. This work seeks to analyze MARL's convergence by comparing it to the optimal solution. Previous works didn't compare MARL to the optimal solution because it had not been formulated. Now, the optimal solution can be calculated, using the linear programming formulation with integer linear

programming (ILP), and can be compared with MARL. Although ILP outputs an optimal solution, as the number of points that can possibly be traveled to increases, the number of possible routes increases factorially. The motivation behind determining MARL's convergence for BC-PCTSP is the fact that as the number of possible points that can be travelled to increases, MARL runs faster because of its smaller time complexity. This work seeks to get optimal solutions from MARL by first comparing it to optimal ILP solutions, then tuning hyper parameters such as learning rate, discount factor, and the number of episodes, to consistently get an optimal solution.

Michael Gonzalez

Exploring the Message: Weimar Republic's Ban on *Anders Als Die Andern* Advocacy for Homosexual Relations

This study dives into the complicated historical and cultural conditions behind the censorship of Richard Oswald's seminal 1919 silent picture, "*Anders Als Die Andern*," during the Weimar Republic. In the aftermath of World War I, Germany's Weimar Republic emerged as a hub for artistic and cultural innovation, but it also struggled with economic insecurity, political upheaval, and societal biases. In 1920, the film, a bold investigation of homosexuality, was censored under Section 175 of the German penal code, which criminalized male-to-male relationships. This study looks into the intertwined impacts of politics, societal standards, and medical perspectives that led to the film's censorship, as well as the broader consequences for the Queer community and the long-term impact on German Queer rights. The research draws on prior studies, particularly Ervin Malakaj's work on gay cinema mourning, to incorporate the Weimar Republic's broader sociopolitical and medical environment. This research intends to provide a thorough picture of the Queer community's problems throughout this important period by weaving together legal, medical, political, and societal elements, demonstrating their tenacity in the face of legal, medical, societal, and political obstacles. The legacy of discriminatory laws, particularly Paragraph 175, shaped the landscape of male-to-male relationships in following periods of German history, underlining the continuous need for knowledge, empathy, and activism for Queer rights. "*Anders Als Die Andern*" is a historical document that reflects the struggles of the Queer community, with its explicit engagement with medical ideas placing it as an enduring artifact. The impact of the film on Queer representation, its role as a cinematic advocacy tool, and the lasting legacy of discriminatory laws highlight the need of remembering and correcting historical injustices in order to promote inclusivity, equality, and justice in modern society.

Alyssa Guerrero

Material Culture Changes at the Ancient Maya Site of Xanab Chak

The Maya civilization has been around for over 3,000 years and there are many aspects of ancient Maya society that are still unknown to archaeologists, especially at the smallest sites. Starting with data collected during a 2022 mapping season, our team excavated a series of test pits in summer 2023 at the small Middle Preclassic (c. 900-300 BCE) site of Xanab Chak in the Puuc Region of Yucatan State, Mexico. Based on my preliminary analysis of the materials recovered from these test excavations, I hypothesized that these early Maya settlers started off with a utilitarian, undecorated pottery that changed and became more elaborate over time as social distinctions evolved within the community. The ceramic pieces we recovered were the material correlates for the social stratification that occurred over time at the site. In addition to discussing the general evolution of the material culture of Xanab Chak, I will also focus on a series of offerings found during the excavation; a figurine, a painted black dish, and an unslipped grey bowl. Xanab Chak provides a unique opportunity to study a very early Maya community that was not destroyed or built over by later sites. It provides the opportunity to look at a long period of residence at the site and how material culture changed over the course of 600 years. The main goal of this research is to use the material evidence that was gathered during the 2023 field season to both test the hypothesis and to gain an understanding of the social changes at Xanab Chak, which can serve as a proxy for understanding how early Maya society changed over time.

Belen V. Guillen and Denise Y. Aguiluz

Loneliness during pregnancy mediates the association between psychological intimate partner violence and postpartum anxiety among Black women

Psychological intimate partner violence (IPV) during pregnancy, characterized by mental manipulation and/or verbal aggression, is associated with postpartum anxiety and adverse outcomes for mothers and infants. Isolation, driven by IPV stigma, contributes to loneliness, intensifying anxiety. Black women experience higher perinatal IPV, elevating the risk of postpartum anxiety. Cultural pressures and expectations can further diminish support and increase isolation when IPV occurs. Limited studies explore how psychological IPV and perinatal loneliness interrelate to impact postpartum anxiety among Black women. Understanding these pathways is important for informing culturally tailored and supportive prevention perinatal programs. This study examined whether loneliness during pregnancy mediates the association between perinatal psychological IPV and postpartum anxiety. Participants included 288 pregnant Black women from the population-based longitudinal Pittsburgh Girls Study. Participants completed standardized questionnaires and interviews before, during, and after pregnancy. We examined self-reported data on prenatal and perinatal psychological IPV, perinatal loneliness, and postpartum anxiety. Analysis using SPSS PROCESS macro testing perinatal loneliness as a mediator of the effect of psychological IPV on postpartum anxiety revealed psychological IPV was significantly associated with postpartum anxiety ($B = .162, p < .005$). Psychological IPV predicted loneliness during pregnancy ($B = .015, p < .021$), suggesting higher IPV leads to more isolation (loneliness). The direct effect of perinatal loneliness on postpartum anxiety was also significant ($B = 2.577, p < .002$). Importantly, the indirect effect of psychological IPV on postpartum anxiety through perinatal loneliness was significant, indicating that loneliness is a significant mediator of the association between prenatal IPV and postpartum anxiety. These findings emphasize that elevations in postpartum anxiety may be attributed to perinatal loneliness, heightened by psychological IPV. Tailoring interventions to the cultural context and highlighting social support during pregnancy is essential in preventing negative mental health consequences for Black women experiencing perinatal IPV.

Rashad Hall

Bioheat Transfer Modeling in Biophysics Using the Finite Element Method from FeniCS Package

Bioheat transfer modeling in living tissues is essential to predict and control the level of potential damage caused to cancerous cells by extreme temperatures. As for controlling the temperature during the laser-cell interaction for instants, numerical simulations are more flexible and convenient for various investigations although laboratory measurements are more reliable to verify the numerical models. Most of the temperature distribution in a human body is based on the bioheat transfer model after Penne's work (1948). In this study, a bioheat transfer problem using the finite element method (FEM) will be conducted to simulate and model the temperature distribution in a breast cell. FeniCS which is the most sophisticated and popular open-source computing package for finite element analysis will be adopted in this research.

Abigail Haury, Kate Duell, Yaremi Ontiveros, and Akimi Johnson

The Experiences of Female Stroke Survivors at a Community-Based Stroke Center

Strokes are a leading cause of long-term disability (Tsao et al., 2023). Disabilities include, but are not limited to, impaired speech, weakness or paralysis on one side of the body, and restricted physical abilities. Current research shows that women are more likely to experience worse stroke outcomes and lower quality of life when compared to men (Petrea et al., 2009; Ospel et al., 2023; Rexrode et al., 2022). Additionally, women stroke survivors are disproportionately underrepresented in the research literature. Therefore, interventions are needed to assist female stroke survivors through their recovery process, this can include community-based programs. The purpose of this study was to understand the recovery experience of female stroke survivors utilizing community-based occupational therapy services. A qualitative study with a case study research approach was conducted. Our methods included semi-structured interviews with an identity web worksheet, as well as observations to gain an understanding of the women's journey and the role the community-based stroke center has had in their lives. Results

indicated six common themes amongst all participants' interviews: community, physical improvements, appropriate services, relationships, activity engagement, and motivation. The study revealed that community-based interventions and access to social support have a notable impact on female stroke survivors' recovery experience. The services have resulted in physical improvements and emotional support, and hold value in the lives of the women. Implications for stroke rehabilitation services are that mental health and community support could be integrated into existing physical exercise sessions for more holistic benefits and create additional support for female stroke survivors.

Abishag Hernandez

The Detection of Deepfakes

This research delves into the critical realm of deepfake detection, addressing the escalating concerns surrounding the proliferation of synthetic media. The study provides a thorough examination of both proprietary and publicly available software solutions, with a focus on Intel, Sentinel, and Microsoft, alongside various tools accessible to the public. By scrutinizing the methodologies, strengths, and limitations of these technologies, the research aims to offer a comprehensive overview of the evolving landscape of deepfake detection. Real-world cases are intricately woven into the narrative, illustrating the tangible consequences of deepfake technology on individuals and society. The conclusion underscores the urgency of advancing detection methods to counteract the ever-growing sophistication of deepfake techniques. Looking forward, future works in this domain are proposed, emphasizing the need for enhanced algorithms, the incorporation of explainable artificial intelligence for transparency, and interdisciplinary collaboration to tackle the multifaceted challenges posed by deepfakes. This research contributes valuable insights to the ongoing discourse on deepfake detection and lays the groundwork for proactive measures to safeguard against the potential misuse of synthetic media in the years to come.

Veronica Hernandez

College Students' Emotional Well-Being

The well-being of a college student is yet to be further researched. There are gaps in the literature such as examining the perspective of college students on the financial and social well-being that affects them emotionally. However, it has been found that, in general, one's financial well-being does affect their emotional well-being, similarly, it has been found that social well-being affects emotional well-being. Wellness is the ability to be able to make decisions that support you in all dimensions of wellness. Wellness goes beyond illness and disease, it is more of a holistic approach of pursuing a fulfilling and meaningful life. It helps one flourish and have a more fulfilling life. Wellness has eight aspects; emotional, occupational, environmental, intellectual, spiritual, financial, social, and physical. More specifically, the study will be looking at how these dimensions affect a college student and especially comparing the financial and social experience between first-generation and non-first-generation college students and how that has affected their emotional well-being. This study will be making a comparison between the well-being of first-generation college students and non-first-generation college students. The widespread perception and common belief that first-generation college students, defined as students whose parents do not have a four-year college degree, endure more and experience more unique challenges in their higher education years calls for a further examination of well-being in college compared to their non-first-generation peers. This study is meant to address the gaps in the literature about college students' well-being. This will be done by going to the direct source, the student, and having them take three different questionnaires regarding three dimensions of well-being, that all will give insight about their financial well-being, social well-being, and how this ties together to affect their emotional well-being.

Jeffrey Herschler

Breathing Easy in Academic Environments: Evaluating CO₂ Levels Across CSUDH

Carbon Dioxide (CO₂), commonly recognized as an outdoor pollutant, is often underestimated in indoor environments. Even at levels as low as 1000 ppm, CO₂ can impair cognitive functions. This led us to

question whether buildings are designed with sufficient ventilation to counteract this issue. With rising CO₂ levels, current ventilation systems may become inadequate, although it's well-known that CO₂ is fatal at concentrations above 5000 ppm. The subtler impacts of lower concentrations are frequently overlooked, yet they are critical due to their potential effects on academic performance. To explore this, we collected primary data using a handheld air monitor to measure CO₂ levels across various buildings at the CSUDH campus. This data was then graphically analyzed using Microsoft Excel and the R statistical package. Our findings indicated a correlation between a building's age and its CO₂ concentration. Specifically, older buildings like Natural Sciences and Mathematics (NSM), and Social and Behavioral Sciences (SBS) exhibited the highest peak concentrations and fastest rates of change. Conversely, the newer Science and Innovation (SI) building showed both the lowest peak levels and rates of CO₂ increase, suggesting that more recent construction projects have indeed prioritized ventilation efficiency. These results underscore the need for ventilation improvements in older campus buildings to ensure optimal learning conditions. Meanwhile, the Science and Innovation building stands as a model of effective ventilation that could guide future building designs. This study highlights the importance of addressing indoor air quality in educational environments to provide the best possible learning ecosystem for all.

Duong Phuong Thao Ho

Inhibition L-cystine Stone by Antifreeze

Protein L-Cystine crystals are a known type of kidney stone. Chemical inhibitors have been designed to counteract the formation of this type of stone. We grow L-Cystine crystals in the presence of NH₃ water solution. After the NH₃ evaporates, two L-Cystine crystals are formed, one with a density smaller than that of water (form A) and one with a density larger than water (form B). The antifreeze protein can inhibit the growth of crystal form A, while it has no effect on the growth of form B. This research highlights the importance of determining this density of natural L-cystine stones to determine the potential for antifreeze proteins to inhibit their formation.

John W. Horton III

African American Language Spoken by Louisiana Migrants in Los Angeles

Summary: I am conducting sociolinguistic research of African American English spoken by clergy of 2 historically African American Churches in Los Angeles, who migrated from Louisiana in the 20th Century. I analyze linguistic variations of African American speech and how these variations relate to race and class, akin to Grieser (2022), Rickford (2015) and Baugh (1983). Background: Many Louisiana migrants relocated next to Historically African American Catholic Churches in Los Angeles, I am analyzing remnants of 20th Century Louisiana linguistic variations and close lying parish dialects that was not present with the migrants that migrated at ages before 9 and was retained by those that arrived at the age of 12 or older. These phonological features were described by Strand et al. (2010), Carmichael et al (2016) and Chung (2020). Research Questions: Is there a unique African American English variation that exists in Los Angeles or is there still evidence of phonological features from Louisiana? What was linguistically retained and what was lost since the migration to Los Angeles? I answer these questions while documenting AAL in Los Angeles. Methodology: I am interviewing 20 African American clergy members in each of the two historical African American Catholic churches, above the age of 65. I am using a digital recorder in running ethnographic and sociolinguistics interviews. I am transcribing the interviews and analyze them, focusing on their phonetic and phonology. Data: I am focusing on these features (1) tensing of /æ/ ([e̞]) before nasal consonants before voiced stops (/b/ and /d/), voiceless fricatives (/f/ and /s/), and /dʒ/ and /g/; (2) raising of /ɔ/; (3) r-lessness; (4) diphthongization of /ʌ/ ([ʌy]). Preliminary results: In the preliminary data that I collected, I found specific African AAL linguistic features that are unique to people from Louisiana who are currently living in Los Angeles.

Keyi Hu and David Mejia

Exploring the Dynamics of Language Transfer and Motivation in L2 Acquisition

Background: Our presentation focuses on language transfer from an L1 to English as an L2. According to Saville-Troike & Barto (2017), there is both positive and negative transfer from the L1 when it comes to acquiring an L2. Moreover, according to Ortega (2009), learners that are intrinsically motivated are more likely to be successful in L2 acquisition. In our study we investigated if and how motivational factors affect English acquisition. Research questions: How does language transfer from an L1 impact L2 acquisition? What motivates students to learn an L2 or English as an L2? Methodology: We conducted interviews with 4 ESL students, from 3 different countries: Japan, Colombia, and the US. The interview was 2 hours with 4 people and it was compiled of 10 interview questions. Discussion: We observed variability in motivators among the 4 students. Native language needs to be taken into consideration when acquiring an additional language because it is part of one's identity. Since learners tend to integrate their L1 background knowledge when learning English, the effect will vary according to nationality. Additionally, work-related reasons, as well as personal interests and goals were key motivational factors. Learners could be motivated by both external (work-related) and internal (personal interests) effects, especially when the two factors reinforce each other. While individuality is a massive component in identifying what motivates people to learn English as a second language, it can directly reflect the learner's performance in the practical application of the second language. Conclusion: We recognized the significance of considering language learners' backgrounds in L2 acquisition to address common errors linked to their backgrounds and maintain their motivation. Moving forward, we want to expand this study by running an actual study including more participants across various age groups, English proficiency levels, and diverse backgrounds.

Anthony Huizar

Vegetation Distribution Analysis at CSUDH for Enhancing the Campus Greenery

California State University, Dominguez Hills (CSUDH) boasts a thriving ecosystem of vegetation, with ample potential for expansion. This lush greenery plays a pivotal role in shaping various aspects of the campus environment, including air quality, temperature regulation, and the overall well-being fostered by its green spaces. To gain insights into the distribution patterns of vegetation types across the CSUDH campus, we conducted a comprehensive analysis. Our methodology involved applying a 5-meter buffer around each vegetation point to estimate the approximate vegetation coverage throughout the campus. This approach allowed us to discern the relationship between densely vegetated areas and those with less vegetation, enabling us to assess the potential impact of existing vegetation coverage on the campus environment. Our research utilized open GIS data to compile a detailed vegetation map encompassing the campus's trees and shrubs. These data points were integrated into the ArcGIS platform, where they were overlaid onto the base layer representing the campus map. Through this process, we accurately calculated the total hectare coverage of vegetation on campus, identifying approximately 38 distinct vegetation types and collecting 1400 location points. Our findings indicate that the total vegetation coverage on campus spans approximately 21.6 hectares. This visual perspective provides valuable insights, enabling us to pinpoint areas in need of greater vegetation and those where enhancements can be made. These observations hold significant importance for future campus planning and sustainability efforts, catalyzing further improvements to the campus's green infrastructure.

Isabelle Hutchins

Tagalog Heritage Speakers' Perception and Production of Primary Stress

Background. French (1988, 1991) defined Tagalog (ISO: tgl) primary stress as always falling on the ultimate or penultimate syllable of the root, as in (1). (1) a. pu'no 'fill/full' b. 'puno 'tree' (2) a. a'bala 'busy' b. aba'la 'burden' In Tagalog, stress indicates the speech category of the word, (1a) and (2a) are adjectives, while (1b) and (2b) are nouns. Primary stress seems to be the easily identifiable and producible factor in differentiating between minimal pairs of Tagalog for native speakers. Goal/research question. I investigate (i) whether English dominant Tagalog heritage speakers can perceive primary stress in Tagalog and (ii) whether they can produce correctly minimal pairs presenting primary stress in Tagalog. Experiment. Participants are taking a demographic survey, a perception test, and a production test. 50 stress target

items and 13 filler items are going to be used in this study. During the perception test, the participants are asked to rate the sentences they hear from a Likert scale of 1-10 of natural sounding, where 1 is not natural and 10 is the most natural. In the production test, the participants are asked to read sentences they see out loud. Preliminary Data and Discussion. Most participants scored sentences with incorrect stress items higher during the perception test. During the production tests, all participants have done well by reading and speaking sentences that contain the correct stress target items. In the demographic survey, 2 out of 4 participants have scored their Tagalog reading skills higher compared to their other skills (understanding, writing, and speaking), while the other 2 participants have scored their skills lower compared to the others. By the end of January, I will have the complete data collection and analysis.

Marcos Iniguez

Rehab or Tough on Crime? Support for Punishment and Rehabilitation Among Californians

The Federal Bureau of Investigations reports an increase in violent crime rates for the state of California between 2020 - 2022. This increase has sparked a debate over whether punitive or rehabilitative approaches are the more appropriate response to individuals convicted of crime. This poster will utilize data from a public opinion survey conducted in California in the summer of 2022 to explore how Californians feel about punishment and rehabilitation. Cross tabulations will be presented that test the relationship between Education, Political ideology, and Race and punitive and rehabilitative attitudes. The implications of these findings for criminal justice policy will also be presented.

Sally Innabi

Exploring Children's Collaboration: A Cultural Analysis

This study examines cultural differences in children's collaboration during a school-like task even when there is no call for them to collaborate. Previous studies have found that US Mexican-heritage children coordinate fluidly with each other in settings in which they are asked to work together (Alcalá et al., 2018; Ruvalcaba et al., 2016). The present study extends this work to an instructional situation in which siblings are working on their own project, guided by an adult, with no suggestion of them collaborating. Participants include a subset of 10 sibling pairs of 6-10 year-old children from two cultural communities: U.S. Mexican-heritage children whose families have likely experience with Indigenous practices and limited experience in Western schooling, and U.S. European-heritage children. A research assistant guided the sibling pairs through a science craft activity in their home, each child making her or his own solar print. Coding focuses on five different phases of the activity that provide openings to collaborate, for example, as the children put different objects onto the solar paper and when they put their own materials away in containers once they are done using them. Coding consists of 10-second segments within each of the five openings to collaborate, to determine whether the sibling pair demonstrated one of the three types of collaboration: collaboration fluidly as one to meet a shared goal; collaborating through proposal building and building off each other's ideas; or collaborating through discussion of ideas which includes back-and-forth exchanges. Preliminary analyses are in accord with expectations. More collaboration, especially fluid collaboration, was observed among US Mexican Indigenous-heritage children when compared to US European-heritage children. The US European-heritage children more often spent the five segments of the task working as individual agents. Findings may help understand cultural differences in children's collaboration with each other, including instructional situations.

Melissa Izaguirre

The role of cmoA and cmoB during long-term stationary phase in *Escherichia coli*

We observed long-term stationary phase (LTSP) in *Escherichia coli*, which takes place after initial cell death during incubation of cells. For my research, my focus is on the role that genes cmoA and cmoB play in survival in LTSP. These genes are directly correlated to tRNA modification and function as synthetase and transferase for the complex responsible for these tRNA modifications, carboxy-s-adenosyl-L-methionine (Cx-SAM). In order to generate mutant strains of *E. coli* missing the cmoA or cmoB gene, wild-type *E. coli* were transduced with lysates made from each mutant strain to delete one gene from the

genome. Mutant strains were then competed against wild-type *E. coli* over 10 days of incubation. After a few days of incubation, many cells, but not all cells, have died. The remaining bacteria enter LTSP and can remain in this phase through the end of incubation. We found that strains missing either *cmoA* or *cmoB* were not able to compete efficiently against the wild-type bacteria in long-term cultures. These data indicates that *cmoA* and *cmoB* are important genes that aid cells during LTSP. We will either conduct experiments to further study these genes or move into a new set of genes to observe their role during LTSP.

Zoe-Marie Johnson

Media Consumption and Attitudes Towards Police in the Post-Floyd Era

Research has found that media consumption plays a critical role in how the public perceives events and the legitimacy of government organizations. The murder of George Floyd by police officers in 2020 led to extended protests of police violence and calls to defund the police in support of racial justice and social media posts about these events were widely covered. A counternarrative about rising crime rates and the need for more police officers also circulated in news and social media. There is a gap in the attitude toward police literature when it comes to the effect of social media consumption on attitudes toward police. Using a public opinion survey conducted in California this study tests the relationship between social media consumption, trust in social media, and the public's attitudes towards police, while controlling for theoretically relevant variables. Policy implications of the findings will also be discussed.

Jerry Joiner-Waters Teaching Kids right from wrong The main idea of my project is that I want to be able to teach kids about how they're able to become successful in this world, and hoping their parents open up a bright future for them as well.

Eric Jones

Mapping the Career Opportunities for Students Within the Homeland Security Enterprise

The Homeland Security Enterprise (HSE), encompassing the Department of Homeland Security, other government agencies in national security, and their private sector partners, offers a wide range of career opportunities requiring diverse skills and qualifications. This project aims to map what the HSE looks like in Los Angeles and more broadly in Southern California to identify stakeholders and important career and service-learning information. Using this data, the project will develop a unique, comprehensive database, paired with an AI-driven chatbot. This tool is designed to assist students at California State University, Dominguez Hills, and across the CSU system in navigating these career paths. The database will catalog information about various HSE roles, requisite qualifications, and align them with corresponding academic courses offered at CSU institutions. The chatbot, accessible to students, will facilitate personalized guidance, helping them identify potential careers based on their educational pursuits and advising on relevant coursework. This project aims not only to enhance the career planning process for students interested in homeland security but also to serve as a scalable model for educational and career guidance in other disciplines.

Precious Jones

Changes in Religious Identity and Self-Esteem during the transition to Early Adulthood

Adolescence to young adulthood is an important phase for the development of identity and self esteem. One factor that can affect this outcome is religious identity, including religious upbringing and changes in religious identity (CRI). Despite the potential impact of CRI on self esteem development in the transition to young adulthood, CRI remains an understudied topic. This study aims to investigate the associations between religious upbringing, religious identification, and self- esteem. Participants included $n = 4,505$ young adults aged 18-26 (3.9% Asian or Pacific Islander, 22.5% Black, 10.9% Latinx, 1.0% Native American, 61.7% White) from the National Longitudinal Study of Adolescent to Adult Health (ADD Health). To measure CRI, we examined differences between religious upbringing and current religious identity. Results showed that 20.6% of young adults experienced CRI. Pearson Chi-Square tests showed that rates of CRI differed by religion of upbringing ($\chi^2 = 487.325$, $df = 7$, $p < .001$). Rates of CRI in

order from highest to lowest by religion of upbringing were: Buddhist = 47.6%, Catholic = 25.1%, Muslim = 25.0%, Jewish = 20.0%, Atheist/Agnostic = 19.8%, Christian (including protestant) = 14.9%, and Hindu = 14.3%. Chi-Square tests also showed that CRI differed by race-ethnicity ($\chi^2 = 41.148$, $df = 4$, $p < .001$). Rates of CRI in order of highest to lowest by race-ethnicity were: Native American = 37.2%, White = 22.5%, Latinx = 22.2%, Asian or Pacific Islander = 17.0%, Black = 14.2%. Linear regression analyses showed that CRI was negatively associated with young adult self esteem ($B = -0.087$, $SE = .021$, $p < .001$). Findings suggest CRI is relatively common while transitioning from adolescence to young adulthood, and may have an important impact on self-esteem in adulthood. Future research should investigate how the impact of CRI on self-esteem may differ across racial-ethnic groups.

Amrit Kafle

Reducing Road Emissions: Impact of a 35% Reduction in Car Use in Los Angeles

Car travel is a major contributor to Greenhouse Gas (GHG) emissions in developed countries. In the United States, for instance, cars account for approximately 91% of all vehicle miles traveled (VMT), underlining their significant role in transportation-related emissions. Since cars are predominantly used for commuting to workplaces, strategies like promoting telecommuting and transitioning to electric vehicles can notably reduce CO₂ emissions. This approach aligns with initiatives like Governor Newsom's Executive Order N-79-20, which aims to increase the sales of electric or other zero-emission vehicles to 35% by 2026. Our study focuses on estimating the reduction in CO₂ emissions that could result from decreasing the number of conventionally operated cars by 35% in the Los Angeles area. We obtained VMT and travel pattern data from the National House Survey Data and converted it into tons of CO₂ emissions using the formula: CO₂ emissions (tons) = VMT (miles) \times CO₂ emissions factor (tons/mile). We considered the average emissions factor for CO₂ per mile, which varies depending on vehicle type, fuel efficiency, and driving conditions. The CO₂ emissions factor was sourced from a variety of resources, including emission inventories, transportation data, and the California Air Resources Board (CARB). These sources provide average emissions factors for different vehicle and fuel types. Additionally, we employed Geographic Information Systems (GIS) to analyze the spatial pattern of VMT in the study region. This analysis will aid in understanding how neighborhood characteristics influence VMT. The findings could inform local and state governments in developing more effective policies aimed at reducing GHG emissions. This could include incentives for electric vehicle use, improvements in public transportation, or stricter emissions regulations.

Muhammad Zaid Kamil

Integration of IoT Sensors with XR Campus Map application

Integration of Real time data to Extended Reality is an essential part in the AR/VR space. With the rise of XR HMD devices (Oculus Quest Pro, Apple Vision Pro) having XR applications that integrates real time data would be beneficial for users. Unfortunately, there is little implementation done in this area of XR because the AR/VR industry is relatively new in Computer Science field. The purpose of this study is to integrate real-time data collection from IoT sensor to the Extended Reality (XR) 3D campus map application. The application will be built for HMD devices such as Oculus Quest Pro and Apple Vision Pro headset which are accessible to the users. The study will showcase six steps in designing and integrating real time data to the XR campus map application. The first step is the design of the front-end of the application, the 3D model of the CSUDH campus map. The 3D Map will include all the CSUDH building locations inspired from the ToroGis Map. The second step is to install the Cisco IoT sensors in campus buildings (Campus Library, Parking Lot, and Cafeteria) to measure the environmental conditions such as temperature and humidity inside the campus buildings and measure the occupancy data of each campus building using the campus Wi-Fi network. The third step is to set up a simple server and store the data in a database in which an API will be created. In the next step we call the API data in Unity3D software which the application will be built to the HMD headset so that when the user selects a building, the fetched data (temperature, humidity and occupancy) will be displayed. The final step is to test the MR application via Headset with users for accuracy, latency and user experience.

Sandra Khim-Pamanian

Barriers to Seeking Professional Mental Health Support: A Qualitative Study of Cambodian-Americans and their Parents in Long Beach, CA

The mental health struggles faced by 1.5 and first-generation Cambodian-Americans and their families in Long Beach, California, present a complex web of challenges. Despite the prevalence of mental health issues within this community, accessing professional support remains a significant obstacle. Factors such as intergenerational trauma, resettlement experiences, and cultural adaptation intricately interplay with their reluctance to seek help. This study employs a qualitative approach, harnessing the power of firsthand narratives and experiences through interviews and focus groups. Additionally, it incorporates an analysis of existing literature, theoretical frameworks related to cultural psychology, and assessments of mental health literacy within the community. One of the paramount aims of this research is to spotlight the enduring repercussions of intergenerational trauma among Cambodian-Americans in Long Beach, a community heavily affected by historical trauma from the Khmer Rouge regime. Understanding the influence of these experiences on their mental health perspectives and help-seeking behaviors is crucial to providing tailored and effective support. By delving into these cultural and experiential factors, this study endeavors to bridge gaps in mental health services, bringing forth a more nuanced understanding of the needs specific to this community. Moreover, the significance of this research extends beyond academia. It aims to catalyze positive societal change by fostering open and constructive conversations about mental health within the Cambodian-American community. By acknowledging and respecting cultural nuances and experiences, we aspire to dismantle the stigma surrounding mental health support, ultimately leading to more inclusive and effective interventions. This research could potentially serve as a catalyst for policy discussions and community initiatives aimed at improving mental health outcomes for Cambodian-Americans in Long Beach and similar communities across the nation.

Matthew Kuljis

Lambda-proton elastic scattering using inclusively produced beams

The use of short-lived beams in nuclear physics research has been established by a recent publication on Λp scattering. Improving this technique for use with beams with shorter lifetimes requires inclusive production, in which the beam properties are determined using only the final-state particles. We are repeating the $\Lambda p \rightarrow \Lambda p$ measurement with a different CLAS dataset; the beam Λ comes from the process $\bar{p} p \rightarrow \Lambda X$. Using only the scattered proton and the products of the $\Lambda \rightarrow p \pi^-$ decay, we reconstruct the mass of the beam Λ in the process $X p \rightarrow \Lambda p$ to determine the number of events. A separate analysis of $\bar{p} p \rightarrow \Lambda X$ is used to determine the incident flux of the beam Λ s. The angle and momentum of the beam Λ determine the effective target thickness. A parallel measurement of the process $pp \rightarrow pp$ will verify the determination of the beam flux and target thickness; this measurement will test our ability to correct for the decay of the Λ . Strong cuts on the Λp vertex position reveal a fairly clean spectrum. This technique will be used not only for further measurements with Λ beams, but also with beams of other short-lived particles, such as K_S^0 , Λ_c^+ , Λ_b^0 , and Λ_c^0 . This talk will present the motivation and history of this work, the current status of our analysis using inclusively produced beams, and prospects for future work in this field.

Katherine La, Christina Giang, Katherine Lin, and Jessica Vo

The Occupational Impacts of Anti-Asian Hate

The COVID-19 Pandemic has been associated with an increase in anti-Asian hate incidents and can be linked to the spread of misinformation and stigmatization of Asians to the virus. This surge in discrimination can be attributed not only to stereotyping, but also to media influence, political rhetoric, and feelings of uncertainty and panic that existed during the time of the pandemic. The purpose of this study is to describe the habits, roles, and routines of young Asian Americans experiencing racism and discrimination to inform occupational therapists and other healthcare providers about the occupational impact on the Asian American community during the rise in anti-Asian hate. The study utilized a qualitative narrative inquiry approach through semi-structured interviews and a Time-Use Wheel to collect the stories. The interviews were conducted via Zoom to record and transcribe the interview. A total

of 7 young, Asian-Americans, aged 22 to 30 years, were recruited and interviewed for this study. Inductive qualitative thematic analysis was used to analyze the data. Findings showed that the habits, roles, and routines of Asian Americans were affected due to an increase in racism and discrimination sparked by the COVID-19 pandemic. Emerging themes include having a safe space, an increase in being vigilant, shifting gears, the art of resilience, and stopping the hate. This study suggests the importance for occupational therapists to take into consideration the benefits of social support for Asian Americans experiencing discrimination. Occupational therapists can include open-ended questions regarding available support systems during the intake processes, such as the Occupational Profile. A trauma-informed care approach would also help to ensure a safe space for the client. This is not only applicable to occupational therapists interacting with the Asian American population but to any healthcare professionals interacting with any population experiencing discrimination.

Kayla Leon Maldonado, Jesus Figueroa, Michelle Belmontes, and Marelin Marquez

The Roles of Stress and Social Support on Mental Health During the Pandemic

Stress plays an important role in mental health. However, social support provides transformative potential in how we manage stress and mental health. Research has explored social support as a factor in stress and mental health outcomes, and stress is recognized as a significant predictor of various mental health conditions, including anxiety, depression, and other psychological disorders (Hutten et al., 2021). Furthermore, the recent COVID-19 pandemic exacerbated mental health outcomes for college students (Hu et al., 2022). This study used data collected from undergraduate students ($N = 284$) during the 2020-2021 academic year, the height of the pandemic, to investigate the effects of family support and friend support on stress and mental health. Specifically, it examines if perceived stress predicts anxiety, depression, and psychological harm from the pandemic and whether family or friend support play stronger roles in these relationships. The sample consisted mostly of females (67.8%), aged 18-60 ($M = 21.57$, $SD = 6.145$). Participants were mostly Hispanic (70%), followed by African American (10%), Asian (9%), White (4%), Biracial (6%), or other ethnicities (1%). Correlational analysis showed that family support was correlated significantly with perceived stress ($r = -.27$, $p < .001$), depression ($r = -.35$, $p < .001$), and anxiety ($r = -.17$, $p = .004$), and that friend support correlated significantly only with depression ($r = -.18$, $p = .002$). Thus, preliminary analyses suggest that family support is more strongly associated with better mental health than friend support. Multiple linear regressions will additionally test if family support mediates or moderates the relationship of perceived stress with depression. Implications for mitigating the adverse impacts of stress and promoting mental health among diverse college students will be discussed.

Javier Lima

The Relationship Between Pursuit of Value-Aligned Goals, Psychological Well-being, and Life Satisfaction in First Generation College Students

The field of positive psychology takes a different approach to human psychology, as opposed to other subfields, which is referred to as "business-as-usual" psychology. It acknowledges the duality of well-being, attempting to emphasize the positive, but not disregarding the negative in life. Instead of observing the field through a diagnostic lens, it seeks to promote interventions that will improve quality of life. Focusing on one's strengths boost character strengths and fosters human flourishing cultivating the good life. An overview of the field emphasizes areas such as values, well-being, gratitude, happiness, etc. While incorporating interventions such as journaling, gratitude letters, compassionate writing, and many more. The current area of research has focused on exploring the impact that values have on the psychological well-being of first-generation college students. Values are derived in a multitude of ways; they serve to function as a guiding mediator for an individual in their daily decisions. Through the current meta-synthesis (literature review) on values, a consistent pattern has been observed amongst small populations; however, diversity should be further explored and there should be an emphasis on incorporating multiple value-identification workshops and clinical interviews, cross-sequentially. The proposed research intends to replicate similar studies in a much more time-compacted manner, with a

considerably large and diversified population. In the current presentation a specific intervention will be discussed and assessed, preceded by a review of proposed questionnaires, including the Valued Living Questionnaire (VLQ) and The Temporal Satisfaction with Life Scale (TSWLS). Future exploratory ideas and recommendations will be proposed.

Stephanie Lopez, Nicole Sanders, Alejandra Diaz, Ashley Collazo, and Andrew Navarro

Sleep Quantity and types of Music affect Working Memory

The current study conducted a survey to determine how sleep quantity and listening to the type of music may have an affect on working memory. This study examined sleep quantity (the participants' levels of sleep: low or high) and two different genres of music (classical and rock). The researchers created a survey using Qualtrics in which participants had to access it through an electronic device and were able to take this survey at whatever time and location they chose to. The sample included a variety of college students: freshmen, sophomores, juniors, seniors, graduate students, and those who were not students. Participants were recruited for the purpose of measuring their working memory capacity using a set of grocery list words from the EPIC Norfolk Food Frequency Questionnaire (Pilato et al, 2022) and asking participants to recall the list after listening to 30 seconds of music, the music was randomly selected so participants would either listen to rock or classical. Once the participants completed the first section of the survey, they were then directed to a demographic section where participants then had to answer multiple choice questions. Furthermore, after the data was collected, researchers discovered that the hypotheses were both supported and not supported. This study was to have an understanding of whether or not the quantity of sleep and the type of music students listen to may have an effect on their working memory.

Keywords: college students, working memory, music, sleep

Stephanie Lopez and Ana Ponce

Exploring Fungal-Derived Compounds for Potential Brain Cancer Treatments

Brain cancer remains a significant health concern, brain and other nervous system cancer represents 1.3% of all new cancer cases in the U.S. with 24,810 new cases and 18,990 estimated deaths reported in the US in 2023, according to the National Institute of Health Surveillance, Epidemiology, and End Results (SEER) Program. This research aims to contribute to the identification of novel therapeutic options by investigating secondary metabolites from marine-derived fungi that demonstrate cytotoxic activity against a brain cancer cell line (U87). Secondary metabolites, also known as natural products, are bioactive compounds produced by living organisms. Throughout history, these small molecules have played a crucial role in traditional medicine and continue to be integral to modern medical treatments, constituting approximately 65% of all approved pharmaceuticals. The success of natural products in medicine is attributed to their structural diversity and evolution over centuries to interact specifically with biological targets. To commence this study, 100 fungal strains were cultured and the metabolites they produced were extracted. Subsequently, these metabolites underwent screening against the U87 brain cancer cell line using a sulforhodamine B (SRB) cytotoxicity assay. Extracts demonstrating activity in the SRB assay were subjected to purification using high-performance liquid chromatography. The structures of these metabolites were then determined through a combination of mass spectrometry, NMR, and circular dichroism spectroscopy. This research represents a vital step in uncovering potential candidates for brain cancer treatment among fungal-derived compounds. By understanding the cytotoxic activity of these secondary metabolites, we aim to contribute to the development of novel therapeutic agents with diverse structures and evolved capabilities to target specific biological processes.

Melissa Lozano

The Role of *ycgX* in Survival of *Escherichia coli* in Long-Term Stationary Phase

Many bacteria can adapt to harsh conditions when nutrients are lacking. *Escherichia coli* is a bacterium which experiences this type of environment as it moves through five phases of bacterial growth including lag phase, log phase, stationary phase, death phase and long-term stationary phase (LTSP). After growth, around 99% of the population dies during death phase and the surviving cells enter LTSP. This phase

involves cells surviving for long periods of time without the need for nutrients. The genes essential for the survival of the cells during this phase are mostly unknown. In order to determine which genes are vital for the survival of the cells, a wild-type strain was competed against a mutant strain missing the gene *ycgX*, which encodes a protein of unknown function. We chose this gene because it was previously identified in a screen for genes involved in survival into LTSP, and due to the lack of information on its function, we hope these findings will help us determine the function of *ycgX*. Comparing how the wild-type and the mutant strain grow shows the effect of the missing gene on the overall survival of the cells. I found that *ycgX* was essential for the survival of the cells due to the mutant strain's subtle loss to wild-type cells during competitions. Future research will entail competing other strains missing genes with the wild-type strain to see if they are also essential for the survival of bacterial cells.

Aaron Malone

A Machine Learning Approach To the Weighted Traveling Salesman Problem

The budget-constrained traveling salesman problem (BC-TSP) is a combinatorial problem with many real-world applications including robotic sensor networks and autonomous driving. The goal of BC-TSP is to find a path that maximizes the traveling salesman's collected prizes and stays within his budget. In our research, we look at applying multi-agent reinforcement learning to solve this problem.

Kelly Marthaler, Christen Low, and Amber Artis

Styrene Levels Before, During, and After Lamination

This paper examines the atmospheric concentration of styrene, a harmful compound involved in producing orthotic and prosthetic devices, within a university's Orthotics and Prosthetics (O&P) facility. Given the rising amputation rates in the United States and the extensive use of prosthetics, it is essential to understand the risks styrene poses to O&P professionals frequently exposed to it during device manufacturing. The study measures styrene levels at various stages of the lamination process in the facility, using Advanced Chemical Sensors and Styrene Monomer Vapor Badges for data collection. The findings reveal that styrene concentrations stayed within the occupational safety limits defined by OSHA throughout the lamination process. OSHA's permissible exposure limit for styrene is 100 ppm over an 8-hour period, with an acute exposure ceiling of 200 ppm for 24 hours. The recorded styrene concentrations were 0.3 ppm pre-exposure, 9.6 ppm during active exposure, and 9.6 ppm post-exposure. This research underscores the necessity of personal protective equipment (PPE) for O&P professionals, especially when handling styrene-containing materials. Although the study only examined a single lamination event and short-term exposure, it provides important insights into the safety protocols at the California State University Dominguez Hills (CSUDH) O&P facility. The facility's ventilation system, exceeding NIOSH standards, coupled with the availability of PPE, ensures a secure working environment for both students and staff. Future research should investigate long-term exposure scenarios and include a broader range of real-world O&P lab settings. In summary, this study affirms the CSUDH O&P program's lamination room is safe for students and staff in regards to the level of styrene.

Karina Martinez, Nadine Brandy, Celeste Gonzalez, and Ferdous Bayangar

Los Angeles Unified School District Performance

District, especially the student attendance and dropout problems. Absence from school can be for various reasons. This research focuses on the problems of policy, leadership, financial management, and parent engagement that cause students' absence or dropout from school. Quantitative and qualitative information was obtained through peer-reviewed articles and reliable internet sources including the lausd.org website. Our analysis showed that student performance would be aided if schools partnered with stakeholders, such as community members like parents, school personnel, and local organizations. More attention to mental health and aiding students with disabilities and minority students by hiring specialists to assist teachers was an advantage. On the other hand, opening more schools has an adverse effect on student outcomes. All in all, proper allocation of available funds would help alleviate the absenteeism issue.

Karina Martinez

Using ChatGPT for Nonprofit Fundraising and Marketing

The launch of the artificial intelligence (AI) tool, ChatGPT, in late 2022 has sparked wide discussions among educators, researchers, and practitioners. Some savvy tech users saw the potential of ChatGPT in nonprofit grant writing, social media posting, and marketing event planning (Haynes, 2023). However, little research has provided empirical evidence on using ChatGPT in the nonprofit sector. Nonprofit organizations (NPOs), especially small to medium-sized NPOs, often struggle with limited financial and human resources. This study examines the potential of using ChatGPT for nonprofit fundraising and marketing. Data will be collected from a sample of nonprofit practitioners and college students who aspire to become nonprofit leaders or managers. Mixed methods will be used for data analysis. The study will contribute to the literature on organizational innovation and has practical implications for enhancing nonprofit organizational capacity.

Paola Martinez, Ronald Bernal, Robert Hill, and Anthony Diaz

Temozolomide (TMZ) methylates histone proteins in breast cancer cells

TMZ is a prodrug and undergoes pH-dependent degradation first producing 5-(3-methyltriazen-1-yl)imidazole-4-carboxamide (MTIC), which is subsequently degraded into 4-amino-5-imidazole-carboxamide (AIC) ϵ an inactive metabolite and a methylidiazonium cation, the methylating agent. The therapeutic benefit of temozolomide is known to depend on its ability to alkylate/methylate DNA, which most often occurs at the N-7 or O-6 positions of guanine residues. This methylation damages the DNA and triggers the death of tumor cells. Our hypothesis is that the therapeutic benefit of temozolomide also extends to protein levels, specifically histone and its associated proteins. Histone provides structural support for chromosomes. Each chromosome contains a long molecule of DNA that has to be wrapped around histones in order to fit into a small space in the nucleus of cells, giving the chromosome a compact shape. Therefore, any change in the structure of histone will impact gene expression and genomic stability. We have examined histone methylation in vitro and in breast and brain cancer cells. The results show that TMZ does methylate histone protein in vitro and in cancer cells. However, increased TMZ concentration did not change the histone methylation level in breast cancer cells but decreased histone methylation levels in brain cancer cells.

Yolanda McDow

Polymers Made from Agricultural Waste: a possible alternative to single use plastics.

The demand for plastic has significantly increased to over 400 million tons, and is estimated to continue, resulting in an increase of petroleum-based plastic waste. This waste accumulates in landfills, breaks down into microplastics, and increases greenhouse emissions. A possible solution to this problem is the use of biological monomers found in plants which can be synthesized to form alternative petroleum-based plastics. Phenolic compounds in the Brassica oleracea group can be esterified and converted to bio-based aromatic diols to form polyesters due to their functionality and aromaticity. Broccoli in particular can be a natural biofuel for plastic polymers due to high fiber and phenolic compounds, which are the biological monomers that are used as the base for plastic polymers. The production of broccoli only harvests 30% of the plant, while the remaining parts are discarded. This inefficient use of agricultural land, water, and increasing air pollution may be reduced by using the phenolic compounds in broccoli to create biological monomers into plastic polymers. This experiment used UV-Vis Spectroscopy and LCMS to determine successful isolation of the compound and identify double bonded functionality and side chains of the phenolic compound. Concentration of phenolic compounds was estimated to inform economic feasibility of using this agricultural waste as monomeric feedstock.

Madison Medhat

Los Angeles: Are the Current Infrastructures Enough for Future Energy Demands Triggered by Climate Change

This research addresses the disproportionate impact of climate change on disadvantaged communities (DACs) and the vulnerabilities of electricity infrastructure, particularly in Los Angeles County. It investigates the multifaceted effects of climate change on physical, social, political, and economic dimensions, with a focus on how these issues manifest in DACs' electricity-related challenges. Key research questions include the suitability of existing energy infrastructure in meeting the growing demands induced by climate change, the heightened vulnerability of DACs due to inadequate infrastructure, and the potential link between DACs and blackouts during extreme weather events. Using ArcGIS Pro for mapping and spatial analysis, the study analyzes factors such as pre-1970s buildings, weather-related facilities, power outages, and the distribution of electric vehicle charging stations. This project identifies the need to bolster support in disadvantaged communities and upgrade infrastructure, operations, and services to adapt to climate change. It emphasizes the urgency of adopting policies and practices that safeguard individuals from energy insecurity, ensuring secure and reliable energy services for all residents in Los Angeles, with a particular focus on the most vulnerable and disadvantaged communities.

Raul Medina

Geospatial Technology Approach to Understanding Ferrel Horse Habitats in California

Abstract: In the face of mounting challenges brought by urban development, climate change, and resource competition, California's Ferrel horse habitat demands comprehensive mapping and monitoring for efficient usage. This research aims to use Geographic Information Systems (GIS) and Remote Sensing (RS) technologies to create a detailed understanding of Ferrel horse habitats in the state. My primary objective is to construct a detailed GIS-based map of California's Ferrel horse habitat, using data from open-access GIS databases. By integrating topography, land cover, and existing wild horse habitat maps, my study will provide an updated and thorough representation of these vital ecosystems. Habitat changes and potential threats to Ferrel horse populations will be presented through sophisticated GIS tools, generating habitat suitability models grounded in factors such as vegetation type, water sources, and terrain characteristics. Spatial analysis will play a pivotal role in identifying critical habitat areas, migration corridors, and potential threats to Ferrel horse populations. This analytical approach aims to inform land use planning, bolster conservation efforts, and refine wildlife management strategies. The study's outcome is poised to deliver valuable insights essential for the sustainable coexistence of urban development and the preservation of California's Ferrel horse populations, offering a roadmap for informed decision-making in the realms of land use, conservation, and wildlife management.

Nataly Mendoza, Christian Smith, and Kevin Morente

The World of Hidato Puzzles

Our research focuses on Hidato, a classic puzzle game known for presenting users with intricate challenges that involve both complex puzzles and logical reasoning. Similar to Sudoku, Hidato requires users to fill a grid with numbers in a consecutive path. The objective is to arrange numbers in an adjacent order, starting from one and concluding at the highest number in the grid. Notably, Hidato comes in two forms: regular square grids and beehive hexagon-based grids. Our team has chosen to pursue the uniqueness of the beehive-shaped grids for our research. The central goal of our research is to determine the number of distinct paths for a given beehive-shaped grid and how these paths contribute to form puzzles for the distinct shape. The beginning phase of our exploration involves understanding paths. A big question is how to identify and enumerate all the paths in a puzzle? Upon further research, a critical aspect of this process lies in the grid's outlines and shapes, as they play a key role in unlocking the nature of Hidato puzzles. Each distinct shape has a unique set of paths, and by expanding upon these shapes, we aim to derive estimations for both the minimum and maximum path counts. Once we determine the number of paths, we move on to identify the different types of clues that are essential to transform each

puzzle into a valid and engaging puzzle. This research not only enhances our understanding of Hidato puzzles but also contributes valuable insights into the intricate world of logical puzzles and their underlying structures.

Ruth Meza, Frazier Hurwin, and Chelsea Derbonne

Social Support as a LGBTQIA+ Member Within a 12 Step Program Promotes Long Term Sobriety, Occupational Participation, and Wellbeing

Abstract Purpose of this study: To describe the roles, habits, and routines that support sobriety for LGBTQIA+ persons and how they find and utilize social supports for substance use disorder recovery and/or sobriety. We described the role of social support in the maintenance of long term sobriety in LGBTQIA+ people. Participants: This study utilized purposeful (convenience) sampling of participants.

We had 4 participants total; 1 cisgendered female identifying as lesbian, 2 cisgendered males identifying as gay, and 1 nonbinary person identifying as gay. Methods: We conducted a qualitative phenomenological study and to collect our data, semi-structured interviews were conducted to gather important keywords regarding the experience of social support influencing the maintenance of recovery/sobriety. Data Analysis consisted of using Thematic Analysis by Braun and Clarke (2006).

Results: The main themes identified included: The Power of Human Connection, A Chosen Family, Use of Time, My Toolbox, and More Listening, Less judging. The themes relating to human connection and chosen family commonly have the need to feel safe. Many LGBTQIA+ persons feel safety is necessary to fully engage with their identity and the sober community. This safety is a main component of participation in recovery programs and increased occupational performance in the activities of daily living. Themes relating to time use, toolbox, and less judgements echo the need to let go of old ideas of how they lived their lives prior to participating in recovery programs. This included both changes in their social circle and daily routines. Discussion: Social support from the LGBTQIA+ community is crucial to the formation and maintenance of roles, habits, and routines that contribute to long term sobriety. Having a safe space to freely express identity in recovery leads to better experiences with sobriety, occupational participation, and wellbeing.

Kavitaben Monpara

Enhancing Financial Security: Implementation of a Credit Card Fraud Detection Model

Financial security is a paramount concern for individuals, businesses, and financial institutions alike. One of the most pervasive threats to financial security today is credit card fraud. The machine learning offers an accurate and effective solution to identify the fraud transaction. This approach supports real-time transaction monitoring and analysis, allowing financial institutions to respond swiftly to potential threats. Through this paper, I intend to discuss the architecture and key components of our model, which includes feature engineering, model selection, and ongoing model training to adapt to evolving fraud patterns. This paper offers insights into a comprehensive strategy for enhancing financial security through the implementation of a credit card fraud detection model. By leveraging the capabilities of machine learning, financial institutions can proactively combat credit card fraud, thereby protecting their customers and maintaining the integrity of the financial ecosystem.

Yahaira Montoya

Understanding Chronic Absenteeism of High School Students to Improve Attendance

Chronic absenteeism has been increasing in grades K-12 from previous years and has been exacerbated by the pandemic. While prevention improves student attendance, the type of mediation on students who are chronically absent also impacts student outcomes and overall attendance rates. Understanding why a student is absent can help to provide appropriate interventions. Using a needs assessment, this study seeks to provide greater understanding of students' motives for their chronic absenteeism from school. The needs assessment is being conducted with students at Benti High School (pseudonym) and data will be used target supports for students who are at-risk of having basic or chronic attendance rates.

Paola Moreno

The importance of ybjS and yccJ for *Escherichia coli* survival in long term stationary phase

The bacterium *Escherichia coli* is able to survive in stressful conditions without additional nutrients in a growth phase that is known as Long Term Stationary Phase (LTSP). This is one of the five phases of a bacteria life cycle: the cells leave the stationary phase, over ~99% of the cells die and the remaining cells survive into LTSP, where they can live for days or even for years. We studied the adaptation of two genes, ybjS and yccJ, on *E. coli*'s ability to survive into LTSP. In order to better understand what genes are needed for the cell to adapt and survive, a competition between a wild-type (WT) strain and strains missing the genes was performed. We found that cells that are missing ybjS, which is a gene of unknown function, are not able to survive in LTSP when competing against a WT strain. Cells that are missing yccJ, which can help the cell become more resistant to hypochlorous acid, are also not able to survive in LTSP when competing against a WT. We will continue to research more genes within *E. coli* to better understand what genes are important to be able to survive and adapt to LTSP.

Mohammad Mustafa

A Federated Based Privacy Preservation and Malware Detection

Since there is a big increase in malware attacks at a rapid rate, making users more vulnerable to cyber-attacks. There are many machine-learning (ML)/deep learning (DL) techniques developed by researchers to detect and mitigate android malware attacks. But because of advancement in technology, there is a rise in devices. Furthermore, the devices are geographically dispersed, resulting in distributed data. In that case, traditional ML/DL techniques are infeasible since all these approaches require the data to be kept in a central system; this may provide a problem for user privacy because of the massive proliferation of devices; putting the data in a central system creates an overhead. Also, the traditional ML/DL-based malware classification techniques are not scalable. Researchers have proposed federated learning (FL)-based malware classification system to solve the privacy preservation and scalability with high classification performance. In traditional FL, Federated Averaging (FedAvg) is utilized to construct the global model at each round by merging all the local models obtained from all the customers that participated in the FL. But there is a slight disadvantage in the conventional FedAvg, if one poor-performing local model is included in global model development for each round, it may result in an under-performing global model. Because FedAvg gives equal precedence to all local models when averaging. To address this issue, our main objective in this work is to design a dynamic weighted federated averaging (DW-FedAvg) strategy in which the weights for each local model are automatically updated based on their performance at the client. The DW-FedAvg is evaluated using four popular benchmark datasets, Melgenome, Drebin, Kronodroid and Tuandromd used in malware classification research. The results show that our proposed approach is scalable, privacy preserved, and capable of outperforming the traditional FedAvg for malware classification in terms of accuracy, F1 score, AUC score and FPR score.

Allen Ng

Redox Activity Vs. Substituents: Synthesis of Aryl-X And Pyridinium Substituted-1,3,5 Triazine.

Redox is a short form for Reduction and Oxidation. The stable redox active compounds are the main back bones of batteries and sensors. These compounds undergo multiple cycles of reduction and oxidation or vice versa without undergoing significant decomposition. Our research group is interested in the design, synthesis and characterization of water soluble organic redox active compounds that can be used in a water-based battery. In this regard, recently, our group published a research article which describes the redox activity of 1,3,5 tri substituted triazine derivative that showed multi redox activity in organic and aqueous conditions. In order to tune the redox activity, five compounds were synthesized by modifying the substituents. These substituents include electron donating: methoxy, methyl, and amino groups to electron withdrawing: nitro, ammonium groups. These compounds are characterized by H & C NMR, MS for their purity and identity, as well as cyclic voltammetry for their redox activity. This presentation will describe the synthesis and characterization of these compounds.

Lynn Ngo Navigating Racial/Ethnic Diversity and Numeric Marginalization in Middle School: Effects on Psychosocial Adjustment

The U.S. school-age population is becoming increasingly racially/ethnically diverse (NCES, 2022). Past research documents the academic benefits associated with school racial/ethnic diversity for adolescents (Mickelson et al., 2015). However, less is known about the costs that school racial/ethnic diversity can have on racial/ethnic minoritized students' sense of fit and psychosocial adjustment during the transition to middle school, or factors that protect against such challenges (Linn & Welner, 2007; Yip et al., 2019). The present study examined how numerical minority status impacts middle school students' feelings of belonging in school, loneliness, perceived victimization, and perceived discrimination based on race/ethnicity, and whether school ethnic climate and cross-ethnic friendships moderate these associations. Participants included 4,215 (52% female) early adolescents in the 6th grade from the UCLA Diversity Study, a larger longitudinal study of over 6,000 students. Students were drawn from 26 middle schools that varied systematically in racial/ethnic diversity which resulted in highly diverse sample. This resulted in a racially/ethnically diverse sample: 41% Latinx, 26% White, 18% Asian, and 15% White). Multiple regression models revealed that students in the numerical minority felt less like they belonged in school, felt more lonely, and perceived greater peer racial/ethnic discrimination, but did not significantly predict perceived victimization. These effects were moderated by cross-ethnic friendships which buffered the negative psychosocial outcomes for students in the numerical minority. School ethnic climate did not moderate these associations. Findings suggest schools should create more inclusive educational environments by promoting intergroup friendships.

Francisca Nuñez

The Astos' Settlement Pattern in the Late Intermediate Period

Using satellite imagery has allowed this project to survey otherwise inaccessible landscapes within the Vilca Valley, in the Peruvian Central Andes, a disregarded geopolitical region despite its ancient architectural remains that have evidenced its continued occupation since pre-Hispanic times. The intensive exploitation of its mercury mines has paralleled the economic importance of its cities during the colonial times; while the rural populations underwent a forced spatial reorganization following Toledo's reductions plan. The Vilca Valley was subject of the A-C-L Project, which in the 60's and 70's, performed the first archaeological research to understand the ethnic group Astos. The Astos was a pre-Hispanic chiefdom within the Angara ethnic group. The Astos inhabited an area delimited by the rivers Vilca and Mantaro, where Daniël Lavallée and Michèle Julien recorded and analyzed twenty-seven archaeological sites distributed between 3,600 and 4,400 masl. The spatial usage of this area reflects the settlement pattern associated with the Late Intermediate Period (LIP), which is characterized by circular stone structures on the mountaintops in the Peruvian highlands. Researchers relate the defensive strategic location of these villages to socio-political conflicts among the LIP highlanders. No archaeological site was recorded on the lower areas, at the base of the mountains and near the water resources. Using and examining the satellite imagery provided by Google Earth and SIGDA (website of Ministerio de Cultura del Peru), this virtual survey along the Vilca valley was able to identify a few sites of archaeological interest nearby Astomarka, the village deemed the Astos' capital. Said new sites do not completely fit within the LIP settlement pattern, since one of them, despite its domestic function, is not located on top of any mountain but in a lower vulnerable area. This project has arrived at more questions than answers and needs to test in-situ its unexpected findings.

Francisca Nuñez

Beheading cut marks as indicators of cultural traditions and specialization

This research has focused on the ancient beheading practice within the Central Andean region, where it can be found in warfare and rituals contexts. Since they were practices regulated by the ruling class, beheading could have been a specialized activity performed only by skilled specialists in ceremonial contexts vs. careless warriors in the battlefield. If so, could the specialists have achieved an advanced

knowledge of the neck anatomy to produce less damage to the head and/or to ease their function with less energy invested in the task? To answer this question, this study aims at identifying the regional differences within the beheading archeological records from the north, central area, and the south of the Peruvian Andes, where unrelated cultural traditions developed during pre-Hispanic times. First, a review of ethnographic, iconographic, and bioarcheological evidence will be presented as to compare and contrast the beheading graphic representations with the osteological remains. Second, an emphasis will be placed on the analysis of the bones mostly affected by the beheading process. The purpose of this research is to understand a long-term traditional practice under the influence of different pre-Hispanic political developments. To investigate if skilled beheading specialists developed a special knowledge of the human neck anatomy to reduce their energy investment in their task vs the careless warriors in the battlefield. The conclusion this research arrived at is that beheading was one of the specializations that supported the ancient Andean ruling class to keep its status and control over its own community and others as well. This research partially answered the question if beheaders achieved a high knowledge of the neck anatomy while frequently performing their task. The four crania at a Moche site Dos Cabezas seem to confirm it, but more research is needed to learn at what extend this could be true.

Dwanjai Oprien

Supply Chain Resilience through Transportation Modal Flexibility

The literature indicates that the flexibility strategy can mitigate supply chain risks and enhance resilience. This study uses manufacturing industry-level data to investigate the shares of different transportation modes in global supply chains during the pandemic and the impact of transportation modal flexibility on inventory efficiency.

Brianna Orantes and Sandra Flores

Use in situ hybridization to study the expression patterns of skin enriched genes in zebrafish embryos. The skin is the largest organ. It plays an intricate role in our sensory experiences and overall well-being. Its complex network of cells, plus the interface with touch-sensing neurons still is a subject of thorough research. Our main interests are how different cells communicate with each other and how cells with the same DNA differ in cell types. In this study, we apply the unique advantages of the Zebrafish model organism to investigate the development of skin cells and their functions. We picked two skin enriched genes encoding transmembrane proteins based on our previous RNASeq studies, and to further examine their involvement in skin development and its interactions with sensory neurons by performing in situ hybridization during the embryonic development. In situ hybridization is a method used in zebrafish research to study gene expression spatially. This emphasizes high-throughput analysis and high-resolution examination of gene expression. Key steps include sample preparation, design and labeling of RNA probes, hybridization, washing, detection, and analysis. This is a method to visualize the genes' expression patterns in the whole embryo. It is adaptable for both large-scale studies and focused analyses of single genes at specific developmental stages which is what we will be examining. By embarking on this project, we anticipate uncovering a better understanding of genes important for skin development and potentially assist in medical applications. For example, in diagnosing and treatment for skin diseases. This research will not only advance our understanding of skin biology but open new innovations to enhance human health and overall well-being.

Julianna Ortega

Food Access and Cultural Knowledge Through Chicana Epistemology

Heart disease and diabetes are some of the leading causes of death among Latinos in the U.S., Mexicans make up about 60% of the demographic (Office of Minority Health, n.d.). A traditional Mexican diet is very nutrient dense due to its emphasis in whole foods, fresh produce, and herbs. To be able to acquire access to a traditional Mexican Diet here in the U.S., whether it be the understanding of how to prepare the dishes or the food itself, is a complex issue that must consider the topic of food politics as it relates to capitalism; where food and agriculture are converted to be commodities (Nestle et al., 2021). Using the

framework of Bernal's (1998) Chicana feminist epistemology, I plan to continue to conduct ethnographic field research to compare my experience in Jalisco, Mexico in the summer of 2023 to being a Chicana living here in the U.S. in the city of Wilmington, a working class primarily Latino community, as a way to provide an alternative manner of understanding the inequalities disenfranchised Latino communities face in regards to access to healthy affordable food and food knowledge. I began preliminary research in Mexico over the summer to understand access to food and am hoping that after conducting interviews over the next month that I will be able to get a better understanding of what it is to eat and have access to a traditional Mexican diet for Mexicans and Chicanos here in the U.S. while living in under the economic pressures of capitalism where basic needs, like food, are commodities.

Karen Ortiz

Importance of Equipping California Community College Counselors to Support Formerly Incarcerated Students

Yucel (2022) discusses that Los Angeles and San Bernardino Counties had more than 14,000 individuals released on parole from 2018 to 2019. Although these counties had the highest number of paroles released in Southern California, only 67% of Los Angeles and San Bernardino Counties colleges offer programs for formerly incarcerated individuals. Who supports formerly incarcerated students when there is no program? Research shows the importance of college staff helping formerly incarcerated students persist through their educational trajectories. Using a needs assessment, the study seeks to learn how prepared counselors at a community college in Southern California feel about supporting and providing resources for formerly incarcerated students when there is a lack of programs at their community college campus. Preliminary data shows the need for additional training for community college counselors to support this student population.

Joseph Pacheco

Meeting Students Where They Are: Career Needs Among Students at Long Beach City College

Using a needs assessment, this study seeks to evaluate the potential causes impeding students at Local Best College from utilizing the Career Center's services. Shifting demands in career selection has altered students' preferences for educational goals and therefore, has affected enrollment and the desire to engage in workshop and service offerings. The utilization of workshop services has been a longstanding problem among Local Best College students and has heightened following the COVID-19 pandemic. Preliminary findings show that while 81% (17) of student respondents have heard of career services, only 48% (10) have utilized them. Student respondents indicated that they most often have used academic counseling and major exploration and would like to continue to use academic counseling in addition to employment services. Although inconclusive, the overall results from the study had several positive implications for enhancing career services which highlighted that the majority of students may be opting for tangible on-demand income and employment while also prioritizing long-standing career aspirations. Preliminary data also suggests that workshop topics and hours offered for workshops may hinder students from utilizing the center's services.

Caleb Padilla

Underserved Students and Their Experience with Data Analysis Software: Their Self-assessment and Motivation to Learn

Background: Underserved students, including first-generation students, often face unique challenges in accessing the latest computer information technologies and developing skills to use those technologies. Purpose: This study aims to assess students' knowledge and skills in using data analysis software, such as Microsoft Excel. In particular, the study answers two questions: Does students' self-assessment vary by gender, employment status, or first-generation student status? Does students' self-assessment affect their motivation to learn Excel for data analysis? Method: A data sample of 137 survey responses was collected from students in a minority-serving public university. We performed ANOVA analysis to examine whether students' self-assessment varied significantly across different student demographics, including gender,

employment, and first-generation status. We performed regression analysis to examine the effect of self-assessment on students' motivation to learn Excel for data analysis. Results: The analysis revealed no significant differences in self-assessment levels based on gender or employment status. However, we found significant differences in self-assessment ($p < 0.001$) between first-generation students and their peers. This result indicates that first-generation students show lower self-assessment ratings in their Excel skill. We also found that the self-assessment has a significant, negative effect on students' motivation to learn Excel ($p < 0.014$). Conclusion/Implications: Our findings highlight the need for implementing educational strategies to enhance data literacy skills among first-generation students. Such strategies are vital for enhancing these students' self-assessment and proficiency in using spreadsheet software, which are in high demand in the data analysis field.

Caleb Padilla

Understanding Students' motivation to learn Spreadsheet software: An empirical study

Background: The cultivation of data literacy is essential in modern education, especially for under-served and first-generation students, who often face unique challenges in accessing and engaging with data-driven learning. Navigating and interpreting data accurately to make sound decisions can be an intimidating process therefore can lower students' motivation. Purpose: This study aims to assess students' motivation towards using spreadsheet software, such as Microsoft Excel. In particular, the study answers the two questions: What drives students to learn Excel skills? Do motivations vary by gender, employment status, or first-generation student status? Method: A data sample of 137 survey responses was collected from students in a minority-serving public university. We employed ANOVA tests and regression analysis to analyze the ratings students provided on a 1-5 Likert scale regarding their motivation levels. This analysis focused on the implications students have rated for utilizing Microsoft Excel in tasks such as data organization, analysis, chart and graph creation, use in their professional careers. The study examined whether these motivations varied significantly across different student demographics, including gender, employment, and first-generation status, and their self-rated Excel experience. Results: The analysis revealed no significant differences in motivation levels based on gender or employment status. However, we found significant differences in motivations to learn Excel to organize data ($p=0.004$), to analyze data ($p=0.045$), to visualize data ($p=0.023$) and for professional career ($p=0.054$) between first-generation students and their peers. This result indicates that first-generation students showed lower motivation for using Excel software. Conclusion/Implications: Our findings highlight the need for specialized educational strategies to develop data literacy skills among first-generation students. Such strategies are vital for enhancing these students' motivation and proficiency in using digital tools like Excel, which are essential for their academic and professional advancement.

Celest Padilla

Navigating Borders: Assessing the Impact of the 100-Mile Border Zone on Migrant Mobility

San Diego County, California is part of the '100-mile border zone,' also known as the 'Constitution-Free Zone,' where people are subject to arbitrary stops and searches without a warrant or probable cause at U.S. Border Patrol checkpoints that are located within 100 miles of the international border.

Consequently, peoples' mobility in San Diego County is regulated by essentially two borders—the international San Diego/Tijuana border and a line of traffic checkpoints that regulate entry and exit into the region. Despite undocumented San Diego residents' daily challenge to navigate checkpoint operations on their way to work, school, or even the grocery store, little is known about these checkpoint operations. The project aims to determine the constitutional legality of immigration checkpoints and how they are being used to enforce the border. For this study, I conducted a policy evaluation of checkpoint operations in San Diego County to assess border enforcement measures' impact on the region. I compiled a policy timeline of immigration policies, regulations, and laws to demonstrate how checkpoints are used legally to racially profile anyone of Mexican heritage within the 100-mile border zone. Ultimately, I find that checkpoints are an extension of the international border that work together to manage migration into the interior of the United States through confinement and deterrence.

Jill Pascual

The Effects of Immune Checkpoint Inhibitors on Killing Activity of Natural Killer Cells Against Multiple Myeloma Cells

Immune checkpoints are critical cellular pathways that regulate immune responses to pathogens and prevent conditions such as autoimmune diseases. However, in cancer, malignant cells take control of these pathways to prevent immune cells from attacking them. One of the best-known examples is the PD-1/PD-L1 pathway between cancer cells and T cells, which results in the inhibition of T cells' function against tumor cells. While this pathway's effect on T cells have been well-studied, little is known about their effect on the killing activity of natural killer (NK) cells. This study explored the effects of PD-1/PD-L1 inhibitors, such as pembrolizumab and durvalumab, on human NK cells with the goal of enhancing their killing activity against various blood cancer cell types. Experiments began with the assessment of GFP-based cytotoxic assays through serial dilutions of GFP-expressing multiple myeloma tumor cells, which displayed a direct correlation of fluorescence with cell numbers and confirmed the assay's accuracy. Subsequent cytotoxic assays involved incubating GFP-expressing multiple myeloma cells with untreated NK cells, resulting in a baseline killing activity of 40-65%. In regards to the question of whether blocking immune checkpoint pathways could enhance NK cells' killing ability, it first needed to be known if NK cells expressed PD-1 protein (which is required for the binding of immune checkpoint inhibitors). Western Blotting of NK cell protein extracts revealed a weak presence of PD-1 protein. Although this finding is supported by prior studies, ongoing investigations aim to support this result. Upcoming experiments involve both the usage of cytotoxic assays and the administration of PD-1 inhibitors to NK cells, with the expectation that PD-1 inhibition will intensify NK cells' killing efficacy against multiple myeloma cells.

Soham Patil

Data Preservation in Robotic Sensor Networks: Covering Salesman Approach

Wireless Sensor Networks (WSNs) are integral to data collection in various domains, from environmental monitoring to precision agriculture, owing to their distributed and versatile nature. In this context, existing approaches often rely on conventional base stations, which may encounter challenges in optimizing data collection efficiency and minimizing associated costs within networks. Our proposed approach introduces a paradigm shift, envisioning a WSN where each sensor node operates within a designated communication range. Data transfer seamlessly occurs when a mobile sink/robot enters a node's communication range, revolutionizing the traditional data collection model. To augment efficiency, we introduce the concept of "collection points" strategically positioned to intersect communication ranges, offering an innovative solution to maximize data collection while minimizing traversal costs. We will incorporate this approach in two different Greedy Algorithms and Reinforcement Learning algorithms. To demonstrate the effectiveness of our approach, we will compare it with baseline approaches where the robot conventionally visits each sensor node location. This proposed methodology represents a significant departure from conventional WSN architectures, presenting a promising avenue for redefining the landscape of data collection in distributed sensor networks. As we explore this novel approach, we anticipate transformative outcomes in terms of enhanced data collection efficiency and minimized operational costs, paving the way for further exploration and validation in real-world applications.

Arianna Peredia

Examining the Validity of a Non-Invasive Biosensor Device for Heart Rate Variability during Pregnancy

Introduction: High levels of stress during pregnancy can negatively impact maternal and infant health including increased risk for preterm labor and birth complications. Wearable mobile biosensor devices are small, noninvasive devices that may allow healthcare providers and patients the ability to measure health outcomes at home throughout the course of pregnancy. However, few studies have established the validity of these mobile devices for monitoring stress physiology during pregnancy. **Objectives:** The goals of this

project were to (1) Examine the validity of a mobile health device (movisens EcgMove4) for measuring heart rate (HR) and heart rate variability (HRV) in pregnancy; (2) Examine differences by age, race, and trimester. Methods: Participants included N=73 pregnant women (68% Black, 27% White, 4% Multiracial) from an ongoing longitudinal study in Pittsburgh, Pennsylvania. HR and HRV were simultaneously measured using the movisens EcgMove4 device and a traditional ECG monitor while participants watched a relaxing 5-minute video. Results: The mobile sensor device was able to calculate HR data for 97% of participants and HRV data for 77% of participants. Among participants with data collected from the mobile sensor, HR and HRV scores were highly correlated with scores collected using the traditional ECG monitor ($r = .807$, $p < .001$ for HR and $r = .988$, $p < .001$ for HRV). The likelihood of having valid HRV data from the mobile sensor was not significantly correlated with participant age ($r = .19$, $p = .11$). It did not differ by race ($\chi^2 = 2.53$, $p = .112$) or pregnancy trimester ($\chi^2 = .09$, $p = .77$). Conclusions: The movisens EcgMove4 allows for live monitoring of psychophysiology from the comfort of patient homes. These findings are critical for prenatal monitoring such as high risk pregnancies in clinical practice, in addition to potential early detection of complications.

Nadine Perez

Enhancing Student Success: An Evaluation of the 7-Step Matriculation Process

This study aims to assess the effectiveness of the "7-Step Matriculation Process" implemented at "LA's Best" College in facilitating student success and knowledge as they pursue their educational objectives. The matriculation process was designed to address barriers faced by new, current, and prospective students during enrollment, course registration, financial aid application, and the establishment of a support system. Despite its intended benefits, "LA's Best" College reports a mere 19% of students successfully completing their educational goals, including timely graduation with degrees or certificates (NCES, 2019). Data also shows that 9% of students who enrolled at "LA's Best College" in Fall 2018 graduated in a "timely time" and 23% graduated in twice as long as "normal time" for their program (NCES, 2019). Building on research by Ballysingh et al. (2021) and Taylor and Kiovisky (2014), which emphasize the pivotal role of counselors in student registration continuity and the positive correlation between program contacts and retention and graduation outcomes, this study employs a needs assessment to identify areas of the matriculation process requiring reassessment. By examining the matriculation experiences of both first-time and returning students, the study focuses on successful transitions to "LA's Best" College, incorporating elements such as a completed application, a comprehensive educational plan, a robust support system, and access to financial assistance if necessary. Preliminary needs assessment data suggests that students engaged in specialized support programs (e.g., CalWORKs, NextUP, EOPS, CARE) exhibit greater success in completing the 7-step matriculation process. Furthermore, students with access to a dedicated program counselor demonstrate increased guidance and support, positively influencing their likelihood of returning and graduating. Data from the needs assessment will inform the updating of the matriculation process to ensure the overall student population achieves success on par with students benefiting from personalized guidance throughout their academic journey from specialized counselors.

Angel Perez

Concepts Most Successfully Learned and Most Challenging to Students in a Redesigned Pre-Calculus Course

Pre-Calculus is considered one of many gate-keeper courses for STEM college students (Viera Jr et al., 2019). To better support students in Pre-Calculus, various college-level institutions have redesigned their Pre-Calculus courses to address learning challenges and inequities faced by students. For instance, Jones & Lanaghan (2021) redesigned the Pre-Calculus course to incorporate a standards-based grading system, active learning practices among students, and emphasis on developing a growth mindset. Students in their redesigned Pre-Calculus course passed the class at a higher rate than those enrolled in the traditional Pre-Calculus course, with a difference of 38.3% higher. Additionally, students in the redesigned Pre-Calculus course passed their Calculus I course at a higher rate, with a difference of 3.1% higher. Despite the overall

improvement and encouraging outcomes to the course, further learning challenges still need to be addressed. This study seeks to answer the following research questions: 1) What concepts are most successfully learned by students in a redesigned Pre-Calculus course? 2) What concepts are most challenging to students in a redesigned Pre-Calculus course? Data from 58 students enrolled in all sections of a redesigned Pre-Calculus course in Spring 2023 were analyzed quantitatively, using descriptive statistics. Discussion and implication for teaching will also be shared.

Zulema Pettway

The Perspectives of Siblings of Individuals with Developmental Disabilities

Extensive research has been conducted on the roles and responsibilities individuals assume growing up with a sibling that has a developmental disability and how sibling dynamics change over time, and the emotions that come with it (Vert et al., 2017; Hayden et al., 2023; Hall & Rossetti, 2015). This study seeks to merge previous findings and onto them by taking a deeper dive into the specific perspectives siblings of individuals with a developmental disability have on Special Education. Investigators will conduct the study by way of interviews and will use a phenomenological approach to understand the relationship between the siblings and the impacts and views on education (Researching Lived Experience in Education, n.d.). There is no study hypothesis as the researchers are trying to understand the phenomenon of having a sibling with a disability. As investigators await IRB approval, the expectation will be to recruit participants and have them screened through Qualtrics through a QR code to make sure they fit the criteria of being an English-speaking adult with a sibling that has a developmental disability.. The anticipated number of participants ranges from 8 to 10. Once approved participants provide informed consent, they will be prompted to fill out an initial questionnaire to gather demographic information prior to the interview, which will then be conducted with a few broad questions to probe a conversation about their experiences growing up with a sibling in special education classes and their perspectives. These narratives will then be coded by themes until saturation is reached, which will provide an understanding of the phenomenon found in the relationship between the siblings and the impacts and views on education. Potential impacts of this research include informing family-centered practices within school districts and future teacher candidates to support students with developmental disabilities, as well as their siblings.

Maricielo Portugal Alvarez

Evaluating the Effectiveness and Visibility of Services for Undocumented Students

The purpose of this study is to assess how undocumented students at Program College (pseudonym) feel about the services offered to them, if they are aware of the services, and any recommendations they have for the institution to ensure their success. Using a needs assessment, the study seeks to evaluate the visibility of services offered to undocumented students through the Fly Program (pseudonym) and how outreach measures can be improved. Preliminary data indicates that although most respondents are aware of the services offered, many have not utilized them due to the program's hours of operation and lack of a physical Dream Center.

April Princing

Identifying the Role yigZ and ymgF Play in Long Term Stationary Phase in *Escherichia coli*

Identifying the Role yigZ and ymgF Play in Long Term Stationary Phase in *Escherichia coli* April Princing *Escherichia coli* goes through four stages of its life cycle before reaching its final stage of long term stationary phase (LTSP), where it encounters stress from a nutrient deficient environment. After growth, the cells enter what is known as "death phase" where >99% of cells die off immediately following the cell's stationary phase; the remaining cells then enter LTSP. *E. coli* is able to overcome stress from its environment and continue to grow by accumulating genetic adaptations. The *E. coli* genes that impact survival in this phase are widely unknown. A previous screening of *E. coli* strains each missing a single gene done previously in the lab revealed 101 possible genes that can affect survival when competing against wild type *E. coli*. To confirm their importance to survival I observed the growth of

mutants $\Delta yigZ$ and $\Delta ymgF$ in competition with the wild type *E. coli* strains. We found that strain $\Delta yigZ$ has little to no difference in growth when competing against the wild type. The strain missing $\Delta ymgF$ also did not show a significant difference in growth when competing against the wild type. These results show that at least two of the initially screened genes are not important to the survival of the cells when in LTSP, but continued research will identify if other genes from the original screen affect growth in this environment.

Jose Quintero

Mapping the Ancient Maya site of Xanab Chak

Archaeologists have been studying the ancient Maya Civilization since the late 1800s, and yet there is still quite a lot we do not know about the earliest agricultural communities in the northern Maya lowlands. Xanab Chak is a small archaeological site in the Puuc region of northern Yucatan, Mexico, that dates primarily to the Preclassic Period (c. 900-300 BCE). During the summer 2023 research season, I worked with my classmates and Dr. Seligson to investigate the chronology and construction sequence of the site. For my project, I mapped the northernmost part of the site to better understand how big Xanab Chak truly was and how many people may have lived there. To map the structures, I combined a handheld GPS unit and print copies of lidar-derived digital elevation models. Many structures did not appear in the digital maps, and I was only able to register them through a pedestrian survey. Upon reaching the residential platforms and structures deep in the forest, I measured all of the features with a tape and compass, and sketched out the shape of the structures on top of my lidar map. In the lab, I used QGIS geospatial software to transform my sketches into digital architectural maps. In total, I mapped six different platforms and eighteen residential structures, most of which were not visible in the digital models. The identification of several additional residential platforms confirmed my hypothesis that the Preclassic communities in the Puuc Region were not as small nor isolated as previously thought. My work also refined the methodological approach to studying these earliest settlements by highlighting both the usefulness of lidar (in identifying larger platforms) and its limits (in terms of not being able to identify the smaller Preclassic residential structures). These findings will have implications for understanding other early communities in the region that may have architectural remains not readily visible on the surface.

Joshua Quiran

Efficacy Assessment of SF001, a Third-Generation Polyene Antifungal, in the Immunosuppressed Mouse Model of Invasive Pulmonary Aspergillosis

Objectives: Invasive pulmonary aspergillosis (IPA) poses a significant threat with high mortality, primarily attributed to *Aspergillus fumigatus*. Emerging cases involve species resistant to current antifungal therapies, necessitating novel approaches. SF001, a 3rd generation polyene, was designed for enhanced efficacy and reduced nephrotoxicity. We aimed to compare SF001 to LAMB in a neutropenic mouse model of IPA induced by *A. fumigatus*, *A. lentulus*, or *A. calidoustus*. **Methods & Materials:** In vitro susceptibility testing, following CLSI M38, utilized clinical isolates: *A. fumigatus* AF293, *A. lentulus* AL1, and *A. calidoustus* AC6. Immunosuppressed ICR mice were infected through intranasal inhalation (*A. fumigatus*) or intratracheal instillation (*A. lentulus*, *A. calidoustus*). Treatment (iv, qd) commenced 16 h post-challenge with SF001 (0.3-30 mg/kg) or LAMB (5 mg/kg), lasting 4 days (*A. fumigatus*, *A. lentulus*) or 7 days (*A. calidoustus*). **Results:** SF001 demonstrated potent in vitro activity (MIC₁₀₀: *A. fumigatus* 0.5 µg/mL, *A. lentulus* 2 µg/mL, *A. calidoustus* 1 µg/mL), surpassing LAMB (*A. fumigatus* 0.06 µg/mL, *A. lentulus*, *A. calidoustus* >16 µg/mL). SF001, doses >1.5 mg/kg, improved median survival and overall percent survival versus placebo. LAMB (5 mg/kg) enhanced *A. calidoustus* survival but less for *A. lentulus*. SF001 exhibited dose-dependent efficacy, with the highest dose (30 mg/kg) well-tolerated and significantly enhancing survival compared to LAMB. Moreover, SF001 (30 mg/kg) led to substantial reductions in lung fungal burden compared to placebo and LAMB (5 mg/kg) in *A. fumigatus*-infected mice. **Conclusions:** SF001 is a 3rd generation polyene that has more potent in vitro activity compared to LAMB against select "polyene-resistant" *Aspergillus* species. SF001 demonstrated

dose-dependent efficacy, was well-tolerated and improved survival in a mouse model of IPA caused by *Aspergillus* species that exhibit polyene resistance.

Farshid Raminfar

Having ethnically discordant healthcare providers or impersonal experiences and others due to the healthcare system in general.

Elder populations preferred ethnically concordant care providers more than younger participants. Factors that influenced healthcare experiences were the language accessibility, patient-provider rapport-building opportunities, cultural awareness or consideration during the treatment process, and the U.S. healthcare system itself. Discussion: More research is needed to discover provider strategies that improve the healthcare experience for Latino/a/x clients. All rehabilitative care providers should seek to build trust and collaborate with their clients in order to build rapport, maintain motivation, and client-centered care. This rapport building should include building an inclusive and safe environment that allows clients to having ethnically discordant healthcare providers or impersonal experiences and others due to the healthcare system in general. Elder populations preferred ethnically concordant care providers more than younger participants. Factors that influenced healthcare experiences were the language accessibility, patient-provider rapport-building opportunities, cultural awareness or consideration during the treatment process, and the U.S. healthcare system itself. Discussion: More research is needed to discover provider strategies that improve the healthcare experience for Latino/a/x clients. All rehabilitative care providers should seek to build trust and collaborate with their clients in order to build rapport, maintain motivation, and client-centered care. This rapport building should include building an inclusive and safe environment that allows clients to

Exploring the transformative impact of social media on governance and public engagement, this study aims to assess the effectiveness of social media as a tool in enhancing democratic processes, particularly within the context of municipal governments in California. The scope of the study includes an analysis of social media communication strategies used by local governments and their impact on fostering citizen participation and engagement. The study sample consists of 46 California municipal governments with populations of more than 50,000 people that have published social media policies on the governments' websites. The research employs qualitative research methods analyzing the use of social media platforms and related policies of the selected municipal governments. It involves examining the patterns of public participation that emerge from these interactions and evaluating the impact of these dynamics on governance and civic engagement. The study integrates data from social media platforms and government publications to show the interaction between government entities and citizens in the digital space. The literature suggests that social media platforms are pivotal channels for government-citizen communication. These platforms enable governments to disseminate information transparently and effectively and engage in interactive, two-way communications with citizens. Significantly, social media has been instrumental in mobilizing historically underrepresented groups in governance, fostering a more inclusive approach. The study will also identify challenges, including issues related to genuine communication, inclusivity, accountability, and inherent biases within social media platforms. Concerns regarding the reliability of information and integrating these platforms into existing governmental structures will also be highlighted. The research will contribute to the literature regarding the use of social media for enhancing democratic engagement and public participation in governance. It will also provide practical implications for public managers who face various challenges in the adoption and use of social media. The study will also suggest future research directions.

Stephania Ramirez and Ana Ponce

Investigation into the Pharmaceutically Relevant Bioactivity of Fungal Metabolites from a *Fusarium* sp. and *Malbranchea* sp.

The overall goal of this research was to identify secondary metabolites from marine-derived fungi that exhibit cytotoxic activity towards a brain cancer (U87) cell line. Secondary metabolites (aka natural products) are compounds produced by living organisms. These small molecule chemical entities have played an important role in traditional medicine for thousands of years and are an essential part of the

current therapeutic arsenal for modern medicine. Presently, ~65% of all approved pharmaceuticals are either natural products or derivatives thereof. The specific aim of this project was to screen metabolites from two strains of fungi, *Fusarium* sp. CREWS 09, and *Malbranchea* sp. CREWS 41. Both strains were cultured on rice media and the metabolites they produced were extracted. Each compound present in the extract was purified using high performance liquid chromatography and their structures determined using mass spectrometry, NMR, and circular dichroism spectroscopy. The purified metabolites were screened against the U87 cell line using a sulforhodamine B (SRB) cytotoxicity assay. For compounds that exhibited activity their half maximal inhibitory concentration (IC₅₀) was determined. This research enhances the knowledge of the chemical scaffolds that can be used in drug lead development of cancer therapeutics.

Kimberly Randolph

The effects of genes *yhfK* and *ygbE* on *Escherichia coli* during long term stationary phase

Escherichia coli can adapt to live in an environment without additional nutrients for an extensive period. Whenever *E. coli* is in an environment where nutrients are rare in the laboratory, they can enter long term stationary phase (LTSP), which may more closely imitate a natural environment. My research involved the characterization of the role of genes *yhfK* and *ygbE* during the *E. coli* life cycle, and specifically whether they are important for survival in LTSP. There has not been much research conducted on LTSP which means the genes responsible for the ability to survive in these conditions are not completely known. To understand which genes are needed for continued cell growth and evolution, competitions between wild-type (WT) & mutant strains (*yhfK*, *ygbE*) were conducted. *yhfK* encodes a putative transporter and is important for resistance to the toxic chemical, bromoacetate. Through experimentation using gene competitions we found that *yhfK* does not have an effect on *E. coli* during long term stationary phase when deleted from the genome. *ygbE* encodes a protein of unknown function, but is found in the inner membrane of the cell. Investigation into the role *ygbE* is ongoing.

Stephanie Rauda, Kenia Vidal, and Rochelle Johnson

Optimizing HIV-1 p17 Protein Expression

The human immunodeficiency virus (HIV) is a viral infection that endangers and reduces the host's quality of life. Our research focuses on the interactions between the HIV-1 p17 protein and heparan sulfate through the use of NMR and computational modeling. The identification of the preferred binding interaction of p17 to heparan sulfate can present a better understanding of how the virus adheres to cells and replicates, leading to the potential development of an antiviral drug treatment. In order to characterize these interactions, it is necessary to establish a reliable and consistent method for the expression of the protein. The HIV-1 p17 was expressed in *E. coli* using the pET 16b-plasmid, then systematically tested under growth and purification conditions to optimize the protein yield. Using the purified p17, NMR titration, STD, and transferred-NOSEY studies will be performed to identify the structural features of strong and specific binding. Furthermore, computational modeling will be used to study the protein-ligand complexes and to gain a more comprehensive understanding of the interactions between the HIV-1 p17 and heparan sulfate.

Sarah Reyes-Vizcarra

Boron in Wastewater: Unveiling Its Environmental Impact

Boron is the 51st most commonly found element in the earth's crust, and along with many other pollutants, is commonly found in wastewater. Industrial users that generate wastewater in Oxnard, California must regularly test their water, and the results must stay within the regulatory bounds established by permits. Permits are created by the City of Oxnard for businesses in the Oxnard area. The City of Oxnard has mandated companies to test for boron monthly but recently has raised more interest and is now required to be tested bi-weekly. High concentrations of boron can cause harm to plants, animals, and humans if ingested. This research compared the wastewater of three different businesses located on the same street in Oxnard, California, and determined whether they fell within EPA set limits

and city limits. Throughout this research, it was discovered that wastewater produced by industrial users in Oxnard is sent to the City of Oxnard's Wastewater Treatment Plant, where it is further filtered and used to recharge basins, indirect potable use, sent to the ocean or sent to the City of Oxnard's Advanced Water Filtration Facility (AWPF) for further purification. Boron compounds are among the most widely found compounds on earth, as we move forward in recycling our wastewater, the biggest concern is to protect our public health.

Kyle Riley, Joanna Redelman, Alejandro Gutierrez, and Karen Arredondo

The Context of the Latino Healthcare Experience

Purpose: The aim of the study was to understand the Latino demographic's rehabilitative healthcare experience and to determine the importance of ethnically concordant care. Methods: Six Latino/a/x individuals that have received rehabilitative services in California were identified and interviewed by researchers through convenience and snowball sampling. Braun and Clarke's 6 step qualitative thematic analysis method was used to code data and determine themes. Themes were generated inductively by researchers coding interviews and triangulated. These themes were then related to the Health Belief Model to further analyze the data. Results: Latino/a/x individuals referenced experiencing many obstacles to their healthcare: some due to express cultural differences, notably communication in their chosen language through a translator or ethnically concordant care provider, and build connectedness with their rehabilitative team. The U.S. medical system itself should improve care coordination services by decreasing referral times, easing the burden of navigating healthcare systems like insurance, and offering more convenient scheduling options to improve client satisfaction.

Jesus Rocha

The Digital Divide

This research delves into the necessity of cultivating digitally literate individuals, particularly focusing on underrepresented students. The study advocates for emphasizing the need for a feedback system that empowers students to identify and bridge gaps in their digital skill sets. Traditional digital literacy frameworks, often centered on access, are critiqued for neglecting deeper disparities in digital fluency. This research posits that a more comprehensive framework should encompass problem-solving, collaboration, and considerations for digital well-being and safety. It contends that this approach is vital to addressing the nuanced challenges faced by underrepresented groups, who may exhibit low knowledge of being comfortable with certain technologies but lacking critical thinking skills. The study aligns with UNESCO's definition of digital literacy, emphasizing the ability to access, manage, understand, integrate, communicate, evaluate, and create information safely through digital technologies. However, it goes beyond advocating for a shift to a "digital by default" paradigm, acknowledging the pandemic's accentuation of inequities in higher education. To bridge the digital divide, the research outlines key elements for digital inclusion, including affordable broadband, suitable devices, digital literacy training, quality technical support, and empowering online content. It underscores the importance of confidence in using technology, especially in online learning contexts, and urges purposeful investment in lifelong digital proficiency programs starting from K-12. In addressing the challenge of standardized digital literacy assessments, the research advocates for context-specific and fit-for-purpose evaluations. It suggests a focus on self-reporting and self-assessment, emphasizing cognitive skills relative to digital tools rather than mere technology competence. In conclusion, this research proposes a culturally responsive feedback system, comprehensive frameworks, and purposeful investments as essential components in enhancing digital literacy. By addressing disparities and empowering underrepresented students, these measures contribute to a more inclusive and equitable digital landscape.

David Rocha

Optimization of periodate dose used for manganese assay as permanganate

This study aimed to discover the lowest amount of periodate oxidizer that can be used to reliably and quantitatively produce permanganate from manganese. The known reaction is $2\text{Mn}^{2+} + 5\text{IO}_4^- + 3\text{H}_2\text{O} \rightarrow$

$> \text{MnO}_4^- + 5\text{IO}_3^- + 6\text{H}^+$. That is, two moles of manganese(II) react with five moles of periodate ion to produce one mole of permanganate ion. In practice, nearly seventy times the stoichiometrically required amount of periodate is used for this reaction in the undergraduate analytical chemistry teaching lab. Using so much periodate is expensive, it is hard to dissolve in the reaction mixture, and sometimes, under extreme conditions, produces hazardous vaporized iodine. The less reagent used, the cheaper and safer the experiment. The investigation strategy method involved setting up an array of permanganate development experiments, using a range of levels of periodate oxidizer. The absorbance of the resulting pink permanganate solutions was measured at 525 nm, and calibration curves were developed for each periodate dose. Samples containing an unknown concentration of manganese were similarly treated, and the concentration of manganese in each unknown sample was derived from each calibration curve. Statistical analysis was used to determine if the calibration and assay results were significantly different than the current method that uses the excess periodate.

Jose Fabian Rodriguez

The Proton-Proton Elastic Scattering Process

Recent efforts in experimental nuclear physics have included processes induced by particles with very short lifetimes. Such particles travel only a few cm before decaying. To maximize the flux of our beam particles, it is necessary to produce them inclusively, without knowing the details of how they were produced. All of the information about our beam particle is then reconstructed using only the final-state particles. To verify this technique, we are measuring the process $pp \rightarrow pp$ using the CLAS detector at the Thomas Jefferson National Accelerator Facility in Newport News, VA. This process has been measured many times by many different groups, and a precise data set is available for comparison with our results. In our measurement, the initial proton is produced using a photon beam that interacts with a liquid hydrogen target. This proton then interacts with a second proton in the same liquid hydrogen target, resulting in the $pp \rightarrow pp$ process. The challenges faced with this technique are the determination of the incident proton flux and the effective target thickness. This talk will discuss the inspiration behind this research, the current status of the analysis, and future applications of this technique.

Noe Rodriguez Cisneros, Michael Nishimura, Hernan Sebastian, and Jacob O'Malley

Immigration's Impact on Patterns of Occupation for Older Adults from Rural Latin America

Immigration from one region to another, particularly when population densities are dramatically different, can create a major change in lifestyle and routines. These substantial changes factor into social determinants of health and may affect immigrant populations negatively if they are not given the proper assistance. Occupational therapists and other healthcare professionals can assess these health determinants and are well-equipped to provide care for this population if given the knowledge and access. The purpose of the study was to examine the ways in which occupational patterns and roles are affected for older adults that immigrate from a rural town in Latino America to Southern California, and thus gain insight into exactly how these changes affected participants. The study used a qualitative, narrative approach that included semi-structured interviews and a photo elicitation for five participants. The data was then analyzed using thematic analysis. Occupational patterns changed most for areas including health management, work, and tradition. Language served as a primary barrier as occupational patterns became more complex in Southern California as compared to their homeland. The economic status of Southern California served as a motive for some individuals' move as well as an adjustment of lifestyle. Findings from the storytelling in this study can guide healthcare professionals working with immigrants in their rapport building and empathy. Themes from the participants can provide insight into ways to help people early on in addressing occupational changes and their adjustment to a new country, as well as assisting people with their occupational wants and needs, both short and long term. By knowing the impact this move may have on an individual, practitioners can be better informed and prepared to help similar populations, and assist them in providing culturally responsive care.

Ramiro Rodriguez Sanchez

Immigrant Generational Status and Parenting Behaviors as Predictors for Marijuana Use among Latinx Adolescents

Prior research has shown later immigrant generational status (e.g., second vs. first generation) to be a predictor of repeated marijuana use among Latinx adolescents. The effects of later immigrant generational status, sometimes called the "immigrant paradox", is explained by the acculturation gap-distress theory, which suggests that assimilation into American culture causes intergenerational conflict in immigrant families, placing children of later generational status at greater risk for psychological and behavioral problems. Despite this, few studies have focused on identifying specific parenting factors within mixed-generation Latinx families that may help buffer the effects of this "immigrant paradox" on adolescent marijuana use. To address this, the current study examined immigrant generational status and parenting factors as predictors of marijuana use in a sample of N=594 Latinx adolescents (27% first, 32% second, 40% third and later generation) drawn from a public-use longitudinal dataset, the National Longitudinal Study of Adolescent to Adult Health (Add Health). We hypothesized generational status would serve as a predictor for risky marijuana use among Latinx adolescents and explored the extent to which parent closeness, parental supervision, and parent-child conflict buffered these associations. Results from logistic regressions revealed that immigrant generational status was a significant predictor of risky marijuana use in the expected direction (OR = 2.49, $p < .001$). Parent closeness, parent supervision, and lower parent-child conflict independently showed a main effect on lower risk of marijuana use (OR = 0.64, $p = .008$; OR = 0.59, $p < .001$; and OR = 1.87, $p = .03$, respectively). However, these parenting factors did not moderate the association between immigrant generational status and marijuana use (all p 's $> .05$). Findings suggest that generational status among Latinx adolescents predicts marijuana use, with family factors not specifically buffering this effect but showing overall promotive associations for reducing risky marijuana use during adolescence.

Sarah Rohloff, Guadalupe Banuelos Diaz, Jaynie MacDonald, and Celine Ly

The Lived Experience of Transgender Athletes in Competitive Sports

Transgender athletes encounter numerous barriers within competitive sports, including social stigmas and restrictive policies hindering their participation. Sports offer physical and mental health benefits, including cardiovascular health and increased mood. Due to various barriers, transgender athletes are often unable to participate in their sports and may leave the sport altogether. The purpose of this qualitative study was to gain a deeper understanding of the significance of competitive sports as an occupation for transgender athletes. This study focuses on the meaning of the occupation, the impact of environmental factors, and potential influence participation has on their health and well-being. Data was collected from seven transgender athletes through photo-elicitation and a 45 minute semi-structured interview. The study generated five themes: 1) more than just a sport, 2) the process of coming out, 3) support, advocacy, and inclusion, 4) safety concerns, and 5) just an athlete. Sports offered an enriching outlet where participants felt true to themselves and utilized the space for self-exploration. The process of coming out highlighted contradicting emotions between gender euphoria and fears of losing their sport. Support, advocacy, and inclusion were identified as factors influencing sports participation retention. Participants also mentioned safety concerns in their social and physical environments, as well as their desire to be seen for their abilities rather than their trans-identity. We conclude that participation in competitive sports has a significant influence on transgender athlete's overall health and well-being. Environmental factors such as inclusivity, safety, and advocacy play an important role in the enjoyment of this occupation. The results suggest that practitioners have a role in advocacy, providing community resources, and gender affirmation care techniques that should be considered when working with the transgender population.

Neve Rosa, Katie Bracewell, and Tiffany Lee

Long-term occupational enablement of club sports in adolescence: A narrative study

Background: During adolescence, club sports are very popular and are very time-demanding commitments, but eventually this comes to an end. We are interested in understanding how people perceive their experiences to contribute to their lives after they have transitioned beyond this stage. There are limited descriptions of how adolescent activities contribute to future engagement in occupations. Club sports is the engagement in a sport where one must pay a monthly fee. The purpose of this study is to describe how participation in club sports as an adolescent influences future activities as an adult. **Methods:** This study uses a qualitative narrative approach using semi-structured interviews and photo-elicitation to gather participants' perspectives about their time in club sports. We used qualitative thematic analysis to determine the themes of our study. **Results:** This study found that participation in club sports in adolescence did not necessarily influence which occupations they engaged in as adults but rather provided individuals with skills and routines that influenced how they performed these occupations. Specific themes we found focused on socialization, mental fortitude, physical activity, organizational skills, and injury. In addition, this fills a gap in occupational therapy theory as it provides evidence of engagement in earlier life shapes, habits, routines, and skill sets. **Conclusion:** This informs practice as it gives data to support occupational therapy involvement at the public policy level. Club sports are very expensive so there is a need for accessible programs that allow adolescents in the community to engage in sports at a higher level. This points to the need to advocate for public policies that facilitate inclusivity in participation in club sports.

Alejandra Ruiz

Ethnic Representation and Experiences of Discrimination in High School Math: Effects on Latinx Students' Math Attitudes and Achievement

Increasing a diverse STEM workforce in the U.S. remains a national priority (NSF, 2021). However, Latinos remain underrepresented (NCSES, 2021; Hernandez et al., 2013). Much remains unknown about how the racial/ethnic context of high school math affects adolescents' math attitudes and achievement, as well as psychological adjustment (Graham et al., 2022). The present study examined the relations between the racial/ethnic context and math attitudes, achievement, and psychological outcomes for Latinx students. The sample comprised of 1,183 Latinx students ($M_{age} = 14.6$ years) who were drawn from a larger longitudinal study. A questionnaire was developed to measure the ethnic context (perceived same-ethnic representation in math class and perceptions of the school ethnic climate) and math attitudes (perceived competence, feelings of belonging, perceived importance, and anxiety in math). Achievement was measured using grades from school records data. For Latinx students, perceiving more same-ethnic classmates in math was related to more positive attitudes about feelings of belonging ($b = .22, p < .001$) and perceived competence in math ($b = .08, p < .001$), and math achievement ($b = .38, p < .001$). Same-ethnic representation was unrelated to math anxiety and importance. Significant interactions between ethnic representation in math and ethnic climate were found suggesting that a positive ethnic climate buffered some of the negative effects of underrepresentation in math on math belonging, competence, and achievement. Implications of the findings for understanding some of the psychological mechanisms that account for high school math persistence and achievement among Latinx students were discussed.

Dalia Sabo, Andrea Dickey, Sophie Samaniego, and Catheline Phan

Teachers' Perceptions of Occupational Therapy in General Education

Occupational therapy (OT) services in schools traditionally only support students who qualify to receive special education. However, the multi-tiered systems of support (MTSS) model provides preventative, universal design services for all students. This includes implementation of school-wide social-emotional learning (SEL) curricula. Classroom teachers are often burdened with the responsibility of implementing the SEL curriculum, in addition to teaching their classes. OTs, who have expertise in childhood social-emotional development and could support teachers using MTSS for SEL, are unable to within the current service structure. We conducted a qualitative case study to describe the perceptions of teachers who have experienced OT implementation of Social Emotional Learning (SEL) curricula at their schools. Participants included four elementary school teachers who had worked collaboratively with OTs in their

general education classrooms to support SEL. Each participant completed a semi-structured interview. Through qualitative thematic analysis, four major themes emerged. The first theme was how OT helped improve engagement and skill development throughout tier 1. The second theme discussed whole-class implementation regarding social emotional learning. The third theme emphasized the need for early intervention and preventative support, and the final theme reviewed the gaps within OT services, resources, and funding. Findings indicate that teachers felt extremely supported and positive about the OT-led SEL. They learned new strategies and became more equipped to support students with diverse needs. The teachers perceived that students improved their engagement and learned new skills following the OT SEL whole-class interventions. Teachers valued early, preventative OT services in their classrooms and noted persisting gaps in resources to meet all students' needs. These insights suggest that including OTs on the MTSS teams providing school SEL curricula may relieve teacher burden and improve student outcomes. Continued pilot projects and further research is indicated.

David Saldana, Carlos Zuniga, and Anthony Trochez

Examining Climate-Growth Interactions in *Pinus jeffreyi* in San Jacinto, CA

Global temperatures have risen 1.2°C as a result of anthropogenic activities. Due to this change, the intensity and duration of droughts have increased due to changing precipitation trends. The purpose of this study is to understand the changing response of California mixed conifer forests to the ongoing effects of a changing climate. We utilized the understudied Jeffrey Pine (*Pinus jeffreyi* Grev. & Balf) to tree-ring growth patterns and climatic trends in the San Jacinto Mountain range. As one of the most abundant species in the transverse cismontane regions, its spatial distribution is within the bounds of various ecotones that provide important ecological services in the state of California. A total of 69 tree-ring cores were collected from 43 trees in the summer of 2021 and processed utilizing standard dendrochronological methods. Ring width was measured with CoreRecorder and verified with the Velmex tree-ring measurement system and software (J2X). Visual cross-dating and statistical tests (COFETCHA, ARSTAN, treeclim, bootres, dplR, xDateR) were used to remove age-related noise and to assist with coding. We used 31 best-correlated cores (23 trees) to reconstruct 220 years (1802-2021) chronology. We identified several low-growth periods, notably in the mid-1800s, and early 1900s, and a few short periods in the mid to late 20th century. There is noticeable good growth around the 1850s, late 1800s, 1940s, and early 2000s, suggesting that these were years with favorable growth conditions for the trees. Findings from this study will help federal and state agencies plan for the upcoming changes to forest biomes due to climate change.

Karla Sales

Exploring Bodies in *Fantomina*: An Analysis of Eliza Haywood and 18th-century Popular Culture

The following proposal touches on the literary world of the 18th century and its enduring relevance for consumers in the 21st century. The research centers around Eliza Haywood's *Fantomina* and its remarkable significance in reflecting and challenging the societal norms of her era. Haywood wrote during a time when culture was characterized by strict moral codes and well-defined social expectations, especially for women. Women were expected to conform to rigid roles and behaviors during these times. However, the changing dynamics of gender roles and women's rights during the Enlightenment made it possible for women to begin participating in a more extensive social dialogue. Haywood, an active contributor to popular culture, often wrote texts exploring themes of love, marriage, and social expectations. *Fantomina* is a unique piece of literature from this time because it explored social spheres and questioned established norms. *Fantomina*'s heroine challenges conventional female roles by adopting multiple disguises and indulging in a secret life that resists societal expectations. This narrative, in many ways, exposed and challenged the deeply rooted dominant ideology that once surrounded gender roles. Furthermore, this academic pursuit later seeks to understand how the consumers of 21st-century popular culture interpret female narratives of the 18th century. Moreover, what do these interpretations tell us about how our understanding of gender, societal norms, and popular culture has evolved? By delving into

these questions, the research will shed light on the enduring relevance of Fantomina and, more broadly, how literature can shape and challenge our perspectives on gender, society, and culture.

India Sanders

Adapting Amidst Adversity: Understanding the Impact of COVID-19 on Mental Health and Resource Utilization among Minority College Students at CSUDH

Amidst the challenges brought about by the COVID-19 pandemic, the psychological well-being of college students has emerged as a significant concern. The abrupt transition to remote learning, combined with a sense of isolation from social circles, has notably heightened anxiety among students. This strain has been further compounded by the increased pressure of managing academic commitments alongside work responsibilities. Previous research has underscored the profound impact of Covid-19 on the mental health of college students. Even individuals without pre-existing mental health concerns have exhibited severe signs of psychological distress. Notably, behavioral and emotional well-being also significantly declined during this period. To comprehensively understand these effects, an experimental survey was crafted to capture students' diverse experiences, adaptations to the altered learning or work environments, and the personal implications of the pandemic. Employing an experiential design integrating on-campus and local community resources within Los Angeles County, this study will evaluate students' preferences in utilizing these resources. The primary objective is to identify potential shortcomings in on-campus resources at CSUDH and devise a comprehensive plan to bolster and refine them. The overarching goal is to create a more nurturing environment that supports students in their academic journey toward upward mobility. This study hypothesizes that students perceive on-campus resources as sources of support while simultaneously experiencing an overall decline in well-being due to the adverse effects of COVID-19. Presently underway at Cal State Dominguez Hills, the ongoing data collection process will shed light on how COVID-19 has impacted the college experiences, mental health, and personal lives of minority students. These critical insights will be pivotal in developing and enhancing resources tailored to meet their unique needs. This research's significance lies in its immediate relevance to understanding and addressing the multifaceted effects of COVID-19 on minority college students' well-being and academic journeys.

Reese Santonil

Creating a 3D Digital Record of Ancient Maya

This project focuses on digital curation and making archaeology more accessible to a broader audience. Using photogrammetric methods, I constructed a 3D virtual catalog of ancient artifacts from the northern Maya lowlands of Yucatan, Mexico. The main objectives of my 3D catalog are to preserve a digital record of the artifacts and to help students, researchers, and anyone else interested in the Ancient Maya civilization to gain easier access to viewing objects from remote places that they might not be able to travel to on their own. Photogrammetry involves scanning objects by taking photographs from many different angles and then processing them using a 3D rendering program like Agisoft Metashape. In a virtual space, researchers and students would not only be able to have access to the objects they wish to study but would also be able to manipulate them and digitally "handle" them in a three-dimensional interactive space. In this talk, I will present the first stages of my virtual archaeology catalog project. Moving forward, I plan to adapt my three-dimensional catalog for virtual reality viewing and eventually create a fully virtual museum and research space.

Candy Saucedo

Analyzing the importance of *ydhI* during Long Term Stationary Phase in *Escherichia coli*

Escherichia coli is a bacterium that has five phases in its life cycle: lag, log stationary, death and long term stationary phase (LTSP). Bacteria can survive for long periods of time in LTSP. In this phase, the bacteria adapts to nutrient limitations and other changes in the environment. The genes which may be important for their survival and adaptation in this phase are not well characterized. To identify the specific genes that are required for the cells to survive and adapt, I competed a strain missing the gene *ydhI* with a

strain with this gene (wildtype) into LTSP. *ydhI* was previously identified as potentially important in LTSP during a screen of a library of *E. coli* mutants. *ydhI* encodes a protein of unknown function, but it is related to other exporter proteins. The strain missing *ydhI* was outcompeted slightly by the wild-type strain in long term stationary phase. Therefore, if the gene *ydhI* is missing in the strain it will not be able to survive in long-term stationary phase. Moving forward, research will help identify why this gene may have these effects in LTSP and what mutations the strain missing this gene accumulates to adapt to long-term stationary phase.

Kahlil Scott

Exploring Puma Habitat Requirements in Southern California

Mountain lions, recognized as keystone species in California, play a crucial role in ecosystem dynamics. This study employs GPS monitoring to analyze the range of mountain lions, providing essential insights into population dynamics. Mapping their range is integral for monitoring population health, predicting growth or decline, and understanding the broader ecosystem impacts. The study utilizes DNA samples to assess genetic diversity and gauge the average health of mountain lion diets. Notably, the research uncovers challenges related to the limited range of mountain lions, leading to significant inbreeding within certain populations. This raises concerns about the future reproductive success of these apex predators. The study emphasizes the predominant role of mule deer in the mountain lion diet, with individuals capable of killing one every two weeks. However, the duration of time these carnivores spend on a deer carcass before abandonment remains undetermined. Barriers restricting mountain lion ranges in Southern California are identified, including freeways and encroaching human developments penetrating deeper into their territories. The research proposes a solution to habitat fragmentation by advocating for the construction of wildlife crossings. These crossings aim to facilitate easier movement across fragmented areas, enabling mountain lions to expand. This study sheds light on critical aspects of mountain lion ecology, addressing issues such as inbreeding, diet composition, and habitat fragmentation. The proposed solution of wildlife crossings presents a practical approach to mitigate these challenges, offering a pathway towards sustaining healthy mountain lion populations in the dynamic landscapes of Southern California.

Kahlil Scott

Cereal Milk Grow

This integrated research effort explores critical aspects of cannabis cultivation, examining both the germination phase and subsequent growth stages, with particular focus on the renowned Cereal Milk strain. The study incorporates two essential components: the evaluation of germination techniques and the meticulous examination of lighting and watering practices. A total of 20 seeds were employed in the study, resulting in 30% germination success rate, with 6 healthy seedlings thriving under controlled conditions. In the initial phase, the study scrutinized germination practices, emphasizing the impact of a carefully designed 12-hour light cycle, operational seven days a week. This lighting regimen, mimicking natural daylight, proved instrumental in optimizing photosynthesis and overall plant growth. Coupled with a thoughtfully crafted watering schedule—administering 3 ounces of water once every 5 days—healthy root development and plant vitality were consistently maintained. Preliminary findings unveiled a promising scenario, with 6 out of 20 seeds successfully germinating. These initial results underscore the efficacy of the applied germination techniques and emphasize the importance of precise lighting and watering practices in cannabis cultivation. Transitioning from germination to early growth stages, the study meticulously monitored the development of the 6 seeds. By adhering to the established lighting and watering practices, these plants exhibited minimal growth patterns, further affirming the applied techniques. The study highlighted the significance of consistent care and environmental stability, as evidenced by the plants' stunted growth and vitality. These combined findings offer valuable insights into efficient and meticulous cannabis cultivation practices, particularly for enthusiasts seeking to cultivate cannabis within indoor environments. The research emphasizes the symbiotic relationship between precise lighting, watering practices, and overall plant health. Continued research and extended monitoring

will provide deeper insights into the ongoing development of these plants, contributing significantly to the discourse on optimal cannabis cultivation methods.

Anthony Scott

The $K0p \rightarrow KSp$ process and KSp Elastic Scattering

The use of short-lived beams in nuclear physics research has been established by a recent publication on Λp scattering, and has been described in several presentations. A potentially useful beam particle for such studies is the KS ; with a mean lifetime of 9.0×10^{-11} s, it travels only a few centimeters before decaying. There is only one previous measurement of this process, which detected a total of 36 events. Quantitative studies with this particle will enable comparisons with similar processes initiated by the longer-lived KL particle, which are much more common in the literature. Using only the scattered proton and the products of the $KS \rightarrow \pi^+\pi^-$ decay, we reconstruct the $K0p \rightarrow KSp$ process to determine the number of events. A separate analysis of the processes $\gamma p \rightarrow KSX \rightarrow \pi^+\pi^-X$ and $\gamma p \rightarrow KLX \rightarrow \pi^+\pi^-\pi^0X$ will be used to determine the incident flux of the beam kaons, and the isolation of the $KSp \rightarrow KSp$ process. The angle and momentum of the beam kaon will determine the effective target thickness. Our recent analyses of the processes $pp \rightarrow pp$ and $\Lambda p \rightarrow \Lambda p$ make us optimistic that we will be successful in observing a signal for this process. Very preliminary analysis of this process indicates the possibility of many more events than presently available in the world data sample. This talk will present the motivation and history of this work, the current status of our analysis, and prospects for the future of this process.

Wakana Seo, Grace Ghitea, Damarice Herrera, and Valerie Ortega

The Experiences of Unpaid Latino/a Caregivers Taking Care of Aging Family Members

Latino/a informal caregivers make up approximately 50% of the Los Angeles County population of informal caregivers of older adults. These individuals play a significant role in promoting the well-being of their family members yet, there are many unmet needs. The well-being and abilities of informal caregivers directly affect the quality of care they can provide for their elderly family members. Under new Current Procedural Technology (CPT) codes, occupational therapy practitioners can bill for support and training sessions provided to caregivers without the patient being present. Current research does not focus specifically on the Latino community, therefore this study aims to discover the meanings and challenges of unpaid Latino/a caregivers' experiences. The phenomenological research approach was used for this qualitative study. Researchers conducted semi-structured interviews and used a time-use wheel diagram to gain insight into the participants' experiences, roles, and daily routines. There were seven female participants with ages ranging from 23 to 65. Participants shared how their commitment to familial obligation within the Latino culture influenced their decision to care for their elderly family members. Changes that occurred within the family included a shift in dynamics, home modifications, financial burdens, and changes in routines. Based on the experiences of the participants, the responsibilities of caregiving introduced positive and negative impacts on their mental and physical well-being. These new changes brought forth various coping strategies and ways to manage responsibilities through resources and a support system. Knowledge of these findings promotes awareness of the Latino culture amongst the field of occupational therapy. Under CPT codes, this research directly impacts how practitioners can provide resources and continue to support the needs of Latino/a informal caregivers. Understanding the culture brings a new collaborative perspective to provide a better quality of care for aging family members and their families.

Samantha Silverman

OrthoTICS: Research and Development of Orthotic Treatment for Tourette's Syndrome

Clinical Question: Can we justify and design orthoses to decrease musculoskeletal damage related to Tourette's syndrome and other tic disorders? The objective of this article is to explore the possibility of using orthotic intervention to treat symptoms and improve quality of life for those with Tourette's syndrome. Background: A search utilized PubMed, Google Scholar, and OPIQ databases to search for articles related to orthotics and Tourette's syndrome or tics. The information was collected and

synthesized to describe the range of presentations and symptom severity in different cases as accurately as possible. Methodology: A prescription was developed for an orthosis that aims to prevent excess or painful motion, create desired alignment, decrease abnormal tone, and enhance function. When an agonist muscle spindle is stretched and the stretch reflex is activated, the antagonist muscle group must be inhibited to prevent it from creating resistance, preventing the contraction of the agonistic muscle. The devices are designed to decrease tone and inhibit neural pathways that can cause tics. Results: I designed several iterations of low-profile soft orthoses for different joints. The goal is to appeal to the user by allowing their muscles to relax and to have a cosmetic look above or under clothing. The materials would be supportive and interface well with the skin. The devices inhibit tone and theoretically reduce the severity and frequency of tics. Conclusion: Orthotic intervention can assist in preventing long-term musculoskeletal damage. By providing support and limiting excessive joint movements, orthotic devices can help maintain joint health. Orthotic intervention can assist the multidisciplinary team to treat the symptoms and prevent long-term damage for those with Tourette's syndrome. Further research is needed to test this theory of rehabilitation. A future N-of-1 study will test the efficacy of the proposed intervention devices. Keywords: orthotics, tics, Tourette's syndrome, rehabilitation, tone-reduction

Jessica Sklar and Victoria Ramirez

Using Zebrafish as a Model System to Study the Effects of Microplastic Ingestion on Fecal Microbiomes
Microplastics (MPs) are a major pollution issue in aquatic ecosystems that impact aquatic life, and those that consume aquatic life. However, studies on how MPs affect vertebrates' health, especially at the cellular or molecular level, are limited. In our lab, we use zebrafish as a model organism to investigate the effects of chronic microplastic ingestion, specifically focusing on identifying zebrafish fecal microbiome changes caused by MPs. To conduct this experiment, zebrafish from the same parents, born on the same day, are separated into one control group (0 mg/L) and three treatment groups with MP concentrations mimicking locations in Los Angeles County, known for recreational and commercial fishing: 1.0 mg/L (West Catalina site), 2.5 mg/L (Palos Verdes and San Pedro Channel sites), and 5.0 mg/L (LA Harbor). 68 fecal samples are collected at 2,3,4,5,6 months post fertilization, and DNA is isolated. Then, 68 16S sequencing libraries are created and of those samples 46 samples generated high quality sequencing data using the Illumina MiSeq. Finally, we are analyzing the microbiome sequencing data through web-based platform Nephele. We expect to identify fecal microbiome changes in zebrafish treated with MPs compared to the control group, which will illustrate important connections between MP ingestion and animal health, including all aquatic organisms and those consuming aquatic organisms. We will also compare our findings with physiological data such as growth, fecundity, digestive enzyme analyses, and visualization of MPs in various zebrafish tissues. Our results will be relevant to our local communities as the concentrations mimic local areas, which we hope will bring awareness and potential solutions to the microplastic pollution issue in Los Angeles County.

Glenn Smith

Major Taylor: A Black Meteor

Like a meteor, Mashall "Major" Taylor entered the earth's atmosphere and set the world ablaze. Although his light was dimmed early, he still has people talking about him. Major Taylor was considered the fastest man in the world during his era. As a cyclist, he set seven world records. He was a world champion in 1899. As a Black man, he not only had to compete against fellow racers, but he also had to fight racism. Major Taylor was the most dominant figure in the world in the most popular sport at the turn of the century. At five-foot-seven, his shadow loomed across the globe. As he was the most popular figure in the world, he was also the most vilified man in the United States. Across the pond in Europe, he was treated like a king and was the celebrated man in Europe. Major, just like every meteor, they do not last long. He made quite a bit of money, but he died at the age of 53 penniless and alone. He was the first Black American Champion of any sport, yet he was buried in an unmarked grave and left to be forgotten. In the fashion of how he lived, Major Taylor's legacy climbed out of the grave. In 1948, his remains were exhumed and moved to a more fitting final resting place for a champion. His legacy grew and began to

positively affect Black cyclists around the world. Black cyclists proudly ride with his name across their chest. His fight against racism and his commitment to excellence propels Black cyclists to be healthier and more conscientious. Major Taylor's brilliance still shines today. His influence continues to grow.

Michael Sullivan

Analyzing Traffic and Accident Patterns of Los Angeles using ArcGIS

Los Angeles is infamously known for its traffic woes and the resulting accidents, which remain a significant public safety concern. In 2022, there were 10,739 reported accidents leading to injuries or fatalities, a modest improvement from the 12,804 incidents in 2021. Many of these accidents are attributed to distractions or impairment behind the wheel, while others stem from issues like traffic congestion and problematic intersections. This study aims to combine traffic density data with accident reports to identify areas with higher risks of traffic and accidents, thus informing drivers about potential danger zones. The focus area encompasses regions shared by Gardena, Torrance, and Carson. Utilizing the ArcGIS platform and California Open Data, I generated a traffic density map followed by a heat map of reported accidents, allowing for a visual representation of high-risk areas. Field visits to these locations allowed for the identification and categorization of contributing factors to these correlations, such as blind spots, traffic congestion, and road defects. These were then marked on the map, distinguishing the cause at each site. The resulting map not only highlights areas to avoid but also indirectly suggests safer alternative routes for traveling. The study provides a foundation for a more informed and proactive approach to road safety, with the potential to significantly improve public safety, enhance the efficiency of traffic flow, and ultimately lead to a reduction in traffic-related injuries and fatalities.

Alyssa Suzuki, Jennifer Siu, Karis Ma, and Erin Kim

Perceptions of Elementary School Teachers Regarding the Socio-Emotional Development of Elementary School Aged Students Post-Pandemic

During the COVID-19 pandemic, peer socialization, education, and childcare services were shut down and replaced by remote learning. Previous research has indicated a decrease in socio-emotional development and readiness of young students, mostly in preschool, as a result of the pandemic. Thus, this study examines elementary school teachers' perceptions of the socio-emotional development and school readiness of elementary school-aged students, from kindergarten to grade 6, pre and post-pandemic. Using a qualitative, hermeneutic phenomenology approach, our research focused on the perceptions of 8 elementary school teachers regarding the changes they observed in students' socio-emotional development post-pandemic. We conducted 60 minute, semi-structured interviews with each teacher, and subsequently used the transcripts to identify common themes from their responses. Common themes that the teachers shared about were (1) an increase in tantrums and outbursts (2) a decrease in collaboration (3) a lack of problem-solving skills (4) a lack of empathy and (5) a need for support in light of what teachers and students have been experiencing post-pandemic. Findings from our study suggest that teachers perceive significant changes in student's socio-emotional development post-pandemic, and highlight a common request for additional support. Their responses draw attention to areas where occupational therapists can directly intervene in general education environments. School-based occupational therapists may use this data as support for the use of Tier 1 interventions for entire classes, and the utilization of groups in therapy for Tier 3 interventions.

Athena Tran

Simulation of Nuclear Physics processes with Short-Lived Beams

Quantitative results in nuclear physics require both an analysis of data and a detailed simulation of the process in question. Simulated data are used to determine the detector acceptance A and the analysis efficiency $\hat{\epsilon}$. A is the fraction of events produced which can be detected, and depends on both the detector geometry and the process being studied. $\hat{\epsilon}$ is the fraction of events that both hit the detector and produce recorded data that satisfy the analysis procedure. This project focuses on analyses currently underway within the CSUDH Hadronic Structure Laboratory, looking at the processes $\bar{p}p \rightarrow \bar{p}p$, $KSp \rightarrow KSp$, and

Ġp†'Ġp. The simulation uses the program gsim, based upon the GEANT Detector Description and Simulation tool, a widely used package which is the industry standard in nuclear and particle physics. For this work, events are generated at angles and energies consistent with data that were taken by the CLAS Collaboration during the g11 run in the Spring of 2004. The generated events are input to gsim, which simulates their paths through the CLAS detector, as well as the detector response, which is written out in such a way as to be as similar as possible to the actual data taken during the run. Post-processing of the data results in simulated data that can be directly compared to the actual data, enabling the determination of both A and Ġ. This presentation will provide a description of the methods used for this work, the current status of our simulation efforts, and expectations for the future.

Athena Tran and Andrea Cocjin

Olympic Recurve Analysis - Stabilizer Optimization

There currently is no consensus or publicly available manual on what an optimal stabilization set up is other than "what feels right and gives one the best score". Archery equipment choice is very subjective, and the purpose of this analysis is to objectively optimize the stabilization of the bow that caters to individual archers. Previously a relationship between stabilizer lengths and angles, bow CG, bow mass, draw length, draw weight, and holding time were identified. Our current work is developing methods to assess the archer's physical abilities to then be able to match equipment to their current progress.

Anthony Trochez

Smoke on the Water: A Fire History of North Lake Tahoe

Significant shifts of wildfire regimes in the Sierra Nevada montane pine-fire system have occurred in the past four centuries due to European-American settlement, logging, and grazing. This study examines the fire history of the Stateline Fire Lookout on the north shore of Lake Tahoe, California. We used dendrochronological methods to document the fire history from the year 1580 to 2022. Our research aims to emphasize the influence of land-use changes and climate on wildfire regimes since 1680 on an old-growth mixed conifer forest. We surveyed for fire-scarred *Pinus jeffreyi* and *Abies concolor* to collect samples for dendrochronological analysis and found 17 living trees, remnant stumps, and logs. Thirteen of seventeen samples crossdated span from 1685 to 1906. The fire scar chronology showcases the frequency and distribution of fires, revealing an 8-year interval for all fires and a 20-year interval for large fires emphasizing key years of more extensive fires within the site. We filtered fire events to identify large fires, 25% of recording trees scarred with at least 2 scars. These results highlight the impact of regional climatic phenomena, with years of high fire synchrony correlating with specific years of known drought, using the Palmer Drought Severity Index with a 10-year spline. Additionally, seasonal analysis demonstrates a range of fire occurrences across earlywood, latewood, and dormant periods. Results provide valuable insights into the complex dynamics of wildfires in North Lake Tahoe, offering a historical perspective essential for shaping effective wildfire management strategies into the future.

Hardipinder Singh Ubhi

GRC for small businesses

Governance, Risk and Compliance has become a crucial part of corporate infrastructure in today's world of zero days and zero trust where every edge, node and endpoint must be viewed as a potential attack surface and a point of origin for an attack. Talk about roles. The usual approach for most organizations will be to either purchase a prebuilt solution that is works as cookie cutter, where the solution which will cover almost all parts of the infrastructure that will use a lot of resources and will bleed the organization of the crucial money it needs to fuel the development. Or on the other hand the organization will not bother to invest in any security tools because they don't want to invest resources and take time to get details. This paper can be used as blueprint to build a security blanket over the key issues that can be found in smaller organizations where the cost and protect surface is the main aspect. It is done to make sure that all parts can be integrated at all stages of the organization's development processes.

Eileen Valencia

Creating a Dominguez Rancho Teaching Collection

The CSUDH Anthropology Department has been conducting a test excavation program at the Dominguez Rancho Adobe Museum property in Carson since 2009. Student excavators have uncovered a wide range of features and artifacts that shed light on how lifeways have changed across the South Bay over the past 150 years. This project analyzes the material collection recovered from 14 years of excavating at the Rancho with a focus on creating a teaching collection that can be used by Dominguez Rancho staff and CSUDH students to provide a hands-on learning experience for K-12 students. Combining spatial and material analyses, I demonstrate how archaeology can serve as a tool for helping students understand how much their own neighborhoods have changed over the previous generations. For instance, the features, artifacts, and partially burned animal bones recovered from test units at the base of the hill below the Rancho house provide evidence of massive annual barbecues that used to be hosted by the Rancho for the broader South Bay community 100 years ago. Industrial artifacts such as metal and ceramic pipes, limestone and plaster foundation pieces, and glass shards provide examples about the technologies of everyday items have changed.

Alondra Vanegas

The Impact of Perceived Minority Status on Adolescents' Positive Life Expectancies During the Transition to Adulthood

The transition from adolescence to adulthood is a period of identity development that is significantly impacted by lived experiences in social settings. For racial-ethnic adolescents, distinct stressors, like threats to belonging, influence their development in their school and neighborhood. Being racially minoritized may influence adolescents' attitudes about themselves, positive life expectancies (expectations about their future), and wellbeing. The current study was to investigate the impact of perceived racial-ethnic minority status during high school on positive life expectancies and psychological flourishing in the transition to early adulthood. We hypothesized that perceived racial-ethnic minority status in high school and neighborhood settings would predict lower positive life expectancies in late adolescence and lower psychological flourishing in early adulthood. Participants included $N = 472$ adolescent girls from the longitudinal Pittsburgh Girls Study, a population-based study that included annual interviews from childhood to adulthood, including measures of perceived racial composition in the neighborhood and school in middle adolescence (age 15-16), self-reported positive life expectancies in late adolescence (age 17-18), and psychological flourishing early adulthood (age 19-20). Consistent with hypotheses, independent samples t-test showed that perceived minority status in the high school setting (but not neighborhood setting) was associated with lower positive life expectancies in late adolescence ($t(110.53) = 2.12, p = .018$). Mediation models showed that lower positive life expectancies predicted lower levels of flourishing in early adulthood ($B = -.76, p < .01$), and mediated the association between racial-ethnic minority status in high school and flourishing in adulthood (Indirect effect: $-.26, 95\% \text{ CI: } -.555, -.001$). This suggests that adolescents who identify as a racial-minority during high school expect fewer positive life outcomes in their future, which contributes to lower psychological wellbeing in early adulthood. More research is needed on the specific experiences racial-ethnic minority adolescents have in high school that negatively impact their positive life expectancies.

German Vazquez

Perceptions of Friendship

Human social relations are essential to human existence. Friendships, a crucial human social relation, can have many positive effects on people as well as many negative effects. Loneliness is reported highly in present times and violence is at times a result of lack of social connections. Recent literature has proven that having sufficient friendships can have positive effects on your well-being and physical health. This study focuses on what is considered an ideal friendship based on desirable characteristics that were found common in previous studies. This study compares ideal friendship characteristics with characteristics found in participants' actual friendships. The participants were psychology students attending California

State University, Dominguez Hills. Correlational analyses will investigate if there is an association between friendship and well-being factors such as depression, anxiety, self-esteem. Additionally, correlations between friendship, extraversion and life-satisfaction will be analyzed. Furthermore, sex differences for all measurements will be examined. Also, a point of focus will be on if Latino men vary significantly in all results.

Cristy Vega and Ana Ponce

Identification of Tyrosinase Inhibitors from Plant Derived Extracts for Cosmeceutical Development
Tyrosinase (TYR) is a vital enzyme involved in melanin production. TYR influences the coloration of skin, hair, and eyes by converting the amino acid tyrosine into melanin through intricate chemical reactions. However, excessive melanin production can result in skin conditions such as hyperpigmentation, melasma, and age spots. Given TYR's role in melanogenesis it has been identified as a therapeutic target to regulate abnormal melanin synthesis. While common skin-lightening agents like hydroquinone, corticosteroids, and kojic acid are effective, prolonged use carries risks such as skin damage, increased cancer susceptibility, and other detrimental health effects. This research presented here aims to identify tyrosinase inhibitors from plant-derived extracts with lower toxicity and enhanced bioavailability as a safer alternative for treatment. The plant-derived extracts will be screened in bioassays against tyrosinase to test for enzyme inhibition. The metabolites present in the plant extracts that show TYR inhibition, will be purified using high-performance liquid chromatography and their structures will be determined using mass spectrometry and NMR. Lastly, the extracts will be screened against a human cell line to ensure there is no toxicity.

Julia Victoria

College students in romantic relationships and academic performance

Abstract This study will explore the correlation between college students in romantic relationships and academic performance. The research will show how the quality and dynamics of a romantic relationship will have an impact on the student's academic performance. Recognizing the pivotal developmental stage of emerging adulthood, the research examines how the pursuit of romantic involvement impacts the cognitive, emotional, and time-management aspects of academic life. The researcher hypothesizes that a male college student will have a better academic performance (GPA) than a female college student because females tend to feel stress from a relationship more than a male would. The data collected was analyzed to identify patterns and correlations between relationship status, relationship satisfaction, and academic outcomes. The study also explores the role of various contextual factors, including social support, communication patterns, how much stress they experience, coping mechanisms, and the level of commitment within romantic relationships. The researchers discovered that females had a higher GPA than male participants. The males were found to not have as much of a support system as the females do while dealing with hardships in life. The understanding of this study is important not just for the students in romantic relationships but for counselors, and educators to help show support to students in managing the challenges and opportunities presented by their romantic relationships. This research contributes to the growing body of literature on the psychosocial aspects of college life and provides insights that can inform holistic strategies to enhance the overall well-being and success of college students. Keywords: romantic relationships, quality, GPA, academic performance, stress, coping skills, relationships length, undergraduate, anxiety

Janette Villafana

Education, Corruption, and Democratic Participation: The Mexican Case and Beyond

Education has been widely recognized as a universal catalyst for promoting individuals' democratic values and political participation in the fields of political behavior and democratization. For example, as people become more educated, they are more likely to support democracy and engage in political activities. However, there has been insufficient acknowledgment of how the democratizing effect of education can vary depending on the circumstances of transitional democracies, such as the quality of

political institutions. In many of these democracies, citizens often grapple with high levels of corruption, leading to frustration. Mexico has experienced national democratization since 2000; however, the levels of democracy vary significantly at the subnational level. This disparity indicates that a substantial number of states within the country have retained undemocratic characteristics, including high levels of corruption and low levels of political competition, in contrast to politically liberalized states. Corruption has been a persistent issue in Mexico, impacting countless lives and leaving its citizens disillusioned with their political environment. Trust in political leaders has declined due to the increasing prevalence of corruption in the political arena. Election fraud has also been an ongoing problem in Mexico, causing people to become less engaged in political activities. These corrupt actions by the government have instilled in people the expectation of fraud, resulting in reduced voter participation. Given these phenomena, this paper aims to demonstrate how highly educated, well-informed, and critical citizens react to a political system characterized by low-quality institutions and rampant corruption. By analyzing data from the World Value Survey, this study will investigate how individuals' education influences their political involvement in activities such as voting, membership in social organizations, and active discussions with others. It will also examine how this relationship is influenced by their perceptions of corruption, with a particular focus on the case of Mexico.

Leslye Villalobos

Competing Genes *yfbN* and *yciG* to Determine their Role in Long Term Stationary Phase in *Escherichia coli*

Stressful environments can often lead bacteria to go into long term stationary phase (LTSP) as a method to continue growing and surviving. *Escherichia coli* is a bacterium that can enter LTSP after passing through the other four stages of its life cycle. After growth, ~99% of the bacteria in the population have died. Those that survive enter LTSP and can survive in this phase for days or even years. We studied the effect of two genes, *yfbN* and *yciG*, on *E. coli*'s ability to survive into LTSP. We competed a strain missing each gene with a wild-type strain of *E. coli* for ten days, through the entire life cycle. Cells missing *yfbN*, which is a gene with no known function, could not survive through LTSP when competing with a wild-type strain, but could grow at the same rate as the wild-type strain when grown on its own. Based on this data, we concluded that *yfbN* is an essential gene when it comes to the survival of *E. coli* during LTSP. Cells missing *yciG*, a gene that is expressed in stressful environments, and contributes to biofilm formation and antimicrobial resistance, thrived through LTSP when competing with a wild-type strain. We will continue to research more genes within *E. coli* that may help it survive in long term stationary phase.

Luke Waldschmitt, Gabriel Yabut, Bryan Ha, and Vanessa Rodriguez

Is Business Booming? A Narrative Study of the Journey of Occupational Therapy Business Owners

The flexibility of environments upon which occupational therapists can provide services allows practitioners to venture into diverse entrepreneurial enterprises. Research on occupational therapists who manage their own private practices have shown that autonomy, professional growth, and entrepreneurship are reasons why practitioners choose to embark on the journey of starting a business. Although it is understood why the process begins, there is limited research on the experience of occupational therapists who start and operate a business that renders occupational therapy services. The purpose of this study is to understand the unique experiences of occupational therapists who own and operate businesses that render occupational therapy-based services. Our description of these experiences aims to inform and motivate those interested in entrepreneurship amongst the profession. This study utilizes a qualitative narrative approach, using semi-structured interviews and photo elicitation to gather responses from participants. The researchers interviewed participants on their experiences as occupational therapy business owners focusing on the chronological aspect of time before, during, and after starting a business. Four major themes were uncovered through our interviews: the spirit of OT, autonomy/freedom, uncertainty, and mindset. With a foundation of strengths-based values focused on client-centeredness, clinical-expertise, and community-centered approaches, these individuals excel at navigating a variety of barriers and

embody a growth mindset when approaching entrepreneurship. Through the study, more awareness is provided of the constraints imposed on these occupational therapy entrepreneurs, hindering the growth of entrepreneurship in occupational therapy. Their entrepreneurial endeavors embody altruism, leadership, and perseverance and continue to provide answers to any calls-to-action for progress and innovation in the occupational therapy profession. The insight into these experiences has the potential to increase the breadth of entrepreneurship to advance the OT profession and further integrate the values and advantages of occupational therapy services into the community.

Tanner Way

Ghosts of Remembrance: An Exploration of Time Space in 2046

Hong Kong film director Wong Kar-wai has long meditated on temporality, space, and the intersection of the two. More specifically, Wong examines how people become their memories - a sort of ghost of remembrance - through this convergence of time and space. This interest in spatial temporality culminates with Wong's 2004 film 2046, a reckoning with Chow Mo-Wan - a recurring character within Wong's cinematic oeuvre. Mo-Wan haunts the gambling halls of Hong Kong and Singapore after the impossibility of his relationship with Su Li-zhen is realized - he becomes a shell of the man he was, reminiscent of the Derridean conception of the trace. Mo-wan's time in Singapore is particularly representative of this idea as he attempts a romance with a second Su Li-zhen, searching for the love he lost. Wong further investigates this dynamic through a fusion of spatial and temporal signifiers within 2046 - both the room and the place within Mo-Wan's science fiction serial - exemplifying Bakhtin's chronotope. 2046, the place, characterizes the chronotope by housing memories - the record of the intersection between space, time, and presence. The aim, for this presentation, is to explore these intersections of time and space and their manifestations within the film 2046. In order to do so, I intend to research Derridean deconstruction and spatial temporality via Bakhtin's chronotope within a cinematic context.

Vanessa Wilder, Leslie Marchelli, Estephanie Perez, and Jennifer Nguyen

"Seguir Adelante:" The Experiences of Latino Immigrant Caregivers of Children With Disabilities

Up to 78% of children in the United States are eligible for early intervention services, yet only 1.48% to 6.96% of eligible children enroll nationwide (Rosenberg et al., 2013). Difficulties in accessing important services such as early intervention for children with disabilities are magnified when families are new to the country and are unfamiliar with the English language. Thus, this study aimed to develop a greater understanding of the experiences of Latino immigrant caregivers of children with disabilities in obtaining access to and utilizing healthcare services for their children in the Greater Los Angeles area. There is currently limited research available exploring the phenomenon of immigrant caregivers and how they access services for their children, particularly for Latino families. As the population of children born to immigrant households grows, it is increasingly important to understand what factors support or inhibit these caregivers' access to healthcare services for their children. The researchers used a qualitative phenomenological approach by conducting in-person interviews with four Latino immigrant parents of children with disabilities to better understand their breadth of experiences as caregivers. Qualitative thematic analysis of the data collected yielded five themes: apoyo (support - both present and lack thereof), barreras y batallas (barriers and battles in their roles as caregivers), seguir adelante (perseverance in moving forward), finding strength through faith, and coming to terms with their child's disability. Findings can guide occupational therapists in helping Latino immigrants realize their caregiver role through connecting them with culturally appropriate support groups and equipping them to advocate for their children with disabilities. Likewise, it also highlights the need for service providers to contribute to occupational justice (i.e., creating equal opportunity to engage in meaningful activities) for this population by ensuring families clearly understand services available to them and the processes through which they are acquired.

Donovan Wright

Black Queer Activism in Los Angeles During the AIDS Epidemic

During the 1980s the United States confronted the AIDS epidemic, arguably the most significant health crisis of the post-1945 era. One of the biggest populations affected by the epidemic was the LGBTQ+ community, more specifically gay men and transgender people. Due to the rise of family values in conservatism under the Reagan administration, the national government did very little to mitigate the virus' impact on America's Gay community. Even more egregious, Black gay men and transgender people were, and still are, more likely to contract and suffer the harsh effects of AIDS, and activism from White Queer Americans did not help to reverse the problem. This presentation examines the activism of the Black Queer communities in Los Angeles as shown through a variety of articles in LGBTQ+ newspapers in the latter half of 1980s. These publications indicate that there was particular collectivization and activism amongst the Black LGBT Americans in Los Angeles that created solidarity and identity for a community that was facing a major health crisis, combined with homophobia and racism.

Martha Xuncax

Transfer Center Services: Understanding Students' Needs

Low-income, first-generation students who attend "X" College experience a multitude of challenges in completing their degree and transitioning into a university. "X" College has a Transfer Center that currently only serves 30% of the student traffic that was documented before the pandemic. Thus, the purpose of this study is to understand students' existing knowledge of the Transfer Center. Using a needs assessment with X College current students, the study seeks to identify the needs of "X" College students and the ways in which the Transfer Center can cater its services to meet these needs. Data from the needs assessment survey will help direct how "X" College utilizes its funding to increase services. Preliminary findings indicate that the location and general lack of knowledge about the Transfer Center services prevents students from accessing these services.

Emmanuel Zamitz

Investigation into the Pharmaceutically Relevant Bioactivity of Fungal Metabolites from a *Penicillium* sp. CREWS 48.

This research project investigates the anti-cancer potential of secondary metabolites derived from *Penicillium* sp. CREWS 48, a marine fungal strain cultured from Indonesian sediment. The CREWS 48 strain was cultured and its secondary metabolites were extracted using organic solvent. The complex mixture of metabolites produced by the CREWS 48 strains were purified into individual compounds including flash chromatography and high performance liquid chromatography. After which their structures were elucidated using high accuracy mass spectrometry and 1D and 2D NMR spectroscopy. The purified compounds were then tested for cytotoxicity activity against a brain (U87) cancer cell line using the sulforhodamine B (SRB) colorimetric assay. This research will further the field of identifying chemical scaffolds from nature that can be used as drug leads.

Emmanuel Zamitz

Development of a crosslinked zwitterionic-based hydrogel as a vitreous substitute with anti-fouling properties

Retinal detachment, vitreous hemorrhage, and diabetic retinopathy are conditions that often require the removal of the natural vitreous to allow easy access to the posterior eye in a surgical operation termed pars plana vitrectomy (PPV). Currently used vitreous substitutes have several drawbacks and are only appropriate for short-term use. Therefore, developing novel vitreous substitutes for long-term use that are physically and biologically compatible is still needed. The objective of this research is to understand the natural vitreous and use its properties to formulate novel vitreous substitutes that closely mimic the properties of natural vitreous. More specifically, we are developing polymer-based materials that can be injected into the eye cavity as a viscous solution that will, then, gel in situ to form a hydrogel, similar to the natural vitreous. Ultimately, the developed material will further be tested in preclinical trials for its

potential long-term use. The targeted material is obtained through the copolymerization of four different monomers that impart desired physical and chemical properties. In particular, the developed biomaterial can form a hydrogel through covalent crosslinks between thiol functional groups and shows antifouling properties against BSA and Fibroblast cells, thanks to the incorporation of zwitterionic monomers. To characterize the polymer-based material, we will use gel permeation chromatography (GPC), nuclear magnetic resonance (NMR), rheometry, swelling, UV-Vis, and cell toxicity in-vitro. The properties of the developed vitreous substitute will ultimately be compared to clinically available substitutes.

Vanessa Zamora

Carbon-Based Material from Waste Biomass and Its Usage in the Fabrication of Electrical Energy Storage Components

Capacitors are used in a large range of electronic circuits and devices, serving as a crucial component of electric energy storage. Our research focuses on incorporating biochar into the construction of electric double layer capacitors (EDLC), a type of supercapacitor. Our biochar, obtained from locally-sourced biomass that has been converted through pyrolysis, was further processed through acid washing, resulting in amorphous carbon. Bonding agents and differing metallic materials that are easily accessible as household items were then used alongside the produced carbon material to create coated electrodes. The ease in access to materials paired with the biochar material (made from readily available biomass) is a purposeful combination with the goal of making the replication of these EDLCs simpler and more affordable than comparable forms of electric energy storage. The capacitance and capacitance retention of constructed electric double layer capacitors (EDLC) with varying configurations were then tested and analyzed in order to assess the effects of the biochar in the construction of these components.

Carlos Zuniga

The Aboveground Response in a New Forest Edge

Temperate broadleaf forests play an important role as one of the world's largest terrestrial carbon sinks. But, they are among the most fragmented forest biomes globally with about 23% of forest patches being found within 30 meters of non-forested patches. In the Northeastern United States, temperate forests exhibit a mosaic of fragmented forest and non-forest patches shaped by substantial agricultural and urban expansion. The resulting forest edges impose unique changes in microenvironment conditions compared to the interior such as increased exposure to drought, fire, light, nitrogen, and wind. Most research quantifying tree growth response to the creation of edges has focused on "mature" edges in place for several decades and overwhelmingly points to an increase in temperate forest tree growth along edges. However, we know little about how quickly tree growth responds to changes in microenvironmental conditions along newly formed edges. To measure these immediate impacts on tree growth, we cleared a 180 by 45-meter section at the Harvard Forest in Petersham, Massachusetts, and established six plots along the south-facing edge of the clearing. Each plot was 15m wide along the edge and extended 30m into the forest interior. They were dominated by red oak (*Quercus rubra*), red maple (*Acer rubrum*), eastern white pine (*Pinus strobus*), and black birch (*Betula lenta*). We quantified radial tree growth for 11 weeks in the summer of 2023 using dendrometer bands installed at breast height on 104 trees. The manipulated forest edge demonstrated strong edge-to-interior gradients for microenvironment variables similar to older forest edges. However, trees along the transition from the edge to the interior exhibited diverse growth patterns. Trees 20-30 meters from the edge displayed the highest mean basal area increment, followed by trees at 0-10 meters, while trees 10-20 meters from the edge exhibited the lowest mean basal area increment.