Wednesday, February 14 Presentations

Behavioral and Social Sciences I — Ballroom B

Evening Session: 6:00 pm – 8:50 pm

6:00–6:20 pm

Jacqueline Hernandez, Bridget Hidalgo, Stephany Ortiz, Psychology

Ethnicity, Family History, and Type 2 Diabetes Knowledge
Faculty Mentor: Erin Merz, Psychology

Type 2 Diabetes (T2D) rates have increased among adolescents and young adults. T2D knowledge has been associated with preventative health behaviors. It is important to identify potential disparities in T2D in-at-risk populations. This study evaluated the relationship between self-identified ethnicity, family history of T2D, and diabetes knowledge in young adults. A cross-sectional survey was conducted on young adults from CSUDH (N = 345). On the 24-item measure of diabetes knowledge, there were no significant differences (p > .05) among those who self-identified as Hispanic/Latino (n = 235, M = 11.99), Black (n = 45, M = 11.82), Asian or Pacific Islander (n = 31, M = 12.16), White (n = 17, M = 12.59), or multiracial (n = 17, M = 12.65). Participants with a first- or second-degree relative with T2D had slightly higher knowledge (M = 12.70) than participants with no diagnosed relatives (n = 129, M = 11.61; p = .005). A factorial ANOVA suggested that there were no significant main effects for family history F (1, 345) = 2.79, p = .096 or ethnicity F (4, 345) = .41, p = .799, on diabetes knowledge; the interaction of ethnicity and family history of T2D was also not significant, F (4, 345) = .26, p = .903. These results suggest that the young adults in the sample had low diabetes knowledge (~50% of items answered correctly) and that there were no ethnic disparities in T2D knowledge. Participants with a family history of T2D were slightly more knowledgeable than those who had no family history possibly due to greater exposure to T2D information. These findings suggest that young adults in university settings may benefit from a blanket T2D educational intervention via the campus health center to improve diabetes knowledge.

6:20–6:40 pm

Hawk McFadzen, Sociology

Food Access, its Impact on Healthy Eating in Los Angeles, and the Role of Urban Agriculture in Changing Consumer Behavior
Faculty Mentor: Matthew G. Mutchler, Sociology

Food access is a complex and multifaceted topic, as barriers to healthy food can vary greatly by individual and by community. One aspect that is often studied, yet seems important to monitor is how food access affects dietary habits. Previous literature shows that food access is worse in low-income, urban areas with non-white populations. We were curious to know if the ease and convenience with which one can access fresh produce affects the healthfulness of their diet. For the purpose of this study, we define food access by availability and affordability of fresh fruits and vegetables. To research the matter, we analyzed the 2014 California Health Interview Survey data. We first conducted a set of bivariate analyses to discover the disparities in food access by race. We then examined the correlations between food availability and affordability and the healthy habit indicator of fast food consumption. Our results showed that racial disparities in food access persisted in California in 2014. Specifically, our cross-tabulation showed that whites had better food availability and accessibility compared to Latinxs and Blacks (p<0.001). We also discovered a notable correlation between increased availability of affordable, fresh produce and reduced fast food consumption.
Specifically, the cross-tabulation showed that those who reported to always find affordable produce consumed significantly less fast food ($p<0.001$). Lastly, we explored the resurgence of urban agriculture in metropolitan areas as a way of alleviating the dependence on certain aspects of commodity bundles. Much research points to creative and state sanctioned urban agriculture as a viable solution to hunger, especially when practiced cooperatively. Additionally, through the community-building aspect of urban farm cooperatives, food insecurity can be treated secondarily on a local level.

6:40–7:00 pm

**Andrew Luu, Psychology**  
*The Impact of Reading Source on Retention of Factual Material and Abstract Concepts*  
Faculty Mentor: Larry Rosen, Psychology

Within the last few decades, the ubiquitous influence of technology has progressed beyond information, communication and entertainment and extended into the classroom. Technologically augmented learning is rapidly being integrated into college classrooms in the form of digital textbooks as an option to the traditional paper textbook. Although both deliver identical source material, they differ considerably in a multitude of other factors, such as distractibility, formatting, and supplemental capabilities. Individuals may also differ considerably in technology usage, perceived format desirability, and executive functioning, all of which have been shown to impact comprehension. Past research has yielded mixed results as to whether one format promotes reading comprehension over the other with some studies showing differences between source material and retention of facts versus abstract concepts. This study investigates the factors affecting reading comprehension and retention among college students using both formats. Forty-five participants will read texts in both formats in a counterbalanced order and be tested for learning outcomes including retention of both concrete material and abstract concepts. Furthermore, daily technology use, platform preference and executive function problems will be assessed as potential moderator variables. Preliminary results with the non-parametric Wilcoxon signed-rank test ($N = 23$) indicate significant differences with regard to retention of concrete material and abstract concepts. For both formats, the percentage of correctly answered concrete questions is significantly higher than the correct responses to abstract questions with $Z = -2.541$, $p = .011$ for print and $Z = -3.218$, $p < .001$ for digital. The results of this study and further research into this field will advance our understanding of how different formats influence memory, retention, and comprehension of both facts and abstract concepts. Through comparisons between participants’ performance, we can better assess which format promotes improved comprehension with potential to help students better comprehend and retain information.

7:00–7:20 pm

**Aurelio Reyes Esparza, Sociology**  
*The hidden Epidemic: HIV in the community*  
Faculty Mentor: Kelin Li, Sociology

Human Immunodeficiency Virus (HIV) is a disease that attacks the immune system and weakens it. Once the HIV virus takes over the immune system it will eventually lead to Acquired Immune Deficiency Syndrome (AIDS) if not treated properly. Although, there is no cure for HIV yet, there are ways to prevent coming in contact with this disease. The purpose of this paper is to look at the epidemic that is known as HIV, and how sexual orientation plays a role as to if an individual gets tested for HIV. Hypothesis for this research is that the sexual orientation of an individual does play a role as to if an individual gets tested for HIV. Furthermore, this study will take a look at the HIV epidemic in the United States. The 2012 General Social Survey (GSS) was used to obtain information on sexual orientation, and if a person had been tested for HIV. The results suggest that a person’s
sexual orientation does play a role as to getting for HIV. Specifically, heterosexual respondents had a higher rate of not being tested for HIV. This research goal is to make the readers take a step forward to improving their health. Don’t let the negative stigma that comes with getting tested hold you back. It is empirical that the individual who is engaging in sexual intercourse get tested every year for STD. If the individual is sexually active it is recommended that they get tested in 3-to-6 month intervals. The intent of this research is not to make the reader become abstinent, but to inform them on the data of those individual who get tested for HIV. The point here is to be informed, and use the resources that are provided.

7:20–7:30 pm        COFFEE BREAK

7:30–7:50 pm

Andrew Luu, Psychology
Life History Theory on Gratification, Education, and Socioeconomic Status
Faculty Mentor: Kevin Dooley, Psychology

Life History Theory (LHT) is a perspective from evolutionary psychology that explains how organisms, as well as humans, choose to accumulate and allocate their resources toward somatic efforts which involve devoting resources to the survival of an individual or reproductive efforts which involve devoting resources to the survival of an individual’s genes. LHT posits two strategies, fast and slow. A fast strategy prioritizes allocation of resources into reproduction. Conversely, a slow strategy prioritizes allocation of resources toward one’s self. Previous studies suggest individuals’ socioeconomic status (SES) growing up strongly influences their life history strategy (LHS). Those raised in resource-scarce environments are more likely to adopt a fast strategy. They fear resources may disappear and therefore, they invest in offspring sooner. Those raised in resource-abundant environments are more likely to adopt a slow strategy. They believe their resources will remain theirs and therefore, they invest in offspring later. Education emphasizes the allocation of resources toward one’s self. However, there is little research assessing the role of education in LHT. This study examines the impact of educational attainment and future educational goals on LHS while controlling for childhood SES. Participants were directed to a survey with a life history strategy measure, gratification measure, and demographic information asking for childhood SES, educational attainment, and future educational goals. Results show that, while controlling for childhood SES, those who desire to pursue a PhD/Doctorate’s score significantly higher on the mini-K which is indicative of a slow LHS, F(3,70)=2.900, p=.041, Partial Eta Squared=.111. Different environments may require different strategies to maximize one’s reproductive fitness. The results of this study and further research in this field can help individuals become cognitively aware of the strategies they employ and the potential benefits involved. As a result, individuals can actively change to maximize investments in themselves and their offspring.

7:50–8:10 pm

Raymundo Cervantes, Psychology
Personality, Social, and Emotional Factors Predicting Anxiety and Depression in Adolescents
Faculty Mentor: Giacomo Bono, Psychology

Depression is a leading cause of poor physical health, disability, and suicide. Adolescents in the US suffer rising rates of depression and anxiety. The current research investigates predictors of anxiety and depression in adolescents. Personality factors linked to anxiety and depression in teenagers are self and emotion regulation. Other factors linked to reduced anxiety and depression are hope and self-esteem. In terms of emotional factors, affective wellbeing is linked to decreased depression and anxiety. Furthermore, social functioning is vital during adolescence, given the emotional and physical
changes during this period. Methodology: This research includes two studies and hypothesizes that self-regulation, emotion regulation, affective wellbeing, hope and self-esteem will be negatively associated with symptoms of anxiety and depression. Participants were demographically diverse adolescents in middle/high school (grades 6-12) drawn from a larger study of student wellbeing (not reported here). The sample for Study 1 was smaller (N = 185) than for Study 2 (N= 900). Both studies examine predictors of anxiety and depression in adolescents. However, the second examines if any factors predict changes in symptoms longitudinally and explores gender and ethnic differences. Results and Discussion: Overall, Study 1 found that anxiety and depression were significantly correlated, as expected, with positive affect, negative affect, emotion regulation, self-regulation, hope, and perceived social support. Initial analyses for Study 2 revealed that negative affect predicted decreases in anxiety and depression symptoms more strongly than positive affect. Also, intentional self-regulation predicted decreases in both anxiety and depression. Finally, hope predicted increases in anxiety. To better understand these relationships, this paper presents these findings and explore gender and ethnic differences. Conclusion: This research advances understanding of the personality, emotional, social factors that contribute to anxiety and depression symptoms for a wide variety of adolescents. Implications for better supporting mental health in adolescents will be discussed.

8:10–8:30 pm

Hawk McFadzen, Sociology
How a Campus Farm Can Contribute to the Ecological Model of Campus Health
Faculty Mentor: Jenney Hall, Environmental Studies

As studies in public health increasingly focus on university campuses, an emerging trend indicates that many places of higher learning are lacking in supporting the health of their communities. When discussing communities, the discipline is looking at the student body primarily. A campus' ecological model is made up of five spheres of influence: public policy, Community Factors, Institutional Factors, Interpersonal Processes and Primary Groups, and Intrapersonal. This research supports the claim that the implementation of an urban farm operation on the California State University, Dominguez Hills campus can improve all spheres of the ecological model of campus health. Through our efforts to gauge student support for a campus farm, the Farm Club developed and distributed a survey both on paper and online. Our research team received feedback from n=112 respondents out of a student body of roughly 14,500 students over the course of two months, and the responses were inputted into SPSS. We analyzed the quantitative and qualitative responses in order to understand what the students are truly interested in seeing on the farm. We were surprised to learn that there is an impressive amount of interest among respondents for farm-based, formal and informal classes that teach about life skills, farm management, and the sciences of plant biology. When visualizing these responses through the lens of an ecological approach to our campus' community health, we realized that the farm can benefit the student body on several levels. A similar study on faculty interest in using the farm as a teaching tool has similar preliminary results.

8:30–8:50 pm

Jeremy Pollack, Negotiation, Conflict Resolution, and Peacebuilding
Clothes Makes the Negotiator: Markers of Groups Identify Affect Perception of Willingness to Negotiate
Faculty Mentor: Nancy Erbe, Negotiation, Conflict Resolution, and Peacebuilding

Visible displays of social identity, such as fashion, tattoos, and other group affiliation markers, are common features of social life, as they can be consciously or unconsciously utilized by individuals to a) help anchor one's self-concept with regard to their social ingroups and b) signal their commitment to the group to both other members of the ingroup as well as to members of the out-group.
Considerable research has shown a positive relationship between commitment to social identity and conflict, as well as a negative relationship between ingroup commitment and open-mindedness and willingness to negotiate. In the presented research, 356 U.S.-based individuals participated in a between-groups online study. Participants first read a vignette describing a negotiation situation with an opposing party's representative. Participants were placed in one of three conditions, each with the representative visualized to be signaling ingroup commitment, operationalized as wearable attire. Participants were then asked a series of questions indicating their perception of the representative’s willingness to negotiate and open-mindedness. The study found some significant effects of condition and general trends supporting the hypothesis regarding willingness to negotiation; however, no effects were found on perceptions of open-mindedness. Implications for future research are discussed, as well as broader impacts of such a research direction.
Biological and Agricultural Sciences I — LSU 323

Evening Session: 6:00 pm – 7:00 pm

6:00–6:20 pm

George Lopez, Biology
*Developing a stem cell therapy for Mucopolysaccharidosis type III B using CRISPR/Cas9 technology*
Faculty Mentor: Michelina Iacovino, Pediatrics division, Harbor-UCLA

1 in 70,000 children are born with Mucopolysaccharidosis disease type III (MPS III), also known as Sanfilippo syndrome, a rare autosomal recessive lysosomal storage disease. These children have a mutation in N-acetyl-alpha-glucosaminidase (NAGLU) gene, one of the many enzymes needed to break down a glycosaminoglycan, heparan sulfate. An accumulation of heparan sulfate in the lysosome leads to a broad range of neurodegeneration disorders, eventually leaving the affected individual in a vegetative state until death. Currently, there is no cure for MPS III, and the limiting treatments available have demonstrated poor results. We are developing a stem cell therapy treatment for MPS III B patients. We are testing the proof of concept to correct Naglu mutation using CRISPR Cas9 system. We have chosen this approach because we can specifically target NAGLU mutation, it is very efficient and will not require integration of foreign DNA. Here we report five guide RNAs that can cause breaks in Exon 1 of Naglu. WT mouse iPSC were transduced with Cas9 plasmid (WT or Nickase) with varying gRNA insertions to determine which gRNA or combination produced breaks that are more efficient. Validation of CAS9 cut was performed with T7 endonuclease, restriction enzyme digestion and by DNA sequencing. We are currently working on creating a DNA template for homologous recombination consisting of NAGLU or NAGLU-IGF2 cDNA to be inserted downstream of NAGLU promoter, to be used in combination with the Cas9 endonuclease and gRNA. Corrected cells will be differentiated into neuronal stem cells and transplanted in Naglu -/- animal to evaluate the efficiency of the cells to deliver the missing enzyme.

6:20–6:40 pm

Anthony Caballero, Biology
*The effects in an ammonium addition on bacterial succession and the nitrification process in a newly established low complexity (no fish, no plant) aquaponics system*
Faculty Mentor: Adriane Jones, Biology

Aquaponics systems are semi closed ecosystems in which fish input nitrogen as ammonia waste products, bacteria complete the nitrification process (ammonia-nitrite-nitrate) and plants uptake the usable nitrate for growth. Compared to traditional farming aquaponics systems use less fertilizer and have a smaller water footprint. In this study we explored the nitrification process and bacterial communities in a newly installed system, first as low complexity system (no fish and no plants) and second after plants were added. We artificially spiked the system with 15 grams of ammonia chloride and monitored the nitrification process using sensors, colorimetric, and spectrophotometric methods; and the microbial community using extracted chlorophyll, cells counts, and 16S rDNA sequencing over the course of a month. We clearly saw the rapid succession of the nitrification process and drawdown of nitrate once plants were added. Microscopy and chlorophyll concentrations indicated a community shift of the planktonic microbes through time, even though cell counts remained fairly constant. Preliminary results indicate a change in the microbiome over the course of the experiment. The fish tank water contained members of the genus Granulosicoccus spp. (20-30%), Oscillochloris spp. (5-3%) and Phenyllobacterium spp.(1-9%). Bacteria are critical to the optimal functioning of aquaponics systems and understanding their community dynamics is key to enhancing system
Leobardo Corona, Stephanie Perez, Roberto Sandoval, Biology

Using in situ hybridization and morpholinos to investigate the expression and function of transcription factors, znfx1 and vgl1, in zebrafish embryos

Faculty Mentor: Fang Wang, Biology

The skin is the largest organ in the human body and serves as protection from the outside environment and interacts with other cells, such as touch-sensing neurons that detect touch stimuli. This interaction has not been well studied and the goal of our research is to better understand the biology of skin cells and their development to potentially help in better diagnosis and treatment of skin disease. To do so, we will analyze and study two candidate genes expressed in the skin of zebrafish: Zinc finger NFX1-type containing 1 (znfx1) and Vestigial Like Family Member 1 (vgl1). In situ hybridization is a powerful technique used to visualize and obtain temporal and spatial information about gene expression. This technique helped us detect the expression of znfx1 and vgl1 in the entire zebrafish embryo. Our preliminary data shows expression of znfx1 in the skin at 52 hours post fertilization (hpf) but none at the 20 somite stage (SS) or 72 hpf. Vgl1 shows strong expression in the skin at the 20 SS but little to no expression at 52 hpf and 72 hpf. To study the function of znfx1 and vgl1, we microinjected zebrafish embryos with morpholinos to inhibit their expression. Morpholinos are antisense oligos that can bind to specific mRNA sequences and can inhibit normal RNA splicing or they can inhibit translation. We targeted two different splicing sites for znfx1 which were the exon-intron boundary of Exon 2 and the intron-exon boundary of Exon 3. RT-PCR results show that the morpholinos caused a partial knockdown of znfx1. We are currently quantifying our data and plan on targeting the translation sites of znfx1 and vgl1 in transgenic fish lines and using confocal imaging to document the effects their inhibition will have on early skin development.
Colleen Curry, Caitlin Allen, Erin Farber, Occupational Therapy
*Transitions into housing: Shifts in time use for formerly homeless veterans*
Faculty Mentor: Claudia Peyton, Occupational Therapy

This qualitative study uses narrative inquiry to identify positive time use habits that may enable formerly homeless veterans to successfully obtain and remain in stable housing. Upon returning from military service, United States veterans face an array of challenges that can hinder their successful reintegration into civilian life. Veterans are subsequently at a greater risk for homelessness than other adults (Tsai & Rosenheck, 2015). Obtaining housing does not necessarily mean an individual will not experience homelessness again. This study’s focus on shifts in daily use of time will hopefully illuminate strategies and resources that may help other individuals in this population make similar transitions in the future. Data was obtained through qualitative interviews with five participants. All were male veterans of the Vietnam War era, currently in their fifties and sixties. Each participant reported a significant change in time use between their period of homelessness and their current living situation in stable housing. Five major areas of time use differences emerged from interview data: access to basic physical needs and Activities of Daily Living, routines and leisure activities, social and family relationships, roles and identity, and environmental factors.

Rebecca Moss, Brittany Schornstein, Meenely Nazarian, Occupational Therapy
*Exploring the Perceptions of Fatigue Held by Individuals Living with Multiple Sclerosis: A Phenomenological Approach*
Faculty Mentor: Claudia Peyton, Occupational Therapy

A substantial percentage of individuals living with Multiple Sclerosis (MS) experience fatigue as a symptom. The experience of fatigue varies from person to person and can significantly limit many aspects of an individual’s life. This debilitating symptom is often misunderstood and there remains a challenge to treat MS-fatigue due to its subjectivity, lack of a single cause, and insufficiency of reliable outcome measures. The present phenomenological study explored the lived experiences of MS-fatigue by examining how fatigue affects the daily occupations and roles of seven individuals living with MS through individual semi-structured interviews. Seven major themes emerged from the data analysis: frustrations with MS-fatigue, loss of occupational participation or engagement, changes in social roles, loss of control and change in identity, lack of acknowledgment of MS fatigue in healthcare, challenges with self-management, and perseverance through MS-fatigue. Results suggest that there remains a profound lack of acknowledgment of MS-fatigue within the healthcare system and most individuals manage through self-care strategies. Despite perseverance through fatigue, participants also expressed changes in their daily occupations, roles, and identity from MS-fatigue. Results suggest that individuals with MS-fatigue need continued physical and emotional support in all areas of their lives. Occupational therapy interventions can particularly benefit individuals with MS-fatigue due to its holistic and client-centered nature. Future research should further investigate how individuals differentiate between MS related fatigue and pain and whether or not there are any discrepancies in experience of fatigue between males and females.
Joanne Kwak, Lauren Labac, Jennifer McCann, Occupational Therapy

*Young Adult Cancer Survivorship*
Faculty Mentor: Claudia Peyton, Occupational Therapy

Young adult cancer survivors, defined as individuals diagnosed with cancer between the ages of 18-35, are underrepresented in the cancer literature. There is a lack of research available for this population with regards to survivorship medical care, how healthcare providers can assist this population, and how young adults cope with the long-term physical and psychological effects of treatment. The purpose of this qualitative multiple case study is to understand and describe how young adult cancer survivors and their loved ones experience and cope with the aftermath of cancer treatment. Seven adult participants were included in the study. The participants were either adults who were diagnosed with cancer between the ages of 18-35 or a loved one of a young adult cancer survivor. Data were collected using two, face to face, sixty minute semi-structured interviews with each participant. All interviews were audio recorded and transcribed verbatim. Each researcher analyzed the transcriptions and the data were triangulated to verify the fidelity of each researcher’s interpretations. Seven themes emerged during data analysis. These include: a greater need for peer support, better access to mental health services, developmental delay, a different outlook on life, positive reflection, how cancer changed the lives of their loved ones, and the unique experience of having cancer as a young adult. Young adult cancer survivors need more services than are currently available to them. However, despite the hardships of treatment, they come out with a more positive outlook on life and a changed perspective. This experience also affects their loved ones who support them through this process. Directions for future research include exploring the experience and specific needs of loved ones caring for a young adult cancer survivor and how occupational therapy can best address the unique needs of this population in the future.

7:00–7:20 pm

Jamila Dizon, Health Science

*Self-Esteem & Health*
Faculty Mentor: Enrique Ortega, Health Science

Background: In primarily US populations, past research has found higher rates of binge eating disorders among college women to be commonly associated with low self-esteem. There remains a need to investigate these associations among other populations in order to determine external validity. Methods: The sample consisted of 472 Italian and Dutch adolescents and young adults (49.8% females and 50.2% males), ages 15-24 years old (mean age= 16.91(S.D. = 1.22)). The participants were representative of the population of adolescents attending high school and college students in European countries. A Pearson R bivariate correlation test was used to analyze the association between eating disorders and self-esteem for this cross-sectional study design. Binge eating was identified as what they felt in regards to self-concept and self-worthiness. Self-esteem was identified as self-reported frequency of eating disorders. We used an adaptation of a Binge Eating Scale (BES) questionnaire. Results: Contradictory to previous research in other populations, Italian and Dutch teens reported low levels of eating disorders with high levels of self-esteem. This finding shows that eating disorders and low self-esteem are not associated in these European countries. Conclusion: While a number of investigations have indicated weak, negative correlations between eating disorders and self-esteem, these results suggested no statistical significance or negative associations for Italians and Dutch young adults. The inclusion of only women was limiting the generalizability of the results to men. Therefore, gender and geographical location needs to be considered in this topic of study. The use of a cross sectional design does not allow for the examination of causal relationships. Possible implications of these findings will be discussed.
Elmira Maghen, Monique Le, Jessica Martinez, Occupational Therapy

Occupational Therapists Supporting Minorities Receiving Care Under Medi-Cal: A Multiple Case Study
Faculty Mentor: Claudia Peyton, Occupational Therapy

Issue statement: Existing literature on Rett syndrome primarily focuses on biomedical considerations and biological causes or genetic research surrounding Rett syndrome. However, few studies look at the lived experience of the primary caregivers. Purpose: To investigate how the responsibility of managing pain in a child with Rett syndrome affects the primary caregiver. Although it is predicted that minority populations will outnumber the non-Hispanic Caucasian population in the future, research shows minorities receive lower levels of healthcare services. Many of these minorities have healthcare coverage under government funded healthcare programs, such as Medicaid. However, being covered under such healthcare programs may limit the kinds of services they receive, including occupational therapy. Occupational therapists are in a position to aid such clients. The purpose of this study was to understand how and why occupational therapists support minority clients receiving care under California’s Medicaid program, also known as Medi-Cal. This qualitative, multiple case study examined views held by seven licensed occupational therapists that work in facilities that provide occupational therapy services paid for by the Medi-Cal program. This multiple case design utilized semi-structured interviews that were audio recorded and transcribed verbatim, and analyzed for identification of patterns, codes, and common themes. A within-case analysis and a cross-case analysis were conducted. Results indicate that occupational therapists work to provide culturally competent and altruistic care, although limited by reimbursement caps, bureaucratic difficulties, and lack of prior academic preparation. Future research may focus on occupational therapists who are part of minorities themselves and how they provide care, shedding light onto how or what minority occupational therapists can do to make their sessions and clients feel more at ease. Possible future research can also focus on how occupational therapists learn to navigate the world of third part reimbursement in order to provide better and more comprehensive services to minority clients who often do not know how to advocate for themselves.

Lindsey Taylor, Justin Stehr, Ricardo Salazar, Occupational Therapy

Young Adult Life Choices and Military Service: A Retrospective Study
Faculty Mentor: Claudia Peyton, Occupational Therapy

Introduction: Life direction and occupational choice are concepts that may guide researchers in understanding the motivations for enlisting in the military. These life-changing decisions are part of a unique process influenced by many personal factors that include childhood upbringing, socioeconomic status, emotional stability, internal control beliefs, adaptive personality, and a sense of self-efficacy. Purpose: To explore and better understand the reasons veterans enlist in the military. Method: Through the use of a qualitative narrative approach, the study explored the early life factors that motivated veterans decisions for enlisting in the military. Storytelling provided a means for veterans to unpack the meaning of their life experiences, producing a wealth of rich data for researchers. Results: All participants reported instances of trauma in their childhood, challenges in school and a lack of occupational choice prior to enlistment. Interestingly, there was a common theme among our veterans with difficulty reintegrating into civilian life due to a lack of occupational choice. Most of the participants also reported some form of mental health issue that affected their
quality of life. Conclusion: Veterans enlistment and post military experiences are unique and provide rich information to advance knowledge of the occupational choice process. A program addressing the unique challenges faced by veterans could be designed and implemented to help with this transition process.

8:10–8:30 pm

Katherine Simon, Thao Thai, Occupational Therapy
A Photovoice Study Exploring Falls Among Older Adults
Faculty Mentor: Claudia Peyton, Occupational Therapy

Falls are a common occurrence for older adults that can severely impact a person’s health and disrupt their routine and sense of identity. Falls are complex and best understood by considering a person’s health along with environmental and social circumstances. Falls should be further assessed temporally for both immediate effects and for long term consequences. Photovoice was selected as the qualitative method to provide eight older adults the opportunity to describe their experience of falls through photos and stories of their natural home and community environment. Photovoice is an action research method that powerfully illuminates participants’ stories in ways that can galvanize communities to better care for those who are often marginalized or overlooked. This particular study was unique because the Photovoice discussion was conducted both privately and also within a small social book club gathering of close friends who had known each other for as long as four decades. Utilizing a safe and familial setting elicited highly personal narratives which exposed the wide-ranging issues confronted after falls along with the participants’ unique responses. Another way that this study was unique is because participants shared about both recent falls as well as falls that occurred decades ago. Considering these longer-duration narratives revealed how some results emerged quite gradually. Environmental, personal, and social categories of results were presented as pertinent examples that can be considered by health providers, community representatives, and the general public.

8:30–8:50 pm

Amanda Rogers, Graduate Nursing
Reducing Door to Balloon Times in STEMI Patients
Faculty Mentor: Lauren Outland, Graduate Nursing

Purpose: The study is a quality improvement project directed at decreasing door-to-balloon times in patients who present to the Emergency Room with a STEMI. Statement of Problem: According to the CDC, “About 610,000 people die of heart disease in the United States every year—that’s 1 in every 4 deaths…and is the leading cause of death for men and women.” (CDC, 2015) Early recognition and treatment of people who have heart attacks decreases mortality rates. The American Heart Association (AHA) recommends that fibrinolytic therapy be provided to patients within 30 minutes of first medical contact and primary PCI be provided within 90 minutes for patients presenting with a STEMI. Data shows that many patients do not meet the recommended times suggested by the AHA. One of the goals for Healthy People 2020 is to increase the amount of eligible patients receiving PCI within 90 minutes of hospital arrival. Method to Address Problem: For the proposed study, the Donabedian’s theoretical framework was applied to evaluate current practices and implement new procedures regarding STEMI patients. This framework is applicable to the proposed research study since the framework works to improve quality of care by dividing health services into three fundamental parts: structure, process, and outcomes. (Polit & Beck, 2008). For the research study, I will utilize a multidisciplinary team approach to look at the processes in place for decreasing time delays in artery opening therapy for STEMI patients. This will be accomplished by modifying existing policies and procedures in place and training staff on the new practices. I will focus my interventions
on the staff in the Emergency Room and Catheterization Lab (Cath-lab). By continually evaluating and giving feedback to staff as well as in the moment feedback from staff regarding what is working and what areas we still need to modify. Some modifications we will implement into our practices would be to have at least two cath-lab staff in the hospital at all times, allowing Emergency Room Physicians to activate the cath lab without cardiology consult and to have central ECG monitoring on all patients in the ER who trigger a cardiac event. Description of Innovation: Literature reviews suggesting evidence-based strategies to reduce door-to-balloon times were reviewed and incorporated into the interventions outlined. Research has proven that central monitoring or ECG monitors, ER physicians ability to activate the catheterization lab (cath lab), and at least two cath lab staff in hospital at all times are strategies to reduce PCI times in patients. Implications for Research: This study will prove these three interventions will reduce PCI times in patients, which will directly impact patient mortality. Supporting research has been identified and outlined and evidence supporting these interventions.
Noraim Nunez, Physics
*Analysis of Lambda-Proton Elastic Scattering in CLAS*
Faculty Mentor: John Price, Physics

Lambda-Proton elastic scattering offers multiple insights on problems in nuclear physics. SU(3)-flavor symmetry implies a close agreement between the Lambda-proton and proton-proton scattering cross sections. The Lambda-Proton elastic scattering cross section can also illuminate the structure of neutron stars. A data-mining project was started using CLAS data taken to look for exotic quark matter with a high-energy photon beam on a long liquid hydrogen target. A Lambda produced in a process such as gamma p–¿K+ Lambda can interact with a second proton inside the target before either decaying or leaving the target. The good angular acceptance and momentum resolution of CLAS make it well-suited for this type of analysis, even though it was not designed for a measurement such as this. The scattered Lambda can be found in the pi- proton invariant mass. The four-vector of the initial Lambda is then reconstructed in the process Xp–¿Lambda p, which shows a strong peak at the Lambda mass with roughly twice the number of events as the existing world data sample. This observation opens up the possibility of other measurements using secondary beams of short-lived particles. This talk will discuss the current status of the analysis, and our plans for future work on this project.

Marcos Guillen, Physics
*Simulation of Lambda-Proton Elastic Scattering in CLAS*
Faculty Mentor: John Price, Physics

The cross section for Lambda-Proton elastic scattering is complicated. The cross section formula is well-known, and depends on the numbers of detected events, beam particles, and target particles, the acceptance, and the detector and analysis efficiencies. For Lambda-Proton elastic scattering, the beam particle is a secondary particle with a short mean life, complicating this calculation. This study made use of the CLAS simulation program GSIM, which includes a complete description of the CLAS detector. The first step is to simulate the energy and angular spectrum of the beam Lambda. Also, the Lambda's short mean life makes it necessary to study the effect of its decay on the luminosity. The energy and angular spectrum of the beam Lambda is simulated with the process gamma p –¿ K+ Lambda. Using this energy and angular spectrum, we then determine the luminosity of our Lambda-Proton measurement by generating Lambdas based upon the simulated results, with a second pass of the simulation. We can then determine the geometrical acceptance for the Lambda-Proton elastic scattering process with a third pass of the simulation. This talk will discuss the status of the simulation project, and will present the initial results of the Lambda spectrum simulation.

Zhayne Tanyag, Clinical Sciences
*Antifreeze Proteins as Nucleants for Thymidine*
Faculty Mentor: Sen Wang, Chemistry

Currently, nucleants for proteins are well-known. However, the nucleants for small molecules remain
unknown. For more than three decades, antifreeze proteins and glycoproteins (AF(G)Ps) have been commonly used as inhibitors for crystals. This inhibition of the growth and recrystallization of crystals of AFPs has been generally limited to ice, amino acids, inorganic salts, carbohydrates, and benzene ring containing compounds. Most recently, we have found that AFPs can work as nucleants for Thymidine-a nucleoside. The induced crystals are large enough for effective use in x-ray diffraction. In order to induce crystals, we created aqueous solutions and used a slow evaporation process at room temperature. The size ratio between the two is as follows: 1 thymidine to a $10^{-6}$ antifreeze protein. Without the AFPs, the crystals grew after 10 days, while with the proteins it took 4-5 days. We used AFPs, such as DAFP1, Type I, Type III, and BSA with varying effects in size, shape, and amount of nuclei. Within the pharmaceutical industry, stereochemistry is crucial. Due to the cost and amount of energy it takes to separate the L and D determinations of crystals, companies sell racemic mixtures. In nucleosides, only the L form manifests. We are exploring whether the proteins can recognize the difference between stereoisomer. Additionally, efficient control of size, shape, and time for crystallization suggests even further applications in food and manufacturing (resins). Being a deoxyribonucleoside, Thymidine is only one of four. Future work would be in researching AFP compatibility with the others.

7:00–7:20 pm

**Justin Hathaway, Chemistry**

*Maker's Electrochemistry: Building a Low-Cost Potentiostat for Cyclist Voltammetry*

Faculty Mentor: John Price, Physics

Cyclic voltammetry is a potentiometric method that is useful for studying electrochemical reactions that create currents. The technique can be used to quantify target analytes, discover reaction kinetics, and elucidate reaction mechanisms. The instrument used for cyclic voltammetry experiments is a potentiostat, which linearly varies an electrode potential over a specific range at a specific rate, while monitoring the current that develops. Commercially, potentiostats and some variation of voltammetry or chronoamperometry are the foundation of myriad chemical sensors such as glucose sensors, on-chip protein biosensors, and gas sensors. Even though extremely useful in biomedical and industrial hygiene applications, little is said of cyclic voltammetry or potentiostats in the undergraduate chemistry laboratory curriculum. One of the reasons for this is that cyclic voltammetry measurements can be tedious and unforgiving. Another reason is that the measurement equipment can be very expensive, with the cheapest laboratory potentiostat retailing for several thousand dollars. Our research group has successfully developed a very low cost potentiostat system assembled from the Teensy USB development microprocessor and commercially available electronic components. This presentation describes the resulting potentiostat kit, its response to benchmark electroanalytical chemistry experiments, and plans for the next phase of incorporating this student-built measurement system into an undergraduate chemistry lab experiment. The ultimate goal of this project is to provide an opportunity for chemistry students to become more familiar with both electrochemistry and electronics/computer interfacing.

7:20–7:30 pm        **COFFEE BREAK**

7:30–7:50 pm

**Adrianna Perez, Physics**

*Star Formation in Simulated Merging Galaxies*

Faculty Mentor: John Price, Physics

Galaxy interactions and mergers are efficient mechanisms to birth stars at rates that are significantly higher than found in our Milky Way galaxy. The Kennicutt-Schmidt (KS) relation is an empirical
relationship between the star-forming rate and gas surface densities of galaxies (Schmidt 1959; Kennicutt 1998). Although most galaxies follow the KS relation, the high levels of star formation in galaxy mergers places them outside of this otherwise tight relationship. The goal of this research is to analyze gas content and star formation of simulated merging galaxies. Our work utilizes the Feedback In Realistic Environments (FIRE) model (Hopkins et al., 2014). The FIRE project is a high-resolution cosmological simulation that resolves star-forming regions and incorporates stellar feedback in a physically realistic way. In this work, we have noticed a significant increase in the star formation rate at first and second passage, when the two central black holes of each galaxy approach one another. Next, we will analyze spatially resolved star-forming regions over the course of the interacting system. Then, we can study when and how the rates that gas converts into stars deviate from the standard KS. These analyses will provide important insights into the physical mechanisms that regulate star formation of isolated and merging galaxies and valuable theoretical predictions that can be used to compare with current and future observations from ALMA or the James Webb Space Telescope.

7:50–8:10 pm

Alexander Wittmond, Mathematics
Partition Problems and a Pattern of Vertical Sums
Faculty Mentor: Serban Raianu, Mathematics

We give a possible explanation for the mystery of a missing number in the statement of a problem that asks for the non-negative integers to be partitioned into three subsets. We interpret the missing number as one of the clues that can lead to a more standard solution to the problem, using only congruence modulo five.

8:10-8:30 pm

Nadia Hirbawi, Chemistry and Biochemistry
Synthesis of Redox Active 2, 4, 6-Tris(p-ferrocenylanilino)-1, 3, 5-triazine and its Host-Guest Properties with Cucurbit[n]uril (n=7,8)
Faculty Mentor: Arumugam Thangavel, Chemistry and Biochemistry

Synthesis of Redox Active 2,4,6-Tris(p-ferrocenylanilino)-1,3,5-triazine and its Host-Guest Properties with Cucurbit[n]uril (n=7,8) Redox active compounds play a vital role in nature and in artificial systems. In nature, many enzymes regulate their activities through redox process. In artificial system, redox active compounds have been used in batteries, solar cells, sensors, to name a few. Many redox active compounds have been reported. Among them, Ferrocene has attracted more attention because of its low oxidation potential as well as its reversible one electron transfer process. It is an organometallic complex with an iron (II) is sandwiched between two cyclopentadienyl rings. In our aim to probe the molecular recognition (Host-Guest) and its role on redox activity, the 2,4,6-Tris(p-ferrocenylanilino)-1,3,5-triazine (3FC-Tzn) was synthesized. The 3FC-Tzn is a star shaped molecule with three repeating units of p-Ferrocenylaniline groups connected by central triazine core. It is synthesized from commercially available Ferrocene and cyanuric chloride; and was characterized by NMR, Mass spec, and IR, Uv-Vis. The 3FC-Tzn is used as a guest to form a Host-Guest complex with cucurbit[n]uril. The cucurbit[n]uril is a macrocyclic molecule and acts as host to form an intercalated Host-Guest complex with neutral and cationic molecule. In this presentation synthesis, characterizations, and Host-Guest properties of 3FC-TZN will be discussed.

8:30-8:50 pm

Vuong Tran, Mathematics
Consider the following problem involving $r$ balls and $n$ urns: we seek to compute the probability that no box contains more than one ball if the $r$ balls are randomly tossed into the $n$ boxes. We distinguish between the homogenous case where all boxes have the same probabilities versus the more general inhomogeneous case. We will find general formulas and compare the two cases in several settings. If there are $n = 365$ boxes and the balls are considered to be birthdays of $r$ random people, this probability corresponds to the chance that at least two people in the group having the same birthday. We will look at further applications such as the protection of privacy in public data sets, and also to so-called birthday attacks of cryptographic hashing functions.
Rebecca Cook, Orthotics and Prosthetics

Exercise and Stress Levels in ABC Certified Orthotists and Prosthetists

Faculty Mentor: Julie Werner, Orthotics and Prosthetics

This study investigated the relationship between regular exercise and stress levels among American Board-Certified Orthotists and Prosthetists (CPOs). Evidence supports increased quality of life and prevention of various medical conditions with regular exercise (Wallace et al., 2009). It is imperative to understand the impact stress has in the workplace, as chronic work-related stress and excessive workloads lead to a high occurrence of burnout and stress related concerns (Wallace et al., 2009). Participants were recruited from personally acquainted CPOs who provided their emails as a resource while completing a Masters in Prosthetics and Orthotics. A snowball recruitment method was then used by asking CPOs to forward it to other practitioners who might be interested in participating. Participants who exercised and those who did not were asked to complete a confidential survey on stress levels which was sent to them via email. The group that exercised, defined as those who participate in at least 150 minutes of moderate intensity activity scored an average of 14.71 and those who did not scored an average 16.444 on the Perceived Stress Scale Respectively. With a p-value of 0.56 further studies with larger sample are needed to further explore the relationship between stress levels and exercise among practitioners.

Gregory Grabe, Orthotics and Prosthetics

Flip Flop Ambulation

Faculty Mentor: Julie Werner, Orthotics and Prosthetics

Flip flop style sandals may be comfortable in some climates, or fashionable to some individuals, but does walking in them change a person’s gait significantly? This study will observe and report findings on ambulation wearing flip flop style sandals and compare it to barefoot gait of the same participants. Temporal spatial data such as duration of each trial and stride length was recorded. Average measurements for each trial were analyzed and compared. Participants were recruited from California State University Dominguez Hills MSO&P program. They were asked to complete two ambulatory trials in a gait lab setting. On average people with flip flops had an average stride length with an average of 67.64 cm and a trial duration of 36.06 and people without flip flops has an average stride length of 66.16 and a trial duration of 34.78. With a p value of 0.79, more research should be collected to obtain a more conclusive understanding of flip flops impact on gait.

Ian Fraser, History

Comics and the Civil Rights

Faculty Mentor: Andrea Johnson, History

My project will attempt to show how comic books reflected the changing perceptions about race and gender during the Civil Rights Movement, as well as how various comic book characters became representatives of the respective race and/or gender. It will also to show how comic books and other forms of pop culture prove that race and gender roles were under constant negotiation as a result of people’s actions and beliefs. By looking at characters like Black Panther I will show how the emerging ideas about a new militant manhood and pride of race affected the African American community. I will also look at how the Black Panther showed the various challenges facing the African American communities like racism and stereotypes. By looking at Wonder Woman we will see how the ideas of feminism in the United States formed and was developed. We will see how Wonder Woman represented the new ideas of woman’s equality and sexuality.
Chris Stokesbary, Orthotics and Prosthetics

*Q Angle Relationship to Step Length*

Faculty Mentor: Julie Werner, Orthotics and Prosthetics

This study is going determine if there is an association between q angle with step length. Q angle is the angle of the thigh (femur) and its connection to the shin (tibia). Step length is the distance between one toe leaving the ground (toe off), and that same heel contacting the ground (heel contact). There is a step length for both feet, during ambulation. Step length can be predicted by leg length; therefore, leg length was controlled for using a multiple regression. The importance of this study is to determine if q angle can predict step length in order infer risk for potential injuries associated with abnormal q angle. Our results were not significant in supporting a relationship between q angle and step length. We found q angle and leg length to not be significant predictors of step length. Future research should analyze a larger sample.

Fann Lim, Orthotics and Prosthetics

*Relationship between Cranial Helmet Orthosis Intervention Age and Duration for Patients with Plagiocephaly*

Faculty Mentor: Julie Werner, Orthotics and Prosthetics

Plagiocephaly is the asymmetrical flattening of a baby’s head resulting in an oblique presentation. Modern treatment of plagiocephaly uses cranial remolding helmet orthosis. It is hypothesized that intervention at an earlier age will result in a shorter treatment completion time. Subjects with infants that underwent said treatment were recruited in an orthotic clinic. The infants’ age, start of treatment date and end of treatment date were collected, and the data was analyzed using ANOVA. Data was collected from 27 infants aged between 3 months to 12 months. The results showed that there was no significant difference between the two groups of infants who started treatment when aged <3 months to 6 months and <6 months to 9 months, but treatment time was significantly longer when infants are aged <9 months to 12 months. The detailed results from this study differ slightly from the results from other studies of the same topic, but the overall findings are similar in that earlier intervention will result in a shorter treatment completion time. Limitations in this study include the lack of number of samples, not accounting for parent or guardian compliance during treatment period, and not including other outcomes such as correction rate.

Samuel Legorreta, Orthotics and Prosthetics

*Do Placebo Insoles reduce Lower Back Pain?*

Faculty Mentor: Julie Werner, Orthotics and Prosthetics

Background: Low Back Pain (LBP) causes more disability than any other medical condition worldwide. One of the possible causes of LBP, is walking long distances, which is common in different jobs. Insoles are typically prescribed for patients with LBP to influence foot stability and to normalize the kinetic chain. Placebo is being an object of treatment, able to produce positive effects and spontaneous fluctuations in LBP. Objectives: Investigate in adults who stand for long periods of time at their jobs, if placebo insoles compared to regular shoe insoles, reduce low back pain. Method and Materials: following ethical approval, participants (n:8) adults (women and men) whose jobs include long standing periods of time (>6 hours/day), were evaluated with the Oswestry Low Back Pain Disability Questionnaire during first interview. Placebo insoles made of 1/16‘closed cell material was placed in 4 participants and regular shoe insoles were used in the rest of participants for 2 weeks, after this period of time same questionnaire was used in all participants with the finality to compare results. Results: a comparison of percentage according to the Oswestry Low Back Pain questionnaire was performed between the placebo insole group and the regular insole group in the first interview, they do not demonstrate statistical changes (P: 0.268144). After a 2-week period of
time, the same questionnaire was accomplished in both groups; in the placebo group only one of the participant reported lower scores, but it wasn’t statistically significant for the purpose of the study (P: 0.377557). Conclusions: The results of this study suggest that time and sample size are valuable resources, otherwise aren’t going to show changes in low back pain in the different groups of investigation.

Iris Nakashima, Biology
Dependency of Aggressive Breast Cancer on Autophagy for Survival
Faculty Mentor: Shehla Pervin, Endocrinology, Charles Drew University

Despite intense efforts breast cancer remains a major threat to women of all ages and race. Major challenges are heterogeneous cell types, their plasticity and resistance to available treatment options, tumor recurrence and metastasis. Surprisingly, aggressive breast cancers become addicted to key signaling pathways for their survival. Our lab has found that an aggressive triple negative (TN) subtype of breast cancer, frequently diagnosed in young African American (AA) women, express high levels of Bax, a pro-apoptotic molecule. We also found dependency of these cells on autophagy, which removes defective cellular organelles to increase their survival. We examined whether the inhibition of autophagy via chloroquine diphosphate salt treatment in TN breast cancers (HCC70, MDA-MB-468, and HCC1806) increased apoptosis, a programmed cell death. Autophagy levels as well as the stability of the key players were compared in cancer cells and mammary epithelial cells (MEC). Autophagy and apoptosis was also examined by inhibition of proliferation and exposure to nitrosative stress. Our data indicated that inhibition of autophagy increased apoptosis, which was determined by Bax cleavage by immuno blot analysis and fragmentation of chromosomal DNA by APO-BRDU kit. We also observed that chloroquine treatment reduced the levels of autophagy players, ATG7 and BCl2, as detected by immuno blot analysis. We also found autophagy was higher in TN breast cancer cells when compared to MEC. The stability of the autophagy and apoptotic players were comparable in the cancer cells but the chloroquine treatment preferentially reduced autophagy players. Inhibition of proliferation and nitrosative stress increased apoptosis and autophagy in these aggressive TN cells. Our results show that AA breast cancer cells were addicted to autophagy for survival and inhibition of autophagy could result in better clinical outcome for these aggressive breast tumors. We also found that autophagy was higher in cancer cell when compared to MECs.

Lizett Gonzalez, Biology
Characterizing of Regulon of SspA in Escherichia coli During Long-Term Stationary Phase
Faculty Mentor: Karin Kram, Biology

In Long-Term Stationary Phase (LTSP) of the Escherichia coli life cycle, cells experience tremendous amounts of stress caused by low nutrient availability, high levels of waste by-products, and a high-pH environment. Advantageous mutations can appear in cells, which are then selected for because the cells are able to survive these conditions. One gene frequently mutated in long-term cultures is the sspA gene. Stringent Starvation Protein A (encoded by sspA), is expressed in order to help cells adapt to stressful environments by affecting expression of other stress-response genes. Previous work has begun to identify all of the genes regulated by SspA throughout LTSP. We used quantitative Polymerase Chain Reaction (qPCR) to confirm the regulation of three genes by SspA. Three types of E. coli cells were grown in Luria-Bertani media and then compared: wild-type (no mutation), null (missing sspA), and point mutant (containing a single nucleotide mutation originally identified after growth in LTSP). We monitored sspA expression along with the expression of cynX (cyanate transporter), hdeA (resistance to low pH) and fliC (flagellin, the major structural component of flagella), each potentially regulated by SspA. Comparing the null strain to the wild type strain, hdeA and fliC genes are upregulated in the null strain, whereas cynX is downregulated in the null strain. These differences are the same when comparing the point mutant strain to the wild-type strain,
indicating that the point mutation may cause a loss of function of SspA. Characterizing the role of sspA, along with other genes involved in cell survival during LTSP, will lead to an understanding of how mutations influence adaptation to changing environments.

**Alina Skwarcan, Orthotics and Prosthetics**  
*Relationship between Non-Verbal Communication and Patient Satisfaction*  
Faculty Mentor: Julie Werner, Orthotics and Prosthetics

Patient Satisfaction is a way to measure clinical outcomes and the quality of care provided by the practitioner (Etches, 1994). Those scores can be used to indicate whether a practitioner is providing the best care. A practitioner can see a variety of patients, but this study looks specifically at cranial remodeling, prosthetic, and orthotic patients. The purpose of this study is to show if patient satisfaction is effected by the device used. The hypothesis is that the ranking of scores from highest to lowest will be; prosthetics, cranial remodeling helmet, and then orthotics. A survey was used and given to thirty-six patients at an office in South Bend, IN. The office sees primarily pediatric orthotic patients, therefore the primary chose of device, orthotic, was indicative of that. The results of this study showed that prosthetic patients had the lowest scores. Despite that, none of the results were statistically significant. This in conjunction with the lack of research based evidence indicates more research is needed to collect more reliable data.

**Sydnee Childress, Education**  
*Effective 4th grade math strategies*  
Faculty Mentor: Edward Curammeng, Teacher Education

This research study was conducted in a fourth grade classroom to gather data and examine what strategies are most effective for raising students’ interest, participation and scores in math. Math skills taught during elementary school years are designed to provide the foundational skills students need to successfully understand concepts introduced continuously. Throughout the study students were provided with information regarding careers in STEM to display how math is relevant to the real world. The strategies used to improve the students interest, participation, and scores included creative and explicit hands on lessons, group collaboration, and daily incentives to keep the students engaged. Throughout the study, the teacher would guide and scaffold carefully to determine how to effectively use each strategy in the classroom. All students were well aware of all expectations, objectives, punishments and rewards. Based on the results of the study students are more likely to participate while working with others and being able to gain rewards for their work ethic.

**Evelinda Parra, Estela Torres, Sociology**  
*The Power of Educational Facilities: Examining the Effects of Interactions*  
Faculty Mentor: Joanna Perez, Sociology

Among working-class students of color, their educational journey is impacted by their campus climate. The purpose of this study is to analyze how teachers, staff, classmates, and overall school environment impacts students’ education and future aspirations. Our research question is, how does campus climate impact a student’s interactions in educational facilities? Drawing from a qualitative methodological approach, we spent a combined total of 168 hours at two sites, where we conducted participant observations and field notes. The sites include the CSUDH Infant/Toddler Development Center and a Family Learning Center funded by HACLA in the Carmelitos Housing Development. As students assistants, we collected and coded data. We found four main themes, 1) students’ interaction with teachers, 2) students’ interactions with staff, 3) students’ interaction with classmates, and 4) students’ perception of the environment and access to resources. While interacting with teachers, we found that how teachers communicate impacts whether student feel welcomed and
comfortable to ask questions. When there was positive student-teacher relationships, students felt validated and reassured that they could continue their education. When students interact with staff like ourselves, we found that given our own background, students often were more likely to express their concerns to us rather than the teachers. However, we made sure to communicate these concerns to the teacher and together, we would come up with possible solutions. This interaction played an essential role in the student’s positive perception towards educational facilities. When students witnessed positive relationships with teachers and staff, students were more likely to reach out and engage with their classmates. Lastly, we found that educational facilities that provide welcoming spaces, made a deep impact in the students’ ability to feel a sense of belonging and appreciation. Our preliminary findings suggest that campus climate has a deep impact in the lives of students.

Francisco Bautista, Biology
EMP2 alters MHC I Expression in Breast Cancer
Faculty Mentor: Madhuri Wadehra, Pathology

Epithelial membrane protein 2 (EMP2) is a cell surface protein that has been associated with expression of major histocompatibility complex class 1 (MHC). It has been observed that high levels of EMP2 mRNA and protein are present in a number of cancers. Additionally, recent work has shown that EMP2 may play a role in immune cell recognition, potentially by altering MHC expression. Cytotoxic CD8+T lymphocytes (CTLs) and natural killer (NK) cells lyse tumor cells expressing or lacking MHC I molecules respectively. Here, we ask if EMP2 directly alters MHC expression levels, we look into this question. With the use of flow cytometry and western blotting we observed the relationship between EMP2 and MHC in an EMP2 knockdown model in different cell lines. Early data has demonstrated a 2-fold increase in MHC expression when EMP2 is knocked down in cancer cells. These results suggest that EMP2 may alter tumor immunogenicity by regulation of MHC I expression. Further understanding the relationship between these two proteins can lead to the rise of novel cancer therapeutics.

Gurkiran Singh, HarmonJeet Singh Brar, Ishu Juneja, Computer Science
Authentication and Access Control of IOT Using Lightweight Cryptography
Faculty Mentor: Bin Tang, Computer Science

When it comes to securing any interface connected to the Internet, the more secure the better. In a time where traditional authentication methods can easily be hacked into, it is critical for websites and online devices to be secure. At the same access control ensures only the correct person is given the respective access level to ensure the integrity of the data. More number of people now live in a smart society. The ‘Internet of things’ is an emerging technology that a large number of people are becoming aware off. It is a network of devices connected to the internet. Hence with the growing demand for such devices and in a world where many common devices are online, it is important to be aware of the vulnerabilities and to ensure the correct steps are taken. This paper explores how far we have come with the ‘Internet of things’ and how secure it is. Besides that, it also takes a peak on the most important topic of ‘how secure the devices are which are connected to the Internet’.

Alexis Guidry, Orthotics and Prosthetics
Effective Transtibial Casting Technique for Accurate Anatomical Measurements
Faculty Mentor: Julie Werner, Orthotics and Prosthetics

The purpose of this study is to put one specific classification of residual limb casting techniques to the test with the goal of determining which technique yields a more anatomically correct cast than the others they are being compared to. The characteristic of each technique that is being tested is overall volume of the cast. The hypothesis is that volumes of one or more casting techniques will be
significantly different from the others. The casting technique that yields volumes closest to the dimensions of the model can be deemed the most appropriate to for anatomical accuracy. 3 California State University at Dominguez Hills Masters of Orthotics and Prosthetics Students each took three casts, one cast per casting technique, and their measurements were recorded. It was found that there were no significant difference between any of the casting techniques, and that all techniques can be appropriately used when casting a persons with a transtibial amputation.

Emily Alumbaugh, Orthotics and Prosthetics
*Prosthetic Cosmetic Impact on Mental Health*
Faculty Mentor: Julie Werner, Orthotics and Prosthetics

Research has shown that limb loss will most likely negatively impact body image. One way for a clinician to encourage positive body image is by collaborating with the patient on designing a cosmetic cover or graphic designed socket for the prosthetic device. Psychological adjustment problems including anxiety, depression, and social isolation are common with people that have undergone leg amputations. The purpose of this study is to investigate how a customer input of cosmetic design can impact the patient's mental health, specifically depression. The research subjects were recruited from O&P Group in Whittier, CA. The survey administered was the Center for Epidemiologic Studies Depression Scale (CESD-R-20). The patients used for the study were over the age of 18 with a lower limb prosthesis who is able to complete the survey accurately. The location of the research study took place online at: https://docs.google.com/forms/d/e/1FAIpQLScFlwfwO4LZvU9u7YUpZosSFNAQ5kI2Ni5sXT2JG5kSU2MHpQ/viewform?usp=sf_link. Thirty individuals with lower limb amputations were asked to participate. Of the thirty, three were recruited for this research study. Among the lower limb amputation group, there were two males and one female participants. There were no participants that stated they did not have input on the cosmetic design of their socket, therefore no p value was calculated. Out of the three participants, two patients were below risk level for depression.

Silvia Gutierrez, Julie Mendoza, Robert Nastav, Giacomo Bono, Psychology
*An Examination of Gratitude and Social-Emotional Well-being in Preschoolers*
Faculty Mentor: Giacomo Bono, Psychology

Gratitude is an important psychological factor in positive youth development that also has the potential to improve students’ motivation and well-being (Bono, Froh & Forrett, 2014). Recently, a curriculum was developed for elementary school children based on gratitude, with results indicating that children felt more gratitude and well-being (Froh, Bono, et al., 2014). However, efforts to understand gratitude, much less promote it, in children at younger ages is hampered by the lack of a psychological measure of gratitude empirically (Bono et al, 2014). This presentation introduces a new gratitude measure for children, ages 3 to 6, that is being developed. It also describes the research to validate this measure and, if possible, preliminary results. The preschool measure, entitled the Early Childhood Assessment of Gratitude (ECAG), is an interactive booklet where children make choices in response to hypothetical benefaction scenarios. The scenarios all involve a common negative event that preschoolers encounter followed by the help of a peer benefactor. The measure is designed to assess emotional, verbal and behavioral aspects of gratitude in 3-6 year olds. Data from two preschools are being collected in the Fall 2017. Prior to data collection all the parents of the children sought to participate in study provided parental assent, and the children themselves provided verbal assent. To evaluate the effectiveness of the ECAG two methods are being used: (1) The ECAG will be administered by investigators before and after a gratitude curriculum (not described here); (2) The ECAG will be correlated with data collected by teachers using the Devereux Early Childhood Assessment for Preschoolers (DECA-P2). The DECA-P2 assesses protective factors central to social and emotional health and resilience and can be used as a screener for behavioral concerns in children ages 3-6. Conclusions will be made about the benefits of gratitude for early childhood
Jose Garfias, Chemistry and Biochemistry
Theoretical Study of 3FC-TZN and its Host-Guest interaction in the Determination of Stable Electroactive Materials
Faculty Mentor: Kenneth Rodriguez, Chemistry and Biochemistry

Reliable theoretical 1H NMR, HOMO, and LUMO is computed for the molecular recognition (Host-Guest) and its role on redox activity, the 2,4,6-Tris(p-ferrocenylanilino)-1,3,5-triazine (3FC-Tzn) with cucurbit[n]uril that has been synthesized experimentally. The Density Functional Theory (DFT) of B3LYP/6-31G* method is used to optimize each molecule and then optimize both structures together using the DFT calculations with the M062X/6-31G* method in the solvent of DMSO. These results are used to compare the computational calculations with the experimentally synthesized Host-Guest. These theoretically calculated values are within a 5% relative error when compared to the experimentally chemical shift. The 3FC-Tzn is a star shaped molecule with three repeating units of p-Ferrocenylaniline groups connected by central triazine core. The 3FC-Tzn is used as a guest to form a Host-Guest complex with cucurbit[n]uril. The cucurbit[n]uril is a macrocyclic molecule and acts as host to form an intercalated Host-Guest complex with neutral and cationic molecule. In artificial system, redox active compounds have been used in batteries, sensors, and solar cells. Such redox active compounds have been known to play an important role in nature and systems that are artificial. Many enzymes regulate their activities through redox process naturally. It has been reported several redox active compounds in the literature. Among them, Ferrocene has attracted more attention because of its low oxidation potential as well as its reversible one electron transfer process. Ferrocene is an organometallic complex with an iron (II) that is sandwiched between two stacked cyclopentadienyl rings. Having been synthesized from commercially available Ferrocene and cyanuric chloride that was characterized by different spectroscopic techniques, such as NMR, Mass Spec, IR, and UV-Vis and compared to reliable computational modeling.

Serina Quintero, Anthropology
GIS Mapping of Historical Buildings in Downtown Los Angeles (central city)
Faculty Mentor: Parveen Chhetri, Earth Science and Geograph

The city of Los Angeles, from its humble past as being one the first pueblo in Southern California to today being a bustling city center dominated by high rise buildings, has a deep and rich history that tells the story of urbanization, transition and growth. Part of this history can be seen in the many historical buildings that are spread throughout downtown Los Angeles. These historical buildings have much to offer us in regards to providing historical context and knowledge of Los Angeles history. The purpose of my research was to document the locations of historical buildings built before the turn of the 20th century in the downtown Los Angeles area and more importantly, to gain a better understanding of the historical significance of these buildings and how they are being incorporated into our modern landscape. The research draws upon data obtained from various sources including Los Angeles County GIS department’s website. Additionally, I reviewed existing literature related to the history of Los Angeles in order to get a better understanding of the historical context and significance of each building being document and incorporated into my map. After incorporating data such as the date of completion of the building, the address, the architect, the significance of the building, date the building was added to the national historic registry, and the use of the building today into my GIS geodatabase. Through the creation of an informative and interactive spatial data map the results of my research provide an increased understanding of the locations and significance of the historical buildings located in the downtown area and demonstrates how these buildings are being incorporated into our
modern-day landscape.

**Samantha Tsumaki, Chemistry and Biochemistry**  
*Synthesis and Host-Guest Properties of 1,7-Dimethyl-1,7-diazoniachrysene with Cururbit[n]urils*  
Faculty Mentor: Arumugam Thangavel, Chemistry and Biochemistry

Pyridinium based redox active compounds can be found in nature as well as in artificial system. In nature, notable example is NADH to NAD+ where it acts as cofactor for the biological redox process. Many pyridinium compounds such as viologen, 2,7-diazapyrene etc. have been used in redox indicator, sensor to name a few. In order to understand the role of molecular recognition on redox activity, the host-guest complex was selected, in which redox active pyridinium based compound acts a guest and macrocyclic Cucurbituril acts as host. In this study, 1,7-Dimethyl-1,7-diazoniachrysene, was used as guest and cucurbit[n]uril as host. The target compound was synthesized from commercially available 1,5-Diaminonaphthalene and glycerol in strong acidic condition, which forms free base and further quaternization yields the target compound. In this presentation, synthesis, characterization and its interaction with Cucurbituril will be presented.

**Daileen Cortez, Biology**  
*Activation of Proteasome by Inhibiting Autophagy in Corneal Epithelia Cells with Limbal Stem Cell Deficiency*  
Faculty Mentor: Fawzia Bardag-Gorce, Pathology and Laboratory Medicine, LABioMed

Previously, failure of UPP (Ubiquitin Proteasome Pathway) was found associated with an activation of autophagy in corneal epithelial cells with limbal stem cell deficiency (LSCD). However, autophagy activation did not remove damaged, aggregated proteins such as keratins (K4 and K13). The present hypothesis proposes that UPP activation might increase the clearance of misfolded proteins including K4 and K13 thus improving corneal epithelial cell function. Rabbits with surgically-induced LSCD were used to quantify the elements of both pathways in corneal epithelial cells (CEC). Rabbit oral mucosa epithelial cells (OMECS) as, similar to conjunctival epithelial cells, are rich in K4 and K13. OMECS were isolated, cultured and treated with proteasome inhibitors and chloroquine to inhibit autophagy. Morphologic analysis of corneal tissue sections showed that both pathways stained positive in normal corneal epithelium. While constitutive proteasome beta subunits B1, B2 and B5 were decreased, autophagy biomarkers – ATG5 and MAPLC3B, were significantly increased in LSCD-CEC. However, despite autophagy up regulation, modified K4 and K13 still deposited and accumulated in LSCD-CEC without clearance. Proteasome inhibition in OMECS also showed a significant increase in ATG12, ATG5 and MAPLC3, confirming our observation that when UPP is defective, autophagy is stimulated. Additionally, when autophagy was inhibited in OMECS using chloroquine, our results showed not only an increase in proteasome chymotrypsin-like activity, but also a significant decrease in unmodified K4 and K13 levels with no keratin high molecular weight deposition. Proteasome activation in the ocular surface could be used to alleviate corneal epithelial cell dysfunction associated with LSCD.

**Jesse Medina, Sociology**  
*The Impact of Abuse on Family Relationships*  
Faculty Mentor: Joanna Perez, Sociology
Various forms of abuse impact families. In my research project, I focus on the relationships between abuse (alcohol, physical, and drug) and family. The research question that informs my project is, how does abuse affect the family and the relationships between the family members? The purpose of this research project is to contextualize the experiences of low-income children who witness abuse in their families. As someone who has witnessed various forms of abuse in the family, I use an autoethnography methodological approach, which entails conducting research and critically analyzing the way that larger social forces contextualize my personal experiences. Based on my preliminary research, I found that growing up in families affected by abuse has a negative impact on the physical and emotional well-being of working-class children. Also, I found that some children who witness abuse in their families face developmental issues, experience torn family bonds, and are more susceptible to become abusers as adults. Through these themes, my preliminary findings demonstrate there are many social forces that are involved in understanding the prevalence of abuse in working-class families and the impact abuse has on children.

Valerie Leonard, Biology  
*Breeding System Variation in Pale Evening Primrose*  
Faculty Mentor: Kathryn Theiss, Biology

Species with large ranges encounter different ecological conditions in different parts of their ranges. We are interested in exploring how breeding system varies across the extensive range of the pale evening primrose (Oenothera pallida ssp. pallida), which extends from Washington to Utah. Our previous research showed that this species is highly variable in terms of breeding system both within and across populations. We expect that fruits that resulted from self-pollinations would have fewer seeds than those that resulted from non self-pollination, which would lead to more variability in seed counts across a population. During the summer of 2017 we collected over 1600 fruits, which contained more than 40,000 seeds, from 12 populations distributed across the complete range of the pale evening primrose. Although the average number of seeds per fruit (~30) was similar across the populations, there were significant differences in variation among populations. We also conducted hand pollinations at two populations to test for differences in breeding system within populations. We had better overall success at our northeastern Idaho site than at our central Idaho site, but found variation in breeding system at both sites. During the summer of 2018 we will grow plants from each of the 12 population in the greenhouse at CSUDH. We will hand pollinate the plants using one of three treatments: a) pollen from the same plant, b) pollen from a different plant in the same population, and c) pollen from a plant from a different population. We will then observe whether the different treatments produce the same amount of fruits and seeds across the different populations.

Bryan Cantero, Chicana/o Studies  
*Por Amor a el Beisbal: Reynaldo Santacruz*  
Faculty Mentor: Corina Benavides-Lopez, Chicana/o Studies

This research explores how identifying as Chicano contributed to the experiences of Reynaldo Santacruz. This research will also explore the intersection of baseball culture and Chicano/a identity through oral history. I will use critical race theory and community cultural wealth model (Yosso, 2005) to further examine the educational experience of Santacruz as well as his experience as a man of color in baseball. This research also works to challenge the notion that Chicano men do not perform well in higher education by providing insight on issues of race, familial relationships, and financial hardship that contributes to underachievement. The research demonstrates ways that identifying as an athlete helped
him navigate the educational system. This research seeks to connect the experience of a Chicano man as a baseball player and the impact that it had on his personal life and career as an educator.

**Bryan Cantero, Chicana/o Studies**  
*Por Amor a el Beisbol: Race, Gender, Educational Success and Sports*  
Faculty Mentor: Corina Benavides-Lopez, Chicana/o Studies

This research explores the intersection of baseball culture and Chicano/a identity through oral history. I apply critical race theory and community cultural wealth models (Yosso, 2005) to further examine the educational experience of, CSUDH alumni, Mr. Reynaldo Santacruz (Class of 1974) as a man of color in baseball. The research demonstrates ways that identifying as an athlete helped him navigate the educational system. This research also works to challenge the notion that Chicano men do not perform well in higher education by providing insight on issues of race, familial relationships, and financial hardship and issue of educational inequality as survived by men of color. The goal of this study is to connect the experience of a CSUDH Chicano alum and the impact playing collegiate baseball had on his personal life and career as an educator.

**Kayla Lock, Alex Whittmond, Mathematics**  
*Refinement of metrics: Erdos Numbers, a case study*  
Faculty Mentor: Wai Pong, Mathematics

The Erdos numbers of a person is the shortest path distance between the person and the mathematician Paul Erdos in the collaboration graph where there is an edge between two people if they coauthored a paper together. The shortest path distance is a metric on a graph and is easy to compute, however, one may argue that it is inadequate measure of “closeness” between the two authors since, for example, it does not take the number of joint papers between two authors into account. In this project, we introduce the concept of refinement between metrics and study in general how one can refine a given metric. We ended up devising some new metrics that lead to various versions of Erdos numbers. They refine the classical measure of closeness “between” authors.

**Leo Osornio, Physics**  
*Using Computer Simulations to Aid in Learning about Magnetic Fields Due to Current Carrying Wire*  
Faculty Mentor: Ximena Cid, Physics

Physics education research is a subfield of physics designed to systematically study the teaching and learning of physics. Though the content of physics can be challenging for some students to grasp, other difficulties occur that are not necessarily related to content. This work focuses on understanding the relationship between mental visualization and abstract areas of physics. Our group focuses on creating interactive 3D computer programs to help students improve their understanding of electricity and magnetism. These simulations are designed to reduce the cognitive load by removing the need to create mental representations. I am working on creating a program which depicts how a charged particle behaves in the presence of a magnetic field generated from a current-carrying wire. For this concept, I employed the GlowScript environment using the Javascript language to show how the force acting on the particle is affected by changing the particle location, velocity, and the current in the wire. Often students have trouble visualizing the magnetic field and this can
impede learning of this topic. This presentation will describe the design phase of this work and will provide a preview of our plans to assess the effectiveness of these programs in the introductory physics courses.

Ashley Aranda, Biology
*Pollinators of Asclepias curassavica in Southern California*
Faculty Mentor: Kathryn Theiss, Biology

In urban environments, native flora and fauna are declining due to habitat loss and the introduction of non-native organisms competing for resources. Milkweeds, including the nonnative Asclepias curassavica (tropical milkweed) could provide a sustainable source of nectar for honey bees, aiding in native and non-native floral diversity. Generalist pollinators, such as Apis mellifera (western honey bee) and Danaus plexippus (western monarch) can provide reproductive success of non-native A. curassavica. I sought to describe the diversity of floral visitors to A. curassavica, evaluate pollinator efficiency of common floral visitors, and determine whether there were nocturnal pollinators of A. curassavica. The main field sites I used to assess my research is composed of an 87-acre garden consisting of 2,500 different plant species, second, a CSUDH native garden with 20 different native species and a residential garden in the city of Carson, California, with nine different native plant species. Data collected on floral visitors between June and December of A. curassavica included visitation duration, along with the number for flowers, umbels, and stems visited. Pollinia (pollen sacs) removal and insertion was observed by individually capturing insects on virgin umbels, counting pollinia on the flower on the body of the insect. By photographing insects captured, I was able to measure pollen loads. I found that A. mellifera was the most abundant pollinator, thus visiting the highest amount of inflorescences over D. plexippus. Apis mellifera had the highest amounts of pollinia removal and insertion, thus aiding in the efficient pollination of A. curassavica. Nocturnal pollinators did not visit A. curassavica during the study, possibly suggesting that these type of insects are not attracted to their flowers, perhaps due to their small size or limited amounts of nectar. This research represents the first time pollinators of A. curassavica have been documented in California.

Morgan Valicenti, Orthotics and Prosthetics
*How Exercise is Related to the Mental State of Persons with Amputation*
Faculty Mentor: Julie Werner, Orthotics and Prosthetics

After undergoing an amputation, a person is faced with many physical and mental hurdles. Often times, the focus on persons with amputations is on their physical well-being, when their mental health remains equally as important. Persons with amputations have shown a higher prevalence of anxiety and depression. This study measures how exercise is related to the mental state of persons with amputations. It is expected that with increased levels of exercise, there will be decreased levels of anxiety and depression. 17 subjects were issued three questionnaires. Scores of The Obligatory Exercise Questionnaire were compared to those of both the SF-36, and HADS. The R values of the compared scores were 0.874 (p=<.0001) and -0.791 (p=0.0001) respectively. The results show a positive correlation between higher levels of exercise and decreased levels of anxiety and depression and, a better overall mental and physical state. Clinically, promoting physical activity and exercise to patients will benefit their quality of life.

Andrea Sosa, Earth Science and Geography
*Oil Refineries Contribution to Contamination of Groundwater Supply*
Faculty Mentor: Parveen Chhetri, Earth Science and Geography
In the Los Angeles area there are a total of 7 operational petroleum refineries. Most of the refineries sit on top of the West Coast Basin, which underlies 160 square miles of this region. These refineries are in charge of refining crude oil and producing petroleum naphtha, gasoline, and diesel fuel, asphalt base, heating oil, kerosene, and liquefied petroleum gas. Many of these refineries produce from 80,000-400,000 barrels of petroleum products per day. The refining process presents a threat to groundwater resources, as deep well injection involves potential pollutants such as wastewater, brine, and/or various chemicals. Another potential risk is that many of the refineries are located close to the coast which presents the added risk of potential salt water intrusion. Using Geographic Information System (GIS) software, this study will compare the locations and outputs of refineries; along with water district replenishment and intake reports. This work is important in that the Los Angeles area does not have enough water reserves to support its current population.

Jeffrey Stone, Social Work
A Qualitative Comparison of Social Work Practices Between Norway and the United States Regarding the Treatment of Single Fathers
Faculty Mentor: Maria Avila, Social Work

In the social work profession in the United States, single fathers are too often thought of as simply providers and not given enough consideration for their ability to be nurturing caregivers and subsequently are treated unfairly. In other countries, such as Norway, fathers are much more exalted and recognized for their capacity to contribute in their children’s day-to-day upbringing. Comparing and contrasting how social workers and single fathers in the two countries perceive the role and treatment of single dads may give insight into advancing more equal treatment of single fathers here in America. In order to better understand and help change the biases against single fathers that exist in the social work profession here in the United States, a qualitative phenomenological study comparing social workers and single fathers here in the U.S. with those in the country of Norway is being conducted. By use of a one-on-one interview/narrative approach, a list of three open-ended questions having to do with views on single parenting were discussed with one social worker and one single father in each of the two countries and then the data collected from those various interviews is currently be analyzed. Thus far the data is showing evidence of two key factors initiating better treatment of fathers in Norway, which include a greater value given to women in the workforce and a greater political involvement of single dads. This is surprising considering it was expected that the difference would have more to do with treatment and attitudes of participants. Subsequently, once the research is completed, the results could be presented in various social work settings to incite discussion and bring more awareness to the issue as well as to encourage mobilization of social workers and single dads to pursue more egalitarian treatment at the state and national levels.

Ruben Domiguez, Anthropology
Accessibility at CSUDH
Faculty Mentor: Sarah Taylor, Anthropology

The purpose of our study was to research accessibility at Cal State University Dominguez Hills. Specifically, we focused on the architectural and structural aspects of accessibility on campus, by obtaining campus community knowledge on the subject on disability. The methods used for this project were: conducting interviews, providing thirty survey questions to both students and faculty, and synthesizing our field notes. We surveyed both students and staff to get an overall perspective of what accessibility on campus means to them. To maintain a holistic perspective, our approach consisted of information received from able bodied and disabled person. Additionally, we utilized materials obtained from a disability
studies course taught by Professor Nancy Armstrong (ANT 371). The results of this study will bring awareness of the architecture and structure of the campus to those in the CSUDH campus community. This project is in perfect timing because, as we speak, a new building is under construction by the library and we must inform them of the necessary amenities needed to make the building as accessible as possible. The research may not only help disabled students and staff members- as a means of accessibility, but also create a better sense of welcome, increase moral, and possibly increase student activity on campus. The forte of a university is the unity and connection students and staff members have within each other. Creating this sense harmony can benefit students and staff members, thus CSUDH a campus that is accessible to individuals of all abilities.

Roxana Rodriguez, Special Education
Students with Mild/Moderate Disabilities: The Relationship Between Executive Functions and The Writing Process
Faculty Mentor: Saili Kulkarni, Special Education

Although there is existing research about students with disabilities and their executive dysfunctions. The purpose of this study is to observe the relationship between executive functions and the writing process. Students with learning disabilities typically display signs of suspected executive dysfunctions which can make completing a lengthy writing assignment difficult. The data from this study will be collected solely from students through narrative observations of behaviors and student work samples. The data will be analyzed by evaluating student’s response to the targeted executive function interventions and their grade on the writing sample based on a set rubric. It is predicted that graphic organizers, as well as a checklist, will help students overcome some of the attributes associated with executive dysfunction during the writing process. The implications will be to demonstrate the how accommodations such as graphic organizers and checklist help students overcome the executive dysfunctions associated with essay writing; additionally, the study will explore how students’ writing can be enhanced through strengthening their executive functions.

Michelle Holloway, Special Education
Increasing Reading Comprehension Improves Standardized SBAC Math Scores
Faculty Mentor: Saili Kulkarni, Special Education

Although proficient secondary reading levels are inconsistent in high school students identified with a disability, a student’s ability to understand and score proficient or advanced on standardized math tests is an expected outcome. This study will examine a text-to-speech intervention used to improve reading comprehension levels, which will help to increase SBAC math test scores. Research articles related to this topic yielded a limited number of relatable articles, or even non-existent ones, that addressed the use of computer-based technology, as an instructional support strategy in advanced mathematics. The participants in this convenience sample are 11th grade students enrolled in a Mild/Moderate Special Education Math Classroom. The study will be completed by collecting quantitative data, which will be stored in a structured and validated computerized software program. In addition, all research participants will chart their time spent using Natural Reader, a text-to-speech program. A comparison of math scores will be performed between participants who used Natural Reader versus those who didn’t use Natural Reader. It is the hope that these research findings support that text-to-speech interventions improve reading comprehension levels, which helps increase SBAC math test scores.
Carleen Ramirez, Special Education  
*What are the effects of Community Based Instruction on Students with Moderate Disabilities?*  
Faculty Mentor: Saili Kulkarni, Special Education

The purpose of this study is to measure the effects of community based instruction on the development of life skills of students with moderate disabilities. The data for this study will be gathered using observations and checklists to monitor progress and mastery of desired life skills. The data will be analyzed by evaluating the progress, if any, of student performance based on checklists on observations. This study will hopefully show that students are able to acquire and master life skills through the use of community based instruction. The implications for this study are that community based instruction teaches students life skills that will transfer to their adult life, leading to more independence and a better quality of life.

Donna DaVanzo, Special Education  
*ADHD, Handwriting and Mathematical Achievement in Middle School Boys*  
Faculty Mentor: Saili Kulkarni, Special Education

Although research has been done on handwriting and its relationship to academic achievement, as well as ADHD and mathemetic achievement, there has been little research that ties these three concepts together; nevertheless, this paper contends that there is a relationship between all three of these domains. With the dual issues of high stakes testing and inclusion of students with Attention Deficit Hyperactivity Disorder (ADHD) in mainstream classes, their success in mathematics is crucial. The purpose of this study is to explore the relationship of ADHD and poor handwriting as it relates to achievement in mathematics. Seventeen boys, 13-14 years old and diagnosed with ADHD participated in the study. The students’ handwriting was evaluated for clarity, and their mathematics achievements were assessed via common formative assessments used on a single middle school campus; the academic results were then compared with the level of legibility each student demonstrated. The results indicated that there is a positive relationship between the handwriting ability of boys and how well they perform academically in mathematics.

Lashanda Grant, Special Education  
*Effectiveness of Sheltered English on English Learners with Disabilities*  
Faculty Mentor: Saili Kulkarni, Special Education

Although there are numerous studies on English language learners and the best ways to educate them, nevertheless the research on long-term English language learners is limited because this group of students have a unique set needs it is imperative to conduct further research to determine best practices to increase the rate in which these students become English proficient. The purpose of this study is to evaluate the effectiveness of a Literacy & Language Sheltered English Course (L & L sheltered English) in aiding long-term English learners in becoming English proficient. Data will be collected through a combination to teacher surveys and a review of California English Language Development Test (CELDT), Scholastic Reading Inventory (SRI), and Reading Inventory (RI) scores. The information will be compiled and analyzed to determined (1) if the L & L sheltered English instruction has a positive effect on reclassification rates and (2) if teachers’ perception and preparedness affects students’ reclassification rates. This study hopes to show (1) the L & L sheltered English course has a positive correlation to reclassification rates and (2) positive teacher perceptions and adequate teacher preparation will increase the number of long-term English language learners (LTEls) who become English proficient. Implications from this study should suggest that a consistent comprehensive English language development (ELD) program can increase the number of English language learners whom become English...
proficient.

David Halushka, Special Education

Student and Administrator Perceptions of School Based Discipline
Faculty Mentor: Saili Kulkarni, Special Education

School-based disciplinary actions that employ the use of the punitive approach to address behavioral problems have been shown to have detrimental effects to students. Suspending a student increases the likelihood that a student will receive a subsequent suspension. There is also a significantly strong relationship between punitive disciplinary actions and low academic achievement. In addition, there is data that overwhelmingly suggests that these punitive practices disproportionately target students in special education. Although quantitative research suggests that the punitive approach is ineffective, we know little about why it is so ineffective. This study looks to supplement the established quantitative data that shows the punitive approach to be ineffective by providing qualitative data in the form of narrative viewpoints and perspectives from students who have been exposed to punitive disciplinary actions. Additionally, administrator perspectives will be utilized to understand leadership perspectives as to why the punitive approach is so ineffective. The implications of this study can aide in designing more proactive and responsive approaches to school-based discipline.

Ranferis Hernandez-Cabrera, Political Science

Sexual Identity through the Eyes of Mapplethorpe
Faculty Mentor: Kirstin Ellsworth, Art and Design

Sexual Identity through the Eyes of Mapplethorpe explores the political and public climate in regards to the LGBTQ community before, during, and after the time Robert Mapplethorpe was working. The presentation explores how Robert Mapplethorpe is an essential component of Queer Arts because, in a time of great censorship, he refused to remain closeted or assimilate to preeminent social constructs by revealing what lurked in the shadows of oppression. In addition, his work helps understand the reasons why and how Queer Theory in the visual arts came into fruition and what Queer Theory means.
Nataly Arias, Biology
*Molecular Methods in Zebrafish Research*
Faculty Mentor: Fang Wang, Biology

Our lab is currently conducting research to understand the molecular mechanisms that control the development of skin and sensory neurons in Zebrafish. Identifying genes highly expressed in Zebrafish skin and its effects on the development can ultimately aid in the future diagnosis and treatment of skin abnormalities in humans. The Zebrafish was chosen as the model organism because its genome has already been fully sequenced, it has high genetic similarities to humans, the external embryonic development facilitates observation of developmental processes, and it can easily be genetically modified. There are many procedures used in our research such as in-situ hybridization, micro-injection, and genotyping. The particular one that I have been learning during my short time in this lab is: Polymerase Chain Reaction, which is also known as PCR. This is a technique used to amplify a section of a DNA or gene of particular interest from a very small amount of DNA template. There are five elements required to execute PCR: the DNA of interest, primers, dNTPs, Taq polymerase, and buffer. The polymerase chain reaction is composed of three stages: denaturing, which is the addition of heat to break the DNA hydrogen bonds and form single stranded DNA template; annealing, when temperature is made ideal to allow DNA primers to bind to the template DNA; lastly, extending, when the temperature is increased to assist the synthesis of DNA molecules by Taq polymerase. This procedure is a common tool used in biological research to detect the presence or absence of a target gene, amplify DNA molecules for sequencing or cloning, and it is also frequently used by forensic scientists and clinical scientists.

Samantha Feinstein, Education
*Assistive Technology in the Classroom*
Faculty Mentor: Edward Curammeng, Teacher Education

This action research was conducted to determine if the use of assistive technology, specifically the interactive SMART board, would lead to higher general education and special education student assessment scores in reading comprehension. The research was completed in a public elementary school. Data was collected using Pre and post assessments, teacher observation journals, and student conferences. The smart board lessons were introduced to the students over a four-week period of time. The lessons included, small groups and interactive activities. Tools such as the highlighter, spotlight, audio, and interactive games were implemented to utilized the abilities of the smartboard. For most students, final assessment data showed the assistive technology driven lessons using the smartboard produced an increase in assessment scores. It is very probable that the use of technology as a teaching tool stimulated interest to the point that assistive technology driven lessons were more effective than other lessons in previous years. Therefore, results suggest that technology driven lessons and the use of different teaching methods could be the best course of action for future practice. Further research could measure the effect of individual use of technology rather than group use of technology on reading comprehension assessment scores.

Homood Alharbi, Education
*Learning with Audio Books via YouTube in reading class*
Faculty Mentor: Edward Curammeng, Teacher Education
The key objective of this study is to investigate the benefit of using audiobooks with adult English learners. The study aims to learn about the advantages and disadvantages of using an audiobook in a reading class, specifically, how does the use of an audiobook in a reading class affect adult English learners’ reading skills? This study was conducted at a small English institute located at a public university, in the Western United States. 100% of the students attending this small English institute are from countries other than the US. The participants in this study were 15 international students, all males between the ages of 18 and 29, from four counties: China (7), Saudi Arabia (6), Kuwait (1) and UAE (1). To investigate that use, the investigator attended an ELS reading class for three days a week for a total time period of three weeks. The reading teacher agreed to incorporate an audiobook as one of the main activities during these three days a week. The audiobook selected was English Audio Book Story for Beginners (With Subtitles) via YouTube. Data in this study was collected by survey, interview, and observation. The result shows that only five students (33.33% out of 15 students) found the use of the audiobook useful and reported that it contributed to improving their language skills. Ten students (66.66% of 15 students) indicated that they did not feel any different with audiobook. The findings of the study revealed a number of both advantages and disadvantages of the use of audiobooks.

Thaithao Nguyen, History
Ethics Community – Little Saigon
Faculty Mentor: Doris Namala, History

Little Saigon provides an essential ethnic enclave inside a large county. Here, immigrants and Vietnamese Americans join together to pursue an improved standard of living and preserve their cultural roots and practices. Over the years, people moved away from the old neighborhood and maintaining only minimal ties to the area. There was also silence concerning the complex nature of Vietnamese migration in the 1960s-70s via firsthand observations of academic and political settings as the narrative of Asian immigration experiences is centered on Japanese, Chinese, Korean, and Cambodian communities. Much of the existing scholarship focuses on the Vietnamese war refugee experience, but only to the extent that this immigration was an outcome of the conflict. It neglects explicit mention of the United States’ role in creating the conditions that necessitated flight from Vietnam and lacks formal acknowledgment of local government’s role (if any) in the settlement process of these immigrants. My research will specifically focus on the community that Vietnamese immigrant and Vietnamese Americans have created in Little Saigon and the surrounding cities over the past four decades. This additional research and examination of local history would present a proactive approach to highlighting and preserving the background of Little Saigon through the Vietnamese-centered immigration experiences that birthed this cultural epicenter. The research goal is to contribute to existing scholarship by studying the development of Little Saigon through the lenses of race, class, and gender, and by thoroughly incorporating US-Vietnam foreign relations in the 20th century as an overarching framework.

Kelly Stephens, Sociology
Equality in Access to Healthy Food
Faculty Mentor: Matthew Mutchler, Sociology

My project is on how access to healthy food is organized around, race, class, gender, and the community. This topic is important because a nutritious diet is a human right. It is part
of overall healthcare. In my research, I aim to contribute to ways communities empower themselves in creating access to healthy food and finding new strategies to achieve this. I use qualitative methods of research by analyzing literature on access to healthy food. My key words include food desert, human right, equality, equity, and intersectionality. I have found themes in my research such as location, transportation, and cost. All of these factors correlate with race, class, and gender in a way affects equity and equality in accessing healthy food. In many cases race, class, and gender create what Patricia Hill Collins named the Matrix of Domination. This is when multiple identities come together in a person’s life that affects their chances and opportunities due institutionalized discrimination. Using both a historical and current perspective, I discuss how accessing healthy food consists of knowledge and empowerment, physical location, and cost. People of color, and people in low income families are disproportionately affected by lack of access to healthy food. Energy dense foods tend to be more expensive and one must eat more to keep full. In addition, when corner stores are the only close location for people to get food, they are limited to what food they can buy and prices tend to be higher. Organizations in the Los Angeles area like Social Justice Learning Institute and Empowered 4 Life strategize and implement strategies to provide affordable healthy foods to low income communities and communities of color. I discuss these strategies, their meaning, and suggest more ways to promote equity and equality to all people in accessing healthy food.