



Student Research Conference
Oral Presentation Abstracts
Wednesday, March 3, 2021

- Behavioral and Social Sciences
- Biological and Agricultural Sciences
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Behavioral and Social Sciences I

Carla Lopez, Undergraduate Student

The Roots of Ethnic Conflicts

Faculty Mentor: Adam Sanford, Sociology

The United Nations (UN) should utilize their prime position in the international community to help settle ethnic crises, but before doing so, they must understand why ethnic conflicts occur. This paper explains how arbitrary borders, power conflicts, and territorial disputes increase the likelihood of ethnic conflicts, and it briefly explores management approaches for the UN. This paper draws on existing ethnic conflict research and examines the African, Hutus-Tutsis, Chinese, and Israel-Palestine ethnic conflicts as case studies. Arbitrary borders threaten physical and cultural security and ultimately induce disunity. Power struggles are manifested as weak states, resource competitions, and problems of privilege. Territorial disputes can be in the name of territorial integrity, symbolic/religious importance, or statehood. Management strategies for the UN include assuming the role of supporters, interveners, or mediators.

Cesar Ovando, Undergraduate Student

The Nearly Impossible Conquest of the Guatemalan Lowlands: The Advantages of the Indigenous Maya in Central Petén

Faculty Mentor: Kenneth Seligson, Anthropology

When discussing the historical events of Mesoamerica's conquest period, most scholars tend to focus on regions that were already extensively studied, like Central Mexico, for it has a diverse collection of primary source materials. Scholarship has recently touched on Guatemala's conquest, but due to the region's geography, the research has mainly stayed in the highlands. Not much historical examination of the invasion has been done in Guatemala's lowlands. It is a bit odd considering that the Spaniards didn't conquer the area until the end of the seventeenth century, which is more than a hundred years later from other campaigns like Central Mexico, Highland Guatemala, and Yucatan. My research has ultimately focused on the conquest of the Guatemalan lowlands, specifically Central Petén. From preliminary research, I had questioned why it took the Spaniards more than a hundred years later to conquer the indigenous peoples of lowland Guatemala, the Maya. The answer is simple: the Spanish's ignorance got the best of them as they were not fully prepared for the lowland landscape. For this research project, especially during the pandemic, my primary source materials were limited. So, I ultimately relied on the methodologies of archeology and geography to support my argument. In addition, I believe that this narrative fits within the scope of Matthew Restall's coined term, The New Conquest History, which highlights multiple participants and accounts under the examination of understudied American regions.

Chloe Aftalion, Piper Asten, Amber Ferrari, Jennifer Duffy, Graduate Student
Commonalities in Treating Eating Disorders: The Experiences of Occupational Therapists
Faculty Mentor: Sheryl Ryan, Occupational Therapy

Background: In 2019, 30 million individuals were diagnosed with an eating disorder in the United States and every 62 minutes someone dies of an eating disorder (National Association of Anorexia Nervosa and Associated Disorders, 2019). This group of disorders typically have a significant impact on an individual's daily life and prevent them from participating in activities that help provide meaning to their lives (Clark & Nayar, 2012; Gardiner & Brown, 2010). The most effective treatments involve a multidisciplinary approach, including occupational therapy. However, currently there is a lack of research published in occupational therapy literature to inform the practice of occupational therapists treating individuals with eating disorders. As Rebekah Mack (2019) made clear, "Occupational therapy's role is distinct and crucial in treating eating disorders (EDs), yet the literature lacks explanation of interventions and contributions specifically related to occupational therapy and EDs." **Purpose:** This qualitative phenomenological research study attempts to understand how occupational therapists are treating individuals with eating disorders in light of this gap in occupational therapy literature. **Method:** We conducted semi-structured interviews with three practicing and licensed occupational therapists who have treated at least one client with an eating disorder. **Results:** Three themes emerged from our data: there's no 'I' in team, focusing on the necessity of having supports in place; uniquely you, which stresses the importance of using a holistic approach; and state of mind, which addresses the reframing of negative thought patterns. **Implications:** Guiding principles defining our role and scope of practice are the missing piece to occupational therapists cementing their place as valued members of a multidisciplinary treatment team for individuals with eating disorders. Future research in this area should aim to better inform practice for clinicians working in these settings, and provide interventions that are proven to be effective in treating eating disorders through an occupation-based lens.

Colleen Vuong, Naomi Nelson, Shayna Quach, Brandon Thomas, Graduate Student

The Lived Experiences of Minority Mothers in the Neonatal Intensive Care Unit and the Role of Occupational Therapy

Faculty Mentor: Sheryl Ryan, Occupational Therapy

The aim of this qualitative study was to understand the meaning of the lived experiences of minority mothers in the Neonatal Intensive Care Unit (NICU) to gain insight on what support and barriers they have encountered and how occupational therapists can incorporate these findings into practice. Minorities in the U.S. include people of non-white cultural backgrounds, ethnicities, and native languages. This population is more likely to receive suboptimal care due to disparities in treatment. Studies suggest that racial disparities could take place in the form of neglectful behavior and degrading communication, and these differences can affect the health of the mother and infant (Sigurdson et al., 2018). Using a phenomenological approach, we conducted interviews with eleven minority mothers who had a child in the NICU regarding their experience. We focused on communication with the staff and whether or not cultural or ethnic differences resulted in more positive or negative experiences for the mothers. The interviews were transcribed and data was analyzed to develop code descriptions and identify themes. Common among all the participants was the perception of receiving social support from family, friends, or outside resources, such as support groups. Participants perceived their social support as opportunities to connect and share resources with other families. Other themes representing major influences on how the mothers interpreted their NICU experiences included varying degrees of ethnocentrism, trust and communication between the mothers and NICU staff. Results suggest that minority mothers have a variety of needs that should be addressed to improve well-being. Implications suggest that cultural barriers represent a significant hurdle that must be overcome in order to ensure that equitable care is guaranteed for all patients. This study may inform occupational therapists of the cultural barriers that exist, and may help derive meaningful support to enhance occupational performance of minority mothers.

Cristina Garcia, Michelle Alfonso, Greg Dolmage, Briana Fajardo, Graduate Student

The Lived Experience of Sons Caregiving for their Parents with Alzheimer's Disease or Dementia

Faculty Mentor: Sheryl Ryan, Occupational Therapy

Background: Dementia negatively impacts the occupations of daily living both for the care receiver and caregiver. Dementia cases are increasing and so are the numbers of family caregivers. This population is primarily female, but there is a growing number of males taking on the caregiving role (Alzheimer's Association, 2020). Previous research has addressed the female and husband caregiver population, with little evidence on the roles, routines, or experience of son's caregiving for parents with dementia. Understanding this niche population informs occupational therapists on how to better support these clients and potentially prevent or reduce the negative effects that can come with caregiving. **Purpose:** This phenomenological study was conducted in order to better understand sons' caregiving for a parent(s) with Alzheimer's disease or dementia. **Method:** The research included four sons aged 48 to 62 years old currently living in Los Angeles County, caregiving for their parent with Alzheimer's or dementia, and recruited through a caregiver support network. The researchers conducted semi-structured interviews via video-conferencing to better understand their lived experience as a caregiver. **Findings:** The following four themes emerged from the data: (1) A Day in the Life--how sons define their role, self-perception, and routine, (2) Challenges of Caregiving--role transitions, isolation, self-neglect, and stress factors, (3) Adaptive Strategies--physical activity, reflection, supports, and resources, and (4) Looking Forward--plans for parents including end-of-life, caregiver education, plans for self, and finding pride in the role. With this knowledge, caregiver resource centers can advocate for increased funding to allow for the inclusion of occupational therapy services. These occupational therapy services include caregiver training in ergonomics and safety, and mental health services such as stress or grief support.

Crystal Solano, Sarah Anne Nakamura, Michelle Vuong, Natalie Pinchuk, Graduate Student
The Impact of Performance Patterns & Spirituality on Post-Rehabilitation Individuals Recovering from Substance Use Disorder
Faculty Mentor: Sheryl Ryan, Occupational Therapy

Purpose: In 2018, 20.3 million individuals had a substance use disorder, yet only 1.4% received proper treatment (Substance Abuse and Mental Health Services Administration, 2019). Furthermore, 80-95% of individuals in rehabilitation centers relapse within 12 months (Hendershot et al., 2011). Therefore, it's crucial to focus on facilitating success post discharge for long term changes in addictive behaviors (Nettleton, 2020). Our study uses a photovoice methodology to explore the habits, routines, roles, rituals and spirituality of two individuals who have attended a rehabilitation center within the last five years and are striving towards sobriety. **Methods:** The participants provided 5-10 photos of their habits, roles, routines, rituals or spirituality factors which have affected their recovery, followed by a one hour interview. **Results:** The themes that emerged included doing the next right thing, which signifies the importance of keeping their mind focused on achieving the next item on their to-do list; not by my own strength, the importance of relying on spiritual entities or social supports to navigate sobriety; family means nobody gets left behind, which recounts how the family members have impacted our participants' decision to get help; all or nothing, the principle that recovery requires 100% dedication and commitment; let you down, the perceived inability to live up to their roles; and wrong place, wrong time, the impact of social and physical environments on recovery. **Implications:** Occupational therapists working with this population can improve existing recovery programs or establish new programs that facilitate healthy habits and routines, enable social interactions, and encourage mentorship post rehabilitation. Additionally, incorporating cognitive behavioral therapy groups may help individuals become conscious of their patterns, triggers, and recognize when their healthy habits and routines are becoming disrupted by shame and guilt. Further, occupational therapists can advocate for a larger presence in substance use recovery.

Daisha Campbell, Undergraduate Student
Anti-Immigrant Attitudes in the United States
Faculty Mentor: Yeaji Kim, Political Science

What influences an individual's feelings for undocumented immigrants? It is certain that the views towards undocumented immigrants are controversial within the United States. For instance, Americans have perceived President Trump's words on anti-immigration fanatical and questioned his approach towards the nation's immigration system as they are in support of immigration. However, there are those that oppose undocumented immigrants and feel radically in their opposition. By employing the American National Election Studies (ANES) 2020 Time Series Study, this research examines how party-identification, education, and age affect individuals' feelings towards undocumented immigrants. This research expects the results as followed; from regression analyses, Republicans are more likely to have colder feelings towards undocumented immigrants than Democrats; people with higher education are more likely to have warmer feelings towards undocumented immigrants than people with lower education; and older people are more likely to have colder feelings towards undocumented immigrants than those that are young.

Elizabeth De Leon, Veronica Rodarte, Yunnia Jimenez, Jessica Vazquez, Undergraduate Student
The Effect of Using Red versus Green ink on a Quiz on women's Memory Recall: Exploring Premenstrual Tension and Anxiety
Faculty Mentor: Tatiana Basanez, Psychology

Past studies have found that reading material in red ink color decreases cognitive recall relative to other colors (Smajic, Banister, & Blinbry 2014). We measured the effect of red ink color (versus green) on quiz scores and hypothesized anxiety and premenstrual syndrome (PMS) would mediate the effect. Women (N = 108) were randomly assigned to ink color conditions: green ink (N = 52), red ink (N = 56) to learn about a plant-based diet and then all answered a recall test. Women who read a green ink quiz had higher scores (mean = 7.77, SE = .17) than those with a red ink quiz (mean = .80, SE = .17). ANOVA indicated that the difference was statistically significant $F(1,104) = 860.08, p < .001$. There was also a main effect of anxiety. We provide recommendations for future research and exam practices.

Heather Bocianski, Julia Adams, Nader Abolhosn, Elisabeth Bolten, Graduate Student
The Lived Experiences of Identity Reconstruction in Individuals with an SCI who Participate in Outdoor Recreation
Faculty Mentor: Sheryl Ryan, Occupational Therapy

Background/Purpose: A spinal cord injury (SCI) results in paralysis, often from the waist or neck down (Moore, Agur, & Dalley, 2015). It requires affected individuals to come to terms with their new reality through physical and emotional rehabilitation in which they are faced with reconstructing their identity due to a sudden external change conflicting with their unchanged internal self (Beringer, 2004). Although occupational therapists acknowledge it is important to support identity reconstruction processes for SCI individuals, few studies explore the extent to which outdoor recreation activities and settings play in identity reconstruction. The purpose of this research is to address this gap in the literature by investigating the meaning of outdoor recreation and its attributes for SCI individuals. **Methods/Results:** Researchers conducted a qualitative phenomenological study. Participants were recruited through online SCI outdoor recreation organizations via convenience sampling and snowballing. Thirteen participants who were between the ages of 31-71, had a sustained SCI, and engaged in outdoor recreation at least three times during the past 12 months completed semi-structured individual interviews. The results demonstrated that outdoor and activity meaning are inseparable and outdoor recreation supported their identity, social participation, and quality of life. However, participants experienced barriers to inclusion and inequitable access to their outdoor recreation activities in comparison to able-bodied individuals. **Implications:** Due to the benefits of an outdoor context, including outdoor engagement may enrich therapeutic sessions. This also suggests therapists should aid individuals with SCI who engaged in outdoor recreation pre-injury to be able to regain these meaningful occupations. These results additionally imply therapists should provide this population with resources, such as outdoor SCI support groups, to increase access to participation. To further increase equitable access within nature, it is important for therapists to advocate for policy changes and to promote self-advocacy within treatment planning.

Biological and Agricultural Sciences I

Liz Solis, Undergraduate Student

Delimiting Species in the Australian Lizard, Ctenotus

Faculty Mentor: Sonal Singhal, Biology

Ctenotus is a genus of skinks that is the largest group of lizards living in Australia. For this reason, Ctenotus has been used as a core species in understanding general biodiversity patterns across the desert and tropical regions of Australia. Although 100 species have been identified within the genus, we do not fully understand their taxonomic diversity because the species were initially grouped based on morphological characteristics. However, this type of grouping often does not correlate with genetic data. Some species of Ctenotus exhibit very few differences in morphology but are genetically quite different. Therefore, genetic data was incorporated to identify individuals to their correct species. In this study, my collaborators and I analyzed the genetic and morphological data for a species complex of Ctenotus lizards: Ctenotus duricola and C. zasticus. Raw nuclear data was collected from 37 individuals to assemble and filtered to create a single-nucleotide polymorphism (SNP) dataset. The SNP dataset was used to construct a phylogenetic tree using the IQtree program and population clustering analysis using sNMF. This allowed us to accurately identify the number of genetic populations, visualize which individuals belong to the same genetic population, and determine how genetically different these individuals are based on population groupings. Our analysis showed there are four genetic populations, and individuals within each genetic population show little genetic diversity. To further understand how genetically different and similar individuals are within Ctenotus, we analyzed mitochondrial DNA (mtDNA) sequence from the same individuals. We created a multiple sequence alignment using MUSCLE which allowed us to generate a map that illustrates species descriptions, and provide a clearer biogeographic history. Furthermore, given that C. zasticus is a vulnerable species affected by conversion of land due to mining, our results will also allow us to make better well informed conservation decisions.

Gabriel Angulo, Eric Thai, Undergraduate Student

Geomorphic Processes and Patterns Controlling the Spatial Structure of Treeline in Makalu Barun National Park, Eastern Nepal Himalayas

Faculty Mentor: Parveen Chhetri, Earth Science

Very few studies have been carried out to investigate the role of geomorphic factors structuring the spatial pattern of Treeline ecotone in the Nepal Himalayas. To address this research gap geomorphic conditions at Treeline ecotone of Makalu Barun National Park, eastern Nepal were investigated by using Landsat satellite images and Aster's Digital Elevation Models (DEMs). Treeline was manually delineated in Landsat image after radiometric calibration, atmospheric correction, and topographic normalization. The extracted Treeline layer was overlaid with DEM to assign the elevation value. Geomorphometric parameters such as slope and aspect were generated from the DEM using ArcGIS and ENVI software. The Treeline layer was overlaid on the slope, aspect, and landforms features layer to examine the effect of terrain conditions on Treeline ecotone. Results showed that the average Treeline elevation was around 3858 m and highest Treeline was around 4101 m. In most of the Makalu Barun National Park slope angle was greater than 35° which was too steep for the forest establishment. This indicated that in many parts of the park Treeline was controlled by the geomorphic feature. A more detailed investigation of the geomorphic pattern and process at Treeline ecotone would help to track the tree line advance in response to climate change.

Gregory Lazzarino, Undergraduate Student

Using Amps to Determine Transformation Efficiency in CRISPR

Faculty Mentor: Harneet Grewal, Physics

An overview is presented of a way to quantify the effectiveness of a bacterial transformation with CRISPR. Bacterial transformation through CRISPR can be observed using Glowing Fluorescent Protein or GFP emitting photons upon excitation and using that light to generate a quantifiable result. Microbes which up-took a foreign sequence and integrated it into their genome will fluoresce in the area of the spectrum of which the protein permits but the rate at which this occurs can be inaccurate due to having only our eyes for observation. The photons which are released upon excitation by a wavelength of greater energy can be utilized to determine the effectiveness of a transformation integrates a GFP. By using a photo resistor which decreases its resistance when exposed to incident radiation, the current produced from the light emitted allows for quantification. *E. coli* bacteria transformation efficiency which have been modified through CRISPR can be measured by another means that visual observation cannot provide but rather by the physical phenomena of light and by calculating how much energy is produced from these *E. coli* bacteria plated on petri dishes.

Raul Gutierrez, Bronte Shelton, Luke Fisher, Undergraduate Student

Comparative Genomic Analysis of Halophilic and Xerophilic Microbes to Elucidate Adaptation to Chaotropic and Low Water Activity Environments.

Faculty Mentor: Douglas Bartlett, Marine Microbial Genetics, UCSD

Studies on the molecular mechanisms of microbial adaptation in chaotropic and low water activity (aw) environments are poorly understood. Chaotropic environments are characterized as salt rich, $MgCl_2$ and $CaCl_2$, which lowers the availability of water for biological processes. PATRIC, an integrated genomic browsing tool containing vast libraries of sequenced genomes, can help us identify unique genetic markers in chaophilic and xerophilic microbes. Halophilic microbes are characterized as obligate hypersaline with the ability to tolerate exposure to chaotropic agents. Microbes with the greatest tolerance in these extreme environments must have advanced adaptive methods. *Halobacterium salinarum* and *Haloquadratum walsbyi* are chaotolerant and well adapted to low water activity. *Haloquadratum walsbyi* is unique among the halophilics as having the highest tolerance for chaotropes and its square shape. Performing comparative genomics using fully sequenced halophilic archaea such as *Halobacterium salinarum* NRC-1, a model halophile, and *Haloquadratum walsbyi* C23, we were able to identify genes that confer adaptation to chaotropic and low environments, as well as individual adaptations that may be responsible for the varying levels of tolerance in chaotropic environments. Characterizing genes associated with chaotolerance and low aw adaptations can help elucidate the cellular functions that make these microbes unique. Chaotropic brines may be used as analogs to study the origin of life and the possibility of suitable environments hosting extremophilic microbes on other planets like the Martian brines and the icy moons of Europa; therefore, studying the microbiome of chaotropic environments are essential in the field of astrobiology. In order to adapt to these chaotropic environments, microbes must be able to retain water, reserve energy for biomolecular repair, metabolize alternative carbon sources, utilize alternatives to oxygen in electron reduction, pump out harmful ions, as well as being able to uptake and synthesize compatible solutes. Here, we have identified several genes that may help elucidate the molecular mechanisms of adaptation in chaotropic and low aw environments.

Education I

Icela Pantoja-Zamudio, Undergraduate Student

Child Language Development: Influence of Multilanguage Exposure and Socioeconomic Status.

Faculty Mentor: Megumi Kuwabara, Child Development

Being able to understand language is a vital skill for humans. In this study, I explored the potential differences in children's language development and home literacy environment based on two demographic factors; the number of languages spoken at home, and socioeconomic status. I focused on both; language development and the home literacy environment because a previous study conducted by Umek et al. (2005) has found that the frequency in which parents engage in literacy related activities is also related to language development in their children. The first question focused on the potential difference between those children who are exposed to one language at home compared to those children who are exposed to multiple languages. This question is important because U.S. Census data shows that 45% of California residents speak more than one language at home, which highlights that many children are being exposed to multiple languages. The second question focused on the potential differences based on socioeconomic status, particularly, the different impacts of income and education. I collected data from 20 parent-child dyads in which parents were given two wordless picture books and asked to tell stories to their children (shared-book reading session). After the zoom session, parents were asked to fill out the surveys about their demographic information and Home Literacy Environment Questionnaire (Umek et al., 2005). These sessions were transcribed for all words children and parents said. From the transcription, I coded the number of words (types and tokens) children said as an indicator of their language development. Preliminary results show that there is no difference in language development based on two demographic factors. However, there is a differential impact of income and education on the home literacy environment. I will discuss the implication of what these results mean for language development.

Sarah Mecklenburg, Graduate Student

"Special Education and General Education Teachers Attitudes and Perceptions on How They Feel About Students with Intellectual Disabilities and the Bullying of Students with Intellectual Disabilities"

Faculty Mentor: Kai Greene, Special Education

This study was aimed to determine special education and general education teacher's attitudes and perceptions on how they feel about students with intellectual disabilities and the bullying of students with intellectual disabilities. The groups studied were five general education teachers and five special education teachers. These teachers will be surveyed from an elementary TK-8th grade and Pre-K-5th moderate/severe intellectual disabilities school. The research design is qualitative. The five general education and five special education teachers were administered a survey on their attitudes and perceptions on how they feel about students with intellectual disabilities and the bullying of students with intellectual disabilities. Bullying is not a new issue in education. Bullying happens with all students, but especially with students with severe intellectual disabilities. What is being done to prevent bullying from even starting? Can teachers prevent bullying by teaching and implementing tolerance from a young age? Do teacher's attitudes and perceptions of students with disabilities affect student's acceptance of people with disabilities? This research helps understanding the attitudes that general education and special education teachers have towards students with moderate/severe intellectual disabilities. The five general education and five special education teachers were administered a survey on their attitudes and perceptions on how they feel about students with intellectual disabilities and the bullying of students with intellectual disabilities.

Humanities and Letters I

Anna Doney, Undergraduate Student

The Performance and Specificity of Death in Renaissance Tragedy and Its Impact on Perception and Catharsis

Faculty Mentor: Kimberly Huth, English

Renaissance tragedy as a genre is uniquely characterized by its historical time period, violent and bloody deaths, and its use of a stage for performance. These moments are not cut and dry as they are specific dramatic portrayals on stage. The staging of these violent and painful moments and their subsequent deaths specificity, provides the audience with some form of emotional experience. In this essay I will examine the deaths in two Renaissance tragedies, John Webster's *The Duchess of Malfi* and Christopher Marlowe's *Tamburlaine* (Parts 1 and 2). This essay will look at the specific nature of the main characters' deaths and what the audience gains or experiences through these deaths through the Aristotelian idea of "catharsis" which entails a purging of "pity and fear" after experiencing a tragedy. I argue that the purging of "pity and fear" depends solely on the nature of violence and pain and the presentation of death within the genre of a Renaissance tragedy and without this inherent violence these works would lack meaning. The deaths in these works differ greatly in their violence and pain presentation, and because of their unique nature they are perceived with a different level of "catharsis".

Daisy Martinez, Undergraduate Student

Chaucer's Philosophical Discussion in The Canterbury Tales

Faculty Mentor: Debra Best, English

Throughout *The Canterbury Tales*, Geoffrey Chaucer seeks to find an explanation to complex issues such as human suffering and religious concerns as is seen with a variety of topics and characters such as: the use of religious figures, forbidden love, the interference of God and planets, the role of fate and destiny, Fortune, and the role of human will; Chaucer's philosophical concepts among his tales provide insight to the discussion of religious beliefs or concerns of his time—which are still relevant in our time. Although there is no "correct" way of deciphering Chaucer's personal stance with these motifs, there is a striking pattern throughout several of his tales; for instance, "The Knight's Tale", "The Man of Law's Tale", and "The Clerk's Tale" make use of these religious themes to spark philosophical discussion about fate, free will, Fortune, and Providence. Humans' free will is recognized, but is also limited when it comes to inevitable events led by chance, fate, destiny, Fortune etc. When examining each tale individually and collectively, this research will discuss how Chaucer supports the belief that in spite of free will and powerful forces of Fortune, fate, and god or goddesses (or planets), God's will is most powerful as He can overrule anyone's decisions and can change the course of events at will.

Jackson Martinez, Graduate Student
The Flâneuse and Phantasmagoria in the Cosmopolis
Faculty Mentor: Andrew Kalaidjian, English

This piece will focus on gender and sexuality of the flâneuse. The flâneuse are exposed to forms of oppression that further marginalize and exile them, but because of their socioeconomic status in having closer ties to dominant discourse societies. The flâneuse experiences alterity differently; they are marginalized for the gender, yet fetishized because of it. The flâneuse is a certain paradox under the trope of Poe's understanding of being the "man of the crowd" because of the male gaze. Therefore this project will examine how issues of gender and sexuality in Barnes' *Nightwood* and Woolf's *Mrs. Dalloway*, become problematic in being subjugated to the male-gaze because of misogynistic hegemonies ruling the city. Both Parsons and Elkin note that because of the "ambiguously gendered trope" and the emergence of women in the cityscape, flâneuse is beyond being emphatically, "possible," but it adversely becomes reluctantly problematic because of its fetishized attributes. In Barnes' *Nightwood*, we learn more about Robin Vote as a flâneuse via testimonials by Doctor Matthew O'Connor and Nora Flood, which emphatically reveals that "question of visibility," according to Elkin. Barnes, however, uses Robin Vote's flâneuse as a critical subversion of hegemonic order by using her somnambulant milieu of flânerie as a way to interpolate both misogyny and heteronormativity. Woolf, on the other hand, revels in integrating her flâneuse, as a comment on the complex nature of her relationships with Peter Walsh and her husband Richard Dalloway. Clarissa Dalloway's stream of consciousness vividly interpolates that very "invisibility" quality in her flânerie because she is constantly highlighting the very minutiae of details that are both in the public space—a space in which women are subjugated to the male-gaze, both a psychological and spiritual space, that is entirely her own.

Jasmine Abang, Undergraduate Student
Immigration, Reproductive Rights, and Mexican (American) Women.
Faculty Mentor: Doris Namala, History

During the early 20th century, California experienced an influx of Mexican immigration. The political and economic realities in México under President Porfirio Díaz favored foreign investment and the Mexican elite's interests. This condition left ordinary Mexicans without land and no opportunities to sustain their livelihoods, forcing a continuous movement of rural people to cities searching for employment. Many settled in Los Angeles, where farming expanded on a larger scale. The Los Angeles white farm-owning elite supported and protected the flow of cheap labor from México because it was prosperous. They also thought that Mexicans would be returning to their country after the growing season was over. However, immigrants began to find permanent settlement in the city, igniting fears and angst amongst the Anglo-Nativists over wellness and overpopulation. To preserve a white Los Angeles, the first line of defense was to segregate public institutions such as public health. California soon adopted Eugenics ideology and used forced sterilizations as the permissible way to manage the Mexican population growth. My project explores the impact of segregated health care in Los Angeles on Mexican women immigrants' in the mid to late 20th century. I will focus on the Los Angeles County USC Medical Center, which eugenic historians coined as the epicenter of these aggressive, coerced, and racialized medical procedures. Additionally, I will also demonstrate that despite the ban of Eugenics and sterilizations, white elites and policymakers could find loopholes to continue their efforts to have reproductive control over brown immigrant women's bodies.

Jeremy Quinonez, Alumni

Revisiting Lumumba's Political Identity through a Colonial Lens in De-Colonial Congo (1956-1965)

Faculty Mentor: Bianca Murillo, History

In 1960, the Congolese people elected Patrice Lumumba as Prime Minister of the Congo. In 1961, after a complicated development on international events, the CIA financed Belgium troops murdered Lumumba via firing squad. This paper will focus on Belgium's colonial attempt to use the media to attack Lumumba's political image. From 1956-1960, it will elaborate on the rise of Belgium's media attempts as a counter to the growing support of Lumumba's pro-independence identity. It will then focus on this same struggle in the context of the U.N. and Ralph Bunche's presence in the Congo. Consequently, it intersects with U.S. reaction against Lumumba's political identity in the summer of 1960. The final section will assess Belgium, U.S. and U.N. attempts to damage Lumumba's political identity by using the media and their political voices. The three sections will add to the strong scholarly work on Lumumba by combining the chronological approach of previous historians to interrogate a critical time period in one of many of Lumumba's political struggles. This essay will argue that from 1955 to 1965, Belgium and the United States sought to protect their economic exploitation of the Congo by using the media to delegitimize Patrice Lumumba's political legacy as violent, uncivilized, and unworthy of independence.

Physical and Mathematical Sciences I

Omar Santizo, Claire Ladan, Justin Hathaway, Undergraduate Student

Improving Undergraduate Chemistry Education Analyzing Biochemical Redox Analytes Using a Student-Built Potentiostat

Faculty Mentor: Barbara Belmont, Chemistry and Biochemistry

Electrochemistry is usually the last topic presented in the undergraduate general chemistry sequence, and often this is the only time it is presented in the undergraduate science pathway. Consequently, students as well as instructors are weak in the topic. One of the reasons for this is that electrochemistry equipment is too expensive and fragile for the undergraduate lab, hence there are seldom undergraduate lab experiments available to reinforce electrochemistry learning. To counter this problem, the Belmont Research Group has developed a low-cost potentiostat kit for students to assemble for cyclic voltammetry experiments, using Maker-community components and an Arduino-like processor known as the Teensy processor. The proposed presentation describes work done to create a portfolio of experiments to use with our “Teensystat” that demonstrates reversible, quasi-reversible and irreversible redox reactions at concentration ranges of 2-20 mM. The research project involved developing optimum reaction matrix conditions, and determining accuracy, precision, and detection limits for each analyte. The resulting portfolio of cyclic voltammetry experiments is comprised of four analytes – ascorbic acid, acetaminophen, N-acetyl cysteine and potassium ferricyanide. While the potassium ferricyanide experiment is used as a device performance benchmark, the three other analytes were chosen to motivate the biomedical interests of most undergraduate science students. The experiment portfolio helps students understand redox through cyclic voltammetry, develop skills in excel for data analysis, develop an appreciation for electronics and computer interfacing, and correlate the biochemical perspective of each reagent.

Orji Ezieme, Graduate Student

Hazardous Air Surrounds West Carson

Faculty Mentor: Parveen Chhetri, Earth Science

With the increase of industrialization and vehicle activities, the air in Los Angeles California, is polluted to an unsafe level. West Carson which is a hub of industrial activities is under a serious threat of this hazardous air. West Carson and nearby cities like Wilmington, Long Beach, and Torrance are the hot spots of harbor activities and heavy industrialization in the entire California. A good part of this area is Assembly Bill (AB) 617 communities of top priority. Meaning that they are pollution burdened, rated as poor community, and grossly disadvantaged. The CalEnvironScreen 3.0 placed them at 96% health burdened. This is in consideration of the disproportionate increase of asthma, congenital birth defect of multigeneration, breathing disorder, chest pain, premature birth, blood disease, and various strange sicknesses. This paper focuses on identifying two main triggers of air pollution - truck survey and particulate matter released from emissions of heavy industrialization and excess truck activities. The Coalition for Clean Air under grant of California Air Resource Board, partnered with Del Amo Action Committee and other environmental Justice groups: Coalition for A Safe Environment, University of Southern California, Comite' Pro Uno, and Pacoima Beautiful, for this. West Carson where I focused, does not have existing base information on truck survey and particulate matter count. Yet the air quality index scale is frequently on red-alert. The projected outcome of the research will guide the city and county, and stakeholders to gear up on the workable and timeous strategy to cut down on these triggers, as the health situations in this area are worsening by the day and the regular air quality monitor is needed.

Raju Bista, Graduate Student

Climate-driven Differing Growth Performances of Cohabitant Abies spectabilis and Betula utilis in the Subalpine Forest in Dhorpatan Nepal

Faculty Mentor: Parveen K. Chhetri, Earth Science

The fir (*Abies spectabilis*) and birch (*Betula utilis*) are often found coexisting in sub-alpine forest of the Nepal Himalayas. Several studies have been carried out on radial growth patterns in their mono-dominant stands. However, no previous and comparative study has been recorded from the Dhorpatan Hunting Reserve, western Nepal. To assess the temporal growth performance of these cohabitant species, tree-ring samples were collected from 30 trees of both species (two cores from each tree) from the mixed stand at elevation range of 3300-3500 m a.s.l. Standard ring-width chronologies of both species were developed with dplR package in R, applying cubic spline to remove non-climatic signals. The ring width chronologies were correlated with climatic variables. We found differential and contrasting growth responses to climate over time. Birch showed positive growth response to precipitation and negative response to spring temperature. Whereas, radial growth of fir was correlated negatively with precipitation and positively with temperature in spring. Moving correlation analyses revealed the divergent influence of spring climate on these species. Increased temperature and decreasing precipitation appeared to be stronger in growth limitation of the birch, whereas, the positive influence of higher temperature on fir growth is gradually diminishing. The significant rising trend of temperature by 1970s coincided with growth decline of birch and increase in fir, as indicated by Basal Area Increment (BAI). Thus, the changing climate appeared to drive the successional dynamics in the mixed stand such that fir has potential to occupy the area with continued current climatic trend. Key words: Basal Area Increment, Dendrochronology, Radial growth, Tree ring, Himalayas

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Planning for Conflict with Urban Coyotes

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While it is generally known that coyotes exist within Southern California urban environments, the heartbreak of losing pets to urban coyotes continues and humans themselves are beginning to experience urban coyote attacks. Information is available about 'coyote proof' yard fencing and cages for domestic livestock (e.g., chickens), but other advice is an unworkable "Keep dogs and cats indoors." Questions remain on how Southern California stakeholders including but not limited to individual households (e.g., pet owners), veterinarians, and government officials (e.g., urban planners) can achieve greater awareness, understanding, and preparedness for the inevitable conflicts with urban coyotes. Literature review, websites search, and crowd-sourced incidence reporting were conducted. Surprising information about coyotes was found. Physically, coyotes are capable of jumping 6 feet high, and are proficient diggers. Highly adaptable and ever the omnivore, coyote population densities are far greater in urban areas than in rural and wild areas. Their populations in Los Angeles County and Oranges County are the densest in the state. Recent studies of coyote stomach contents in these areas reveal more specific information than previous scat studies have. Preliminary results find cats are 8 percent of the urban coyote diet, and leather boots are not unheard of. In addition, different from the rural and wild area coyote, the urban coyote temperament is bolder and more aggressive. Except for removal of individual coyotes that have become aggressive toward humans, evidence shows removing urban coyotes from an area is not a long term solution. This study suggests that planning for conflict with urban coyotes must become second nature. Practical solutions by pet species, involving impenetrable barriers, are available and need to be implemented with the same prophylactic mindset as wearing seat belts while driving. These solutions need to be adapted and supported for households of all income levels.