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## 2017 URSCA Abstracts

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## **2017 URSCA Abstracts**

### **Jessica Acosta**

#### **Botánicas and the Intersectionality of the Latino/a Identity in Southern California**

This paper makes sense of the connection between culture, the Southern Californian Latino/a identity, and botánicas. Botánicas are spiritual stores that sell herbal remedies, charms and other religious objects that can be used for religious ceremonies or for spiritual protection. It is rooted in the religion of Santería and Catholicism, and there is a heavy emphasis on saints and the spiritual dominion they control. There is a connection between the perception of botánicas and how a person's culture and creencias manipulate that relationship. I use the the Spanish word "creencias" to specifically describe beliefs that have been instilled since childhood because of strong cultural connections to Latin America. Thus, my research question is: How are botánicas connected to the creencias of Latinos in Southern California? The purpose of this study is to examine the correlation between the Latino identity and the various healing methods done in botánicas. I will also be examining the life of my great grandmother, as she was a very spiritual woman who provided people with advice on herbal remedies, as well as interviewing eight people on their perceptions and or experiences with botanicas, creencias, and Latin American healing practices. The examination of interview data showed that the key variables are change in perception based on generational differences, distinctions between spirituality and religion, the supernatural, gendered characteristics, and tradition. By examining how these variables from my ethnographic data connect to other literature sources, this study will illustrate the connection between my personal experiences, others' experiences in botánicas, and how creencias are still manifested in modern Latino/a life through the relationship between religion, culture, and identity.

## **Jessica Adachi**

### **Ethnic Socialization and Identity Development of Minority Adolescents**

This literature review aims to examine the relationship between ethnic socialization and identity development of minority adolescents. Previous research indicates that minority adolescents who positively identify with their ethnic identity show higher levels of psychological well-being in self-esteem. Additionally, a positive ethnic identity can also serve as a protective factor against discriminatory encounters. This research review seeks to identify the ways in which parents socialize their children ethnically, and the effects of familial ethnic socialization on adolescents' identity development. In reviewing the current literature on this topic, research findings reveal that while cultural socialization and preparation for bias messages are both associated with positive ethnic identity, promotion of mistrust messages can hinder the development of adolescents' ethnic identity. Due to the increase in ethnic diversity, and the current political climate, ethnic socialization is an essential component of minority adolescents' sense of belonging and contributor of self-esteem.

## **Rachel Alhanati**

### **Are Diseases More Prevalent in Purebreds or Crossbreeds? A Meta-Analysis**

Since the Stone Age, people have been taking care of dogs. The dogs started by snatching up garbage from campsites, then grew to become man's best friend. Now, dogs are domesticated pets, bred for various behaviors, keen senses, and key physical characteristics. But with this, many health issues have arisen. On the other hand, mutts or mixed bred dogs have emerged and been outliving these so called "perfect" purebreds. Therefore, we will be analyzing different primary literature's data to determine if diseases are more prevalent in purebreds or mutts. Also, we

will be looking at if this is linked to genetic diversity. As well, we will be looking at the longevity of purebreds and crossbreeds compared to the prevalence of disease. We, then, will be comparing large and small popular breeds to see if disease affects them individually. Lastly, we will determine if popular breed specific data differ from purebreds as a whole. The data collected will be from primary literature sources to determine the results and they will be no more than 25 years old. The diseases we are focusing on are lymphoma, mast cell tumors, cancer, hip dysplasia, heart disease, spinal disease, and inherited diseases. As well, we will be surveying peers at Whittier College to determine if the information we concluded changes their thinking on what dog to get, a purebred or mutt. Studies have shown that purebreds have had more problems throughout their life due to inbreeding. Striving for certain looks has created a smaller gene pool for purebred puppies, meaning the chances of mutated genes being expressed are increased. Crossbreeds have a much larger gene pool; therefore, the likelihood of mutations are reduced. Though, they don't always show a perfect bill of health, they seem to have less issues with wellness and longevity compared to purebreds. Our collected data correlates with these statements. The mutts are seen to have less problems and live longer than purebreds. Also, popular large purebreds are more prone to diseases causing early death compared to purebreds as a whole. Therefore, cross breeds are the better type of dog to have health wise.

## **Ishmerai Angeles**

The Roles of Socioeconomic Disparities, Diet Patterns and Physical Inactivity Impacting Hispanic/Latina Woman Residing in the U.S., Influencing Breast Cancer Development

The American Cancer Society estimates that by the end of the year of 2017, about 40,610 women will cease to live from breast cancer. This is equivalent to about 1 in every 8 U.S. women to develop cancer over her lifetime! One of the most common forms of cancer affecting U.S.

Hispanic/Latina women today is Adenocarcinoma, best known as breast cancer. Several studies have demonstrated that different risk factors may contribute towards the development of breast cancer in Hispanic/Latina women. Three risk factors identified to contribute to the development of breast cancer between the ages of 30-70 are socioeconomic disparities, diet patterns, and physical inactivity. The purpose of this meta-analysis review will demonstrate how these three factors have influenced the rise of increased incidents of breast cancer among Hispanic/Latina women residing in the United States of America. In the study conducted by Junghyun Kim, we found that these women struggle to deal with fear of being socially stigmatized due to the permanent alterations made to their body resulting in disruption of their social life, changes in intimate relationships, and emotional issues with their families potentially responding to their treatment. Overall this support influences either a positive or negative effect in the quality of life of these women.

## **Ishmerai Angeles**

**La Religión en el Cine Mexicano y la Reforma Constitucional para Promover un Estado Lico y el Derecho a Profesar Creencias**

El objetivo principal de este ensayo es de destacar el papel que juega la producción mexicana Miércoles de Ceniza (año 1958) en el debate de la religiosidad en México y la cuestión del Estado laico. Miércoles de Ceniza, al igual que otros filmes producidos en México a partir de los años 50 hasta el presente, aborda la cuestión del desencanto y caída de la fe en la religión y sobre todo la Iglesia católica, a partir de una fábula que se desarrolla en la época de la lucha de los Cristeros. Muchas de estas películas han sido medios en cómo la iglesia católica está perdiendo fieles por la cantidad de abusos, sobre todo de tipo sexual, que sus sacerdotes han estado practicando durante muchos años y que han empezado a salir a la luz gracias a las denuncias y juicios iniciados por las víctimas. La pérdida de fieles católicos ha hecho proliferar un sinnúmero de creencias y este

fenómeno religioso se ha convertido en parte fundamental en la vida diaria de muchos individuos en México, así como en otras partes del mundo. Por ello la cuestión del estado laico es una consecuencia de estos malestares, debido a que la gente comienza primero a afiliarse a otras religiones y, una vez formados estos grupos, reclaman la participación legal, jurídica, en la sociedad mexicana. De tal modo que vivir bajo un Estado laico es esencial para poder asegurar los derechos y libertades de cada persona con el propósito de respetar las diversidades de creencias religiosas. Miércoles de Ceniza fue, de cierto modo, paradigmática en cuanto a plantear estos problemas, ligados a su vez a un trasfondo de corrupción que llega hasta el día de hoy (prostitución, trata de blancas, narcotráfico y abuso sexual por parte de los sacerdotes). Desde un punto de vista político, cultural, y religioso este film tiene un rol importante el cine mexicano dejando huella y marcando una nueva era en estos últimos tiempos apoyando, de algún modo, la revisión de la constitución política del país, modificada en el año 1992 para poder darles un amparo a todos aquellos que deciden cambiar de una religión a otra.

## **Gracie Aragon**

### Religious Identity or Oppression: The French Ban on Face Covering

My research poster will focus on the French Ban of Face Covering in France and will compare how the hijab is looked at in the United States, in Muslim communities, and in France. Multiple countries have proposed bans on the wearing of hijabs/headscarves; however, my research will include France and the act that prohibits veils covering the face in public spaces. The proposed bans in these various countries range from multiple claims--one being that religious symbols should not be allowed to be expressed in public circumstances and another because imposing women to cover their face is deemed to be sexist. Because of stereotypes claiming women who practice veiling are terrorists or harmful, the government

feels that these women should assimilate to social norms of traditional France. My goal is to educate society about the history and significant roles of traditional Muslim veiling and how it has become an important symbol or focus of controversy. On account of my aim to educate society, I will also acknowledge Western feminists who view veiling as a symbol of oppression and system of patriarchy.

## **Jasmine Arce**

### **Cognitive Impairment and the Correlation to Patients with Multiple Sclerosis: A Meta-Analysis**

Multiple Sclerosis (MS) is an autoimmune disease which affects the human body's central nervous system. The damage to the central nervous system affects the patient's cognitive function and may lead to signs of impairment. Usually cognitive impairment occurs in almost half of multiple sclerosis patients and gradually progresses over time. According to evidence, patients affected encounter issues dealing with emotional, memory and critical thinking complications. In this meta-analysis, 10 studies were examined to compare patients' emotions, memory and critical thinking functions. There seems to be a decline in cognitive function with those healthy patients living with multiple sclerosis. However, further studies need to be conducted to see the long-term permanent damage and the correlation to MS.

## **Krissy Arechiga**

### **Measuring the Shades of Grey: Intangible Assets in the Pharmaceutical Industry**

Tobin's Q is the ratio of a firm's market value to the replacement cost of its assets. Empirical studies have tried to explain Q by examining what causes this large discrepancy between a firm's listed market value to its book value. This paper explores the relationship between various measures of intangible assets and the market value of young biopharmaceutical

firms. Drawing on a sample of 447 newly incorporated biopharmaceutical companies, we provide empirical evidence that acquisitions, strategic alliances, clinical trials, branding, and technological specialization are important drivers of corporate market value. Our model explains 30% of the variation in Tobin's  $q$ .

## **Reannen Arevalo**

### Nitrogen Enrichment Allow Alien Species to Outcompete Coastal Sage Scrub

Plant restoration is important for preserving the biodiversity of an area and sustaining the life around it. Coastal sage scrub, also known as CSS, is one of the many plant species that is slowly disappearing due to many different factors. CSS requires nitrogen and it is an important component for it to grow and be stabilized. But researchers have found that nitrogen can have some negative effects to the CSS community. Nitrogen is a key element that controls species composition, diversity, and dynamics of plants and it is being affected by many things such as agriculture, combustion of fossil fuels, and many other human activities. The human activity that is happening all around us, in general, is increasing both the availability and the mobility of nitrogen all over and the negative effects that it is having are how the coastal sage scrub community competes with invasive or alien species, as well as affecting restoration. The methods that are used to measure the levels of nitrogen are different because researchers measure the nitrogen in the air and the fertilizer. We expected to find that with the increasing amount of nitrogen that is found in the plant species, there will be both negative and positive effects on the survival rate of CSS, how it competes with invasive or alien species, and its restoration. The results that researchers found, were consistent with the hypothesis of having both negative and positive effects on CSS and this is important because CSS provides a habitat for many different species to live, as well as it being one of the few species to thrive in certain environments. This is something that can help researchers rebuild habitats

and restore endangered species but, some of the weaknesses in this experiment are limiting both the availability and the mobility of nitrogen all over, as well as limiting the disturbances from alien or invasive species.

## **Giovanna Bacon**

### **A Meta-Analysis on How Stress and Physical Characteristics Impact the Immune System**

Stress is believed to have a distinct influence over the pathogenicity of various communicable diseases. This psychosomatic strain can predispose animals and humans to infectious agents greatly. Body symmetry and other defining physical features are indicative, as they emphasize an organism's developmental triumph. Some unique and enhancing characteristics can mark an individual as a superior choice for a mate; this concept is also known as selective breeding. Studies conducted on animals have indicated that less appealing or attractive physical attributes can mark an organism as further vulnerable to certain disorders. Particular traits can affect their social ranking and status as well. Those who are more dominant in their community have lower levels of stress compared to those inferior. Stress can be caused by specific physical characteristics and result in an increase of susceptibility to infection due to these features possibly hindering their immune system. Individual's response to chronic stress can overall impair their immune response and contributes to the development and progression of some types of ailments since stress can directly impede our physiology. Thus, there is feasibly a direct correlation between certain traits and our immune system's function. Analysis of animals shows that less attractive and even asymmetrical physical features can make an organism more susceptible to infection. Various journals were collected and inspected to find out the affect certain traits can have on an animal's' immune system. Majority of the journals examined appear to support the idea that symmetry and beauty are more than just aesthetic.

Physical attractiveness is simply ingrained in our biology. And understanding the relationship between physical characteristics and in what way they can inhibit our immune system can be applied to developing new clinical and treatment policies.

## **Kelsi Bailey**

### Sea Hare Phylogeny

There are 80 known species of sea hares (Mollusca: Gastropoda: Anaspidea), but their exact phylogenetic relationship remains unresolved. Current phylogenetic hypotheses for Anaspidea shows Akeria is sister to the rest of the Anaspidea, based on mitochondrial genes (Medina & Walsh, 2000; Medina et al, 2001). Using nuclear genes, we are trying to determine if in fact Akeria are related to Anaspidea or not. Knowing the phylogenetic relationship of sea hares helps determine common ancestors and shows how each organism is more related to another. From this, we can predict how species evolved traits, and hypothesize how and why they evolved those traits. The goal of this experiment is to reconstruct a resolved, and well-supported phylogeny of the relationships between sea hare species. Genes Cytochrome c oxidase I (CO1), 12S ribosomal DNA, 16S ribosomal RNA, 18S ribosomal RNA, 28S ribosomal RNA, and Histone H3 were chosen as they are useful in the study of phylogeny. As nuclear genes, 18S, 28S, and H3a are important in reconstruction phylogenies, due to the fact that nuclear genes evolve slower and are able to tell us the difference between families, and subfamilies, making constructing a phylogenetic tree more accurate. Mitochondrial genes CO1, 12S, and 16S (Medina & Walsh, 2000), however, evolve faster, and are able to tell us the difference between different species. We used polymerase chain reaction to amplify gene sequences CO1, 12S, 16S, 18S, 28S, and H3. We aligned the sequences of all six genes, using the DNA sequencing aligning

program, ClustalX. From there, we reconstructed the phylogenetic relationship of sea hares using MrBayes. Previous studies suggest Akera share a common ancestor with Anaspidea and Aplysia is a monophyletic group and share a common ancestor with the rest of the Anaspidea. However, our preliminary analysis show Akera is found within Anaspidea. Additional analysis will test the effects of outgroup species selection on Anaspidea phylogenies.

## **Anders Blomso**

### Religious Boundaries and Borders: Myanmar and Dali in Comparative Perspective

How do imported religious systems interact with local religious traditions? Experiences on the ground in Myanmar and China point to two very different types of interactions, which have very different consequences. Research at various pagodas and temples in Myanmar indicates a framework in which an imported or arrived religion (Buddhism) has come to scaffold and engulf the pre-existing indigenous beliefs. Research in and around Dali, Yunnan, amongst various Bai ethnic minority villages suggests the opposite phenomena-Buddhist practices have been subsumed within and by the Bai religious tradition. My presentation will detail this phenomenon by pointing to specific examples discovered both in Myanmar and in and around Dali. Research included analyzing religious structures by mapping shrines and locating deities within them, investigating religious doctrine and cosmology, and interviewing religious specialists and adherents. Additionally, the presentation will discuss the potential for an environmental ethic in both religious systems by analyzing how both systems discuss and relate to the non-human environment.

## **Anders Blomso**

## A Gay Man's Paradise? Homosexuality in Pakistan

While significant time has been spent by European and North American scholars, journalists, and intellectuals in analyzing and understanding the Muslim perspective on male homosexuality, not nearly the same effort has gone into reconstructing social realities for men in Muslim majority societies. This emphasis on scriptural analysis, with the special attention paid Islamic Law (shari'a), has created an unrealistic and inaccurate image of the possibilities for life experienced homosexual men in predominantly Muslim countries. Emphasis on textual analysis, while useful, can lead to an understanding and characterization of the Muslim world that does not accurately reflect lived realities on the ground and reifies "Islam" or "Muslims" into a monolith. Thus, this project will seek to problematize those understandings by analyzing and describing life for gay men in Pakistan. By understanding the unique situation for gay men in Pakistan through primary sources like interviews in journalistic sources and personal advertisements on websites such as locanto.com.pk, we can construct a clearer and more accurate understanding of what it can mean to be Muslim and gay in a Muslim majority society, and the possibilities for life that exist within these societies. Gay men in Pakistan lead a diverse array of existences, from cruising at religious sites to using dating apps to carrying on monogamous relationships. Thus, this project will help break boundaries of understanding and challenge stereotypes about the possibilities for gay men in Muslim majority societies.

## **Breiann Bolos**

### Antibacterial Susceptibility Testing of Chinese Medicinal Herb Extracts

Many drugs and supplements come from plants to treat infectious diseases. Plants contain many secondary metabolites that have been discovered to have antimicrobial properties. In this study, we investigated antibacterial properties of the active constituents from four Chinese medicinal herbs -

Scutellaria barbata, Salvia miltiorrhiza, Artemisia annua, and Scutellaria baicalensis. Maceration was the method used for the extraction of the medicinal plants using absolute ethanol, cyclohexane, and distilled de-ionized water as the extraction solvents. The screening of antibacterial activity of the extracts was conducted by disc diffusion method against two gram-positive bacteria (*Staphylococcus aureus* and *Bacillus subtilis*) and two gram-negative bacteria (*Pseudomonas aeruginosa* and *Escherichia coli*). Overall, absolute ethanol extracts of the four Chinese medicinal herbs exhibited larger zones of inhibition than the DDI water extracts.

## **Roberto Bonilla**

Theological Interpretation: A Lethal Weapon Against the Islamic State?

During any sort of armed conflict, whether international or domestic, we often hear about the role of women in the peace-making process or the war effort at the home front. But when women leave the white flags behind, or their jobs at their ammunition factories and pick up the rifle to engage the enemy in the battlefield, the attention that is directed by the mainstream media to these female fighters is unprecedented. In the last two years, fighters for the Women's Protection Unit (Yekîneyên Parastina Gel, YPG) have joined in the fight against the Islamic State in Iraq and Syria (ISIS). Media outlets such as Huffington Post, Business Insider, and CNN, have portrayed and fetishized these women who are on the front lines of Syria and Iraq, alleging that ISIS fighters are terrorized by the idea of being killed by a woman in combat. This fear, they argue, stems from a belief maintained by ISIS fighters that they will lose their ticket to heaven and fail to get their earned rewards, were they to be killed in battle by a woman. After observing the level of attention attracted by stories like this, I was presented with the following query: What are the theological foundations for this belief and how have ISIS fighters interpreted Islamic texts like the Qur'an and hadith (statements and teachings of Muhammad) to support this view? After analyzing multiple articles that depicted the

lives of these brave women killing terrorists and fighting for social equality, I was not able to find a reference to a credible source that confirmed that this belief is held by ISIS fighters—no religious scholar, or Quranic verse is ever cited in any of the news articles. The over-glorification of these women (specially in social media), and the frame used by the different media outlets to depict their lives, I argue, is a sequel of deep seeded Orientalism lying in the assumption of these women's oppression.

## **Alina Bonto**

### Migration and Ecophysiological Traits of Coastal Plants: Implications of Adaptability to Rising Sea Levels

As a result of rising sea levels, some coastal plant species may require assistance to migrate to more suitable inland locations. Disturbances that reduce competition with established, upslope vegetation may enhance survival and growth of relocated species. In May of 2015 two pine island-marsh complexes, spanning a gradient from salt marsh to pine woodland, were burned, and two complexes were left unburned within at Grand Bay Natural Estuarine Research Reserve in coastal Mississippi. Sods excavated in the dominant vegetation types were reciprocally transplanted into four zones, including their own “home” zone. *Juncus roemerianus*, the brackish marsh dominant, successfully established and increased its cover in downslope, “home”, and upslope positions. This species also had higher cover in burned plots compared to control plots. The salt marsh dominant *Spartina alterniflora* established in all upslope positions but persisted only at “home” and brackish marsh zones. In this study, physiological traits will be investigated to explain why some species can expand following disturbance while other species are incapable. We compared water potential and light availability of these two species in control and burn

plots along the salinity gradient. We hypothesize that pre-dawn and midday water potentials of *J. roemerianus* will not differ across the gradient, in all plots. We expect that *S. alterniflora* will have lower water potentials at the edges of its upslope distribution relative to its “home” and brackish water distribution. These physiological responses may help us predict future responses of dominant coastal species to disturbances and chronic sea level rise.

## **Christina Brown**

### Does Social Media Influence Election Results?

The results of the unprecedented 2016 election have caused many political scientists to come up with theories as to why Donald Trump won. Some articles and political scientists say that social media had a large impact on why Trump was so successful, eventually leading to his win. Some articles also compare Trump to Obama. Although they appear to be antitheses to each other, both prevailed when using social media compared to their opponents. They both started out as outsider candidates that slowly began gaining popularity on social media. Scholars say that social media tends to attract the youth and the millennials because it has continued to evolve in their era. Another aspect that is discussed is the legitimacy of the information on social media. With Facebook and Twitter, there may be articles that aren't completely factual. However, because of how easily accessible these sites are and the traffic they have every day, articles can be shared and seen by millions in a matter of minutes. It's ignorant to assume that everyone fact checks everything they see online; we could however assume that those who are more educated who view information

on the internet would fact check. Before these however, it would be interesting to see how exposure to social media has or has not swayed how individuals have voted, as well as where from media they received their information. With the media and technology constantly evolving, it makes sense that it would change and evolve presidential elections; the question is how. I will test two hypotheses, examining my results using cross-tabs analysis and compare means analysis. I have pulled information from studies by C. Tolbert and V. Gueorguieva to help frame my hypotheses. My data will be from the ANES 2012 data set. The hypotheses will be as follows: 1) "In a comparison of individuals, those who viewed and heard information about Presidential campaigns from the internet, and who have an education lower than a Bachelor's degree, were more likely to be warmer towards Obama than those who did not get their information via internet." 2) "In a comparison of individuals, those who paid more than moderate attention to the internet news, and are Millennials [ages 17-34], most likely voted for Obama than those who did not pay attention to internet news." From then, I will use a series of tests to test whether or not my findings were statistically significant.

## **Micheyla Buechler**

### **The Role of Various Sibling Structures on Academic Achievement**

Siblings play an important role in the educational outcomes of children in their school-age years through adolescence. This review of literature will examine how varying sibling structures, as well as the quality of sibling relationships, can influence the academic success of children. Specifically, birth order, number of siblings, spacing between births, gender, lack of siblings, and same age sibling relationships (i.e. twins) are all factors to consider when examining a child's educational outcomes. The resource dilution hypothesis and confluence model provide a framework for examining the impact of birth order, number of siblings, and sibling spacing. For later born children with several older siblings, lower

academic success is evident due to fewer resources being available; however, high quality sibling relationships can challenge these findings. For example, research shows that academic support from older siblings is positively related to academic motivation in younger siblings, which essentially serves as a protective factor from the negative relationship of educational outcomes and being a later born sibling. While each twin is also influenced by sibling structures, such as a birth order and number siblings, they are unique in the fact that they have a same age sibling, who must be considered, as they tend to have a very close bond. This unique sibling relationship is an important structure to consider when determining if the twins will be in separate classrooms or not. Separating twins most clearly points to internalizing behavior problems, which can be negatively related to academic achievement. This review of research on siblings and educational outcomes points to suggestions for parents in providing support for all of their children, as well as ensuring that their children have enough support in their schooling.

## **Leslie Caamal**

### **Gender and Generation: How Millennials Perceive Gender**

The Millennial generation (1981-1997) is considered to be the most unique generation as they are classified as innovative, confident, and open to change. Existing literature finds that Millennials were raised to be open and accepting of all individuals, which has shaped their outlook on the world, as they are set apart from older generations by maintaining nontraditional views and opinions based off their unique upbringing. Although Millennials are very accepting of others, present literature lacks to discover whether this unique attitude also affects their views of gender roles. The question is posed whether Millennials perceptions of gender are different in comparison to the traditional views of older generations. Due to the lack of literature within this realm, this research study aims to analyze the differences amongst males' and females' perceptions of gender

within the Millennial generation. The questions of this study remain relevant today as we are attempting to be a more gender inclusive and equal society. How do male's perceptions of gender differ from female's perceptions particularly amongst the Millennial generation? What factors have contributed to these differences? In order to answer these questions, this study incorporates a mixed methods approach of both qualitative and quantitative data. A total of 64 females, 30 males, 1 other participated in this study where 96 surveys and 6 interviews were collected from a small liberal arts college in Southern California. Results of this study find that the upbringing of Millennials did in fact shape their perceptions of gender roles as they view men and women as equal counterparts.

## **Carlos Campos Moya**

### **Interpreting 3 Telescopes' Archival Data to Know More about Supernova Progenitors**

The explosion of a star into a supernova generates a shockwave which spreads out through the Circumstellar Medium (CSM), composed of matter previously emitted by the star as stellar wind. The interaction of the shock heats the particles in the CSM; in turn, these particles cool by bremsstrahlung radiation and emit X-rays in the process. We have analyzed archival data from Swift, Chandra X-ray and XMM-Newton Telescopes from a number of supernovae. Based on the geometry of and reasonable assumptions about the CSM and shock front, we are able to determine the CSM density from our results. These results give us a more complete picture of the environment around the supernova progenitor and its historical mass loss rate.

## **Petra Carlos-Arzate**

### How Current Understanding of Anxiety Related Genetics Influences Diagnosing and Treatment

The American Psychological Association defines anxiety as an emotion characterized by feelings of tension, worried thoughts and physical changes like increased blood pressure. According to the National Institute of Health, anxiety disorders affect approximately 18% of the US population over the age of 18; it is estimated that 40 million adults are affected by anxiety or anxiety related disorders (Anxiety and Depression Association of America, 2010-2016). Current diagnosing techniques rely primarily on self-reporting symptoms and concerns, the only physical examinations conducted to evaluate one's anxiety as a symptom of an underlying medical condition (Mayo Clinic, 1997-2017). The three main risk factors known to increase one's probability of developing an anxiety disorder are one's personality (largely rooted in one's life experience and temperament), genetics, and lastly, being female (Mayo Clinic, 1997-2017). This meta-analysis focuses on investigating current research regarding the biological and genetic factors contributing to generalized anxiety and or anxiety related disorders. How or if this understanding of the biological mechanisms of anxiety can be utilized to improve testing, diagnosing, and treatment methods in accordance with the APA's Diagnostic and Statistical Manual of Mental Disorders (DSM-5) definition and classification of Anxiety is also discussed. Studies reviewed for this paper found that the limbic system, specifically the amygdala, is the region of the brain most affected by anxiety due its role in the processing of emotions, emotional behavior, and cognitive and autonomic responses (University of Texas Health Science Center at Houston, Makovac, Meeten, Watson, Herman, Garfinkel, Critchley, Ottaviani, 2016). Research suggests that a genetic predisposition to high anxiety is related to decreased DNA methylation. Exploration of possible genetic markers indicate that dopaminergic (DAT, DRD, COMT) and serotonergic genes

(5-HTTLPR, HTR1A, HTR2A) may be the best explanation for a biological mechanism contributing to the development of anxiety and anxiety related disorders (Lacerda-Pinheiro, et. al). This area of study is relatively new and contemporary conclusions warrant further research. With regards to diagnosing and treatment methods, conclusions found suggest that until the biological mechanisms at play in the development of anxiety and anxiety related disorders are better understood, self-reporting methods are the most efficient and economically viable option.

## **Maria Beatriz Carpio**

### **An Investigation of Vaccination Rates in Correlation to Individual Access to Healthcare in California in Three Populations Within Los Angeles County**

Developing diseases that could have been prevented or treated is becoming an issue in many different cities. Socioeconomic statuses of individuals without proper health insurance and citizenship, has led to difficulties in administering vaccinations. Due to this observation, an individual's citizenship and access to insurance is closely related to a community's access to preventative healthcare. Databases such as AskCHIS Neighborhood Local Level Health Data and UCLA Level Policy Research provided an excellent opportunity to examine the socioeconomic status of individuals within a community's access to vaccination in California. An investigation of individual populations of communities specifically within Los Angeles County, as well as the population of the city of Whittier, was done for the descriptive epidemiology and follow up studies. The following studies were conducted within the UCLA Level Policy Research: 1) a descriptive epidemiology of socioeconomic status and vaccination rates, 2) a population-based case-control study, and 3) a follow up study of the community within the course of a year. These databases helped identify the vaccination trends between the relationship of individuals who have access to insurance and hold legal citizenship with those who do not. Significant differences were found on the rates of flu

shots being received for those who were citizen's and those who were insured. Discrepancies were also prevalent in cases where doctors or clinics chose to inform parents about when children should receive flu shots. These were observed across populations of U.S. born citizens and non-citizen children. These differences between health behaviors and socioeconomic status play a deciding role towards vaccination rates in Los Angeles County, providing a deeper understanding as to why outbreaks of preventable diseases occur. Further research needs to be done to investigate other causes of potential exposure to preventable diseases and ways of prevention.

## **Osvaldo Cerda and Ryan Hernandez**

### **Effects of Water Acidification on *Chlorella Vulgaris***

Due to the rising temperature of the Earth's surface, all bodies of water are faced with the harsh effects of climate change. The acidification of water ecosystems is present as a result of the over-abundance of carbon dioxide in the surrounding environment. Within our study, we measured the effects of different pH levels on algae species *Chlorella vulgaris*. We placed the algal species in six different pH (2, 4, 6, 7.6, 8, and 10), each with three replicates. We hypothesized that as the pH levels of the water became more acidic algal chlorophyll production will be negatively affected. After one week, we measured chlorophyll content as a determinant of algal growth. Our results yielded that optimal algal growth was observed at pH of 8. Acidification of the water resulted in decreased growth and algal death was observed at pH 2. Similarly, algal growth also declined as the pH level of water exceeded 8. These data show that water acidification negatively affects algal growth in the *Chlorella vulgaris* species. Algal death caused by increased acidification or harmful algal blooms due to increased alkalinity may have ramifications on the food chain. Further work is examining the effects of pH on aquatic animal species.

## **Esai Cervantes and Tyler Putnam**

### The Correlation Between Specific Leaf Weight and Hydraulic Conductivity in Coastal Sage Scrub Species

The Coastal Sage Scrub (CSS) ecosystem, located in Southern California and northwestern Baja California provides habitats for many endemic species including the cactus wren and the California gnatcatcher. The plant community is adapted to the summer drought typical of Mediterranean type climate regions like Southern California.

Anthropogenic related disturbances like land development, introduction of invasive species, and pollution have resulted in elimination of much CSS habitat. Increasing temperatures and decreasing water availability predicted by climate change models are likely to impact plant species typical of CSS, so it is important to understand how hydraulic conductivity of CSS species responds to drought. Hydraulic conductivity is the measurement of a plant's ability to move water through their stems. Vulnerability to drought can be estimated by measuring percent loss of hydraulic conductivity (PLC), is the loss of hydraulic conductivity as drought increases. We also examined leaf traits in relation to vulnerability to cavitation because we expected that decreased vulnerability to drought may be correlated with decreased leaf surface area which is also a drought adapted trait. We examined these traits in *Malosma laurina*, a deeply rooted evergreen shrub, *Encelia californica*, a shallow-rooted shrub, and *Salvia leucophylla*, a shallow rooted partially summer deciduous shrub. In order to calculate P50, the point at which 50% of hydraulic conductivity is lost we measured vulnerability curves for each species by calculating PLC with increasing artificially induced drought. We measured leaf area and leaf mass to calculate specific leaf weight, the ratio of leaf area to mass. Our vulnerability curves revealed similar patterns of responses with increasing drought. Purple Sage has the lowest mean P50 value (-3.9), while Laurel Sumac has a mean value of -2.6, and Bush Sunflower with the highest mean P50 value (-2.5). We reject our hypothesis because

Purple Sage's P50 value makes it the most drought resistant plant but does not have the smallest leaf area density. Interestingly, Bush Sunflower and Laurel Sumac have similar P50 values but have very different leaf sizes and plant physiology. As a drought deciduous, Bush sunflower sheds its leaves in order to conserve water during drought transport while the evergreen Laurel Sumac does not shed its leaves during changes of water availability.

## **Abigail Chavez**

### *African-American Men in the New Deal*

This research project examines African-American men during the Great Depression through the lens of Franklin D. Roosevelt's New Deal programs. By reviewing this historically significant event, I clarify what it was like to be an African-American male during the Great Depression; racial discrimination increased immensely during the 1930s because available jobs were given to white men. My research led me to this conclusion. Franklin D. Roosevelt tried to alleviate the economic suffering of African-American men, however, in the implementation of local relief programs, African-American men experienced racial discrimination. My research strategy included utilizing both primary sources and secondary sources. The primary sources consisted of speeches, newspaper articles, poems, letters, and legislation. The three New Deal Programs I focused on were: the National Recovery Administration (NRA), the Civilian Conservation Corps (CCC), and the Workers Progress Administration (WPA). Roosevelt created the programs at the federal level with rules and regulations to go along. However, when it was administered at the local level, the programs were changed and manipulated by the administrators to fit the rules and regulations of the county. Ultimately, if the administrators did not want racial equality, they would be able to manipulate the program to fit their agenda. This project challenges the

narrative that all Americans received the same economic relief under the New Deal.

## **Ashley Chen**

### Reconstructing a Phylogenetic Tree of Petalifera to Test their Diversity

Anaspidea, or “sea hares” are medium to large sized molluscs that have rhinophores that mimic the ears of a hare. Anaspidea are of the smallest of the opisthobranch orders and have been studied in ecology, neuroscience, and taxonomy. Anaspidea have about 9 or 10 genera with about 80 species, although the exact phylogenetic relationships are still unknown. The genus Petalifera are found in the Mediterranean and Australia and their phylogenetic relationship to the rest of the sea hares is currently unknown. This study will put together genetic information from Petalifera and nine different species of sea hares to reconstruct a phylogenetic tree in order to better understand their biodiversity. The genetic information was obtained using polymerase chain reaction (PCR) Gel electrophoresis was used to separate and analyze the DNA fragments, COI, 16S, and 12S, based on their size and charge. Unfortunately, the PCR amplification for Petalifera genetic information was inconclusive so we had to take the genetic information from GenBank instead. Although we were unable to get results from the PCR, we used the program ClustalX to identify and align the genetic sequences for COI, 16S, 12S from our samples. Cytochrome oxidase I (COI) is a marker for DNA coding, 16S ribosomal DNA (rDNA) and 12S rDNA are mitochondrial genes that can undergo rapid evolutionary change therefore making it a better marker for determining the relationships of the genus, species, and populations. The genetic information obtained will then be compared to previously made phylogenetic trees and analyzed as to whether or not they support previously reconstructed phylogenetic trees. The species Petalifera in past research have been linked to the species Dolabrifera and Phyllaplysia. Petalifera was labeled as a sister taxa with Bursatella and Stylocheilus

rather than with Dolabrifera and Phyllaplysia. Resolving the genetic information for the phylogenetic tree will allow scientists to better understand the relationships of Petalifera and sea hares, which will allow us to better understand their morphology and their biodiversity. Future analysis is required to test and put together the phylogenetic trees.

## **Michelle Chen**

### **Nutritional Effects on Age-Related Changes in T-cell Differentiation and Function**

T cell differentiation and function have shown to be related the age-related changes we see in primates. T-cells are a type of white blood cell that circulate in our bodies, scanning for cellular abnormalities and infections, thus making them essential for human immunity. However, due to the effects of aging, our bodies diminish the production of T cells and as a result, elderly individuals do not respond to immune disturbance as robustly as the young. In this experiment, I am examining the Jurkat cell, a human T lymphocyte cell line, viability at different treatment concentrations of the natural compounds, resveratrol and curcumin, and to cancer treatment drugs, cisplatin and bleomycin. The comparison between natural compounds and cancer treatment drugs is to test whether or not these natural compounds work better than the cancer treatment drugs. If they do work better than the cancer treatment drugs, it can potentially lower the cost of cancer treatments and eliminate side effects from treatment. The results from the experiment show that at 1 $\mu$ M resveratrol, 1 $\mu$ M curcumin, 1 $\mu$ M cisplatin, and at 1 $\mu$ M bleomycin there was a significant decrease in cell viability when compared to the individual treatment control groups. The trend seen from all these compounds indicate that as concentration increased the average of alive cells decreased. I am in the process of combining the different compounds to determine their effects on Jurkat cells. I am also in the process of performing RT-PCR to detect which proteins are being expressed, such as

the Sirtuin 1-7 family, mTOR, and telomerase. The overall goal of this experiment is to determine the mechanism for memory T cells senescence and memory T cell.

## **Dana Christensen and Zayne Repp**

When Environment and Art Collide: Environmental Writing in Sino-American Discourse

This will be a presentation of writing generated on the LIASE alternate Spring Break trip to Beijing and Kunming. The work will consist of poetry, fiction, and creative non-fiction that examines the interplay of the environment and the artist as well as the development of Sino-American discourse. Student Authors will present their work by reading said work aloud in a public presentation followed by a question and answer session involving all participants. Approximately six students will read their work aloud and answer questions.

## **Vanessa Cini and Sharon Tai**

A Comparison of Leaf Traits in Restored and Native Coastal Scrub Species

Coastal Sage Scrub (CSS) is home to over 70 threatened endangered species. Unfortunately, it is also a threatened habitat with about 15% of the habitat remaining. Much of the land has been converted to housing and air pollution and invasive species have contributed to the decline of CSS. Restoration of CSS overseen by the U.S. Fish and Wildlife Service and or the California Department of Fish and Wildlife is used to offset losses of this habitat. Previous studies suggest that restoration results in shrubs that are drought stressed. We were interested in comparing leaf traits and photosynthetic capacity to see if leaves of black sage and laurel sumac from restored areas are more drought-adapted than leaves from a reference area. The layers of palisade mesophyll and spongy mesophyll in a leaf can affect the efficiency of photosynthesis of the leaves. Palisade

mesophyll limits water loss, because it is a densely packed layer of plant cells. Spongy mesophyll is loosely packed facilitating increased diffusion of CO<sub>2</sub> which can increase photosynthetic rates; the tradeoff is that spongy mesophyll loses more water. The ratio of palisade mesophyll in the sage leaves was similar, 0.213 for the reference site and 0.219 from the restored site. The ratio of palisade mesophyll to spongy mesophyll for sumac individuals from the reference site was 0.337 but was 0.503 for individuals from the restored area. The changes in ratio can indicate the leaves are becoming more drought resistant, because the layer of palisade mesophyll is thicker, and decreases water loss from the leaf. This is important for laurel sumac because it retains its leaves for as long as 3 years. Since black sage is summer deciduous, increased amounts of palisade to prevent water loss is irrelevant. Although the ratio of palisade mesophyll did not change for black sage, specific leaf area, the ratio of leaf area to leaf mass was much lower in the restored site relative to the reference site indicating more drought adapted, thicker leaves. Photosynthetic rates were higher in the reference site for both black sage and laurel sumac. Our results suggest that leaf construction and photosynthetic rate is responding to decreased water availability to individuals in restored areas.

## **Hannah Cohen**

### Islamic Art

In this poster, I hope to examine historical art from the regions in which Islam began. To do this, one must first answer the question of “what is considered Islamic art?” To explain the difference between Islamic art and region-specific art, I plan to define the differences between the two. By doing this we can better relate this art back to Islam. We also understand that it was not originally created to be viewed as just art but also to be a practical and useful object in everyday life. Along with this Islamic art does not portray the prophet Muhammad. It rather depicts many geometric and precise shapes as well as Arabic text from the Qu’ran.

## **Alexi Cruz and Hector Valenzuela**

Faculty Mentor: Hector Valenzuela

“The Effects of Poor Oral Health on the Human Body”

Maintaining proper oral health is essential for living a healthy life. Good oral health indicates being in a state that lacks facial pain, oral or throat cancer, oral infections or sores, gum disease, tooth decay or loss, and any other associated disease that may impair a person’s ability to bite, chew, smile, and speak. If a person is in poor oral health, they may also experience lowered psycho-social well-being. The effects of poor oral health spread past the mouth and can lead to certain diseases throughout the body. The mouth is an obvious entry point to the body, this is usually a path for nutrients; however, food is not the only thing that enters our body through the mouth. If good oral hygiene habits are not maintained, then the mouth because a prominent entry for many bacteria to take over other parts of the body. The objective of this study was to examine and compare the literature on diseases associated with oral health. The literature was examined to meet the following criteria, there was a sound connection from the given disease to poor oral health and offer a solution to lowering risk factors through proper oral hygiene. Based on these papers, it can be concluded that poor oral health has additional detrimental effects on the human body. People with certain diseases, like diabetes, are more prone to oral health complications, such as, Periodontitis. According to recent studies, poor oral health can also lead to pregnancy complications, atherosclerosis and subsequent cardiovascular disease, and respiratory infections.

## **Julia Davis**

The Impact of the Religious Right on Reproductive Healthcare in the 21st Century  
United States

This paper will focus on the impact of religious institutions in the United States on women's access to reproductive healthcare, including contraception and abortion. The specific question being addressed is, what impact have the Catholic, Presbyterian and Baptist churches had on the determination of policy regarding reproductive rights during the Bush and Obama administrations? Focusing specifically on these institutions and administrations, it will use political and religious theory and research, including articles by John Hoffman, Daniel Maguire, and journalist Esther Kaplan, to describe perspectives on contraception and abortion in these churches and public policy surrounding reproductive rights throughout the past three decades. It will explore more deeply a few specific policy decisions under these presidents, such as the war in Afghanistan, the recent defunding of Planned Parenthood, the wave of backlash following the introduction of the Affordable Care Act, and the reimplementation of the global gag rule, as described in scholarly journal and news articles, to illuminate the role that Christian and Catholic institutions play in the determination of policy and legislation and the impact that U.S. policies have on women worldwide. In essence, the paper will be a comprehensive and focused literature review, using newspaper articles to supplement theory in order to provide up-to-date information on the issue of reproductive justice in the United States. The focus of the paper is interdisciplinary in nature and treats the issue of reproductive healthcare and justice as an intersection between religion and politics. Its aim is not to demonize or incriminate the institutions being examined, but rather to investigate the role they have played in the trajectory of reproductive healthcare in the United States over the past three decades and presidential administrations.

**Julia Davis**

Religion and Environmental Conservation in Dali

This spring, I and 15 other students travelled to Dali in Yunnan Province in Southwest China to study relations between environmental conservation and the tourist industry. Different research teams had different foci related to this broad topic. My research concentrated specifically on religion, and local religious connections with the environment. The question that I sought to answer during the trip was this: how is religious identification, or lack thereof, related to attitudes toward and interactions with the environment among ethnic minority groups in Yunnan Province, and how, if at all, does ethnotourism impact self-identification amongst these groups? What I found was that while villagers in and around Dali did worship deities (associated with good weather, flooding, and agriculture), the villagers themselves usually did not have strong affiliations with “mainstream” religions such as Buddhism, etc. I found that they identified more strongly with their ethnicity and geographic location than with any religious group such as “Buddhists.” This development may in part be impacted by government-sponsored ethnotourism, which deemphasizes conventional religious identification in favor of minority and exotic “ethnic culture”. This, for instance, became particularly evident during an interview with a female Bai tour guide (the Bai constitute a significant ethnic minority group in Dali) who said that it would be very unlikely for anyone in Dali to ask about or advertise a religious identity, unlike an ethnic identity, which might be displayed through clothing or other cultural practices including certain gender-based rituals, in part to demonstrate ethnic identity and custom to tourists. Another finding was that, while the category of “religion” might not be a central aspect of identity construction, the fervency and love with which many people in and around Dali worshipped nature and the land seemed profoundly important. In other words, it seemed to me that for many villagers the earth itself held the status of a deity, an object of intense worship. During my presentation, I will elaborate upon these preliminary findings by sharing testimonies I heard from villagers and environmental

activists in and around Dali, combined with other types of ethnographic data (e.g., visual images from temples visited).

## **Alexis Dods**

### Multiracial Children's Perceptions of Their Parents' Marriages

Prior research on interracial marriages that has drawn from U.S. Census Data has examined the rates of interracial marriage over the years. Moreover, previous research on multiracial children has focused on the formation of multiracial identity. Little to no prior research has examined interracial marriages using the children as the units of analysis. This study thus aims to fill the gap in research on multiracial children and interracial marriages by analyzing multiracial children's perceptions of the power dynamics of their parents' interracial marriages in light of the key variables "socioeconomic status" and "nativity status." I hypothesized that interracial marriages, particularly between immigrant women and white men, would be more traditional in nature given the racial hierarchy evident in the United States, which positions white men at the top. In this study, 85 multiracial people ages 18 and older completed an online survey administered using a student email database belonging to a private liberal arts college in Southern California as well as a personal Facebook account. 26 monoracial (people whose parents are of the same race) completed the survey as well. Their responses will be compared to those of the multiracial respondents. Additionally, two multiracial college students ages 18 and older agreed to be interviewed after completing the survey. The preliminary findings suggest that 65.77 percent of mothers had at least obtained Associate degrees or higher or had some form of trade/technical/vocational training compared to 63.60 percent of fathers. In terms of nativity status, a higher percentage of mothers were reported as being immigrants (25.23 percent) than fathers (21.62 percent). Lastly, even though 71.82 percent of respondents reported that they came from two-income households, a significantly higher percentage of respondents

reported that their fathers worked while their mothers were stay-at-home moms (18.18 percent) compared to the 4.55 percent of respondents that reported the opposite. Overall, the current findings do not support my hypothesis and instead suggest that contemporary interracial marriages are more egalitarian in nature. Previous literature on interracial marriages has indicated that such marriages are more traditional in nature, especially in marriages that combine Western and Asian cultures. Therefore, my findings represent a shift the nature of interracial marriages.

## **Kiara Downs**

### **Fanny's on the Big Screen: The Adaptation of Fanny Price for Modern Audiences**

This project looks at Jane Austen's novel, *Mansfield Park*, and its adaptation into film. It seeks to understand the novel's main character Fanny Price and the way she is presented in the novel. More specifically, there is focus on the way the narrator constructs the interiority of Fanny, and the effects it has on the readers. This draws from the work of scholars such as Nancy Armstrong, Joyce Jenkins, and Alasdair MacIntyre to discuss the way Fanny's interiority exposes characteristics that make her less appealing to Audiences. This discourse of interiority and character is carried into the analysis of two film adaptations (1999 & 2007) of *Mansfield Park*. Due to the loss of the narrator in both adaptations, I seek to answer how the film attempts to compensate that loss. What film elements do they employ, and are they successful creating the same depth of interiority and characterization of Fanny?

## **Sofia Duenas**

### **Beyond Back-to-School Night: Parent Engagement in Elementary Schools**

Research studying students of color and of low socioeconomic status consistently reports lower levels of achievement and educational attainment in this country. Researchers have since produced a wealth of work identifying the various barriers that low income and/or students of color face that their white, wealthier peers do not. One significant reported difference between these groups involves the level and types of parent engagement within schools. Prior research has identified the positive relationship between parent engagement and student achievement. While prior research explores the ways in which parents, teachers and administrators understand parent engagement differently, as well as examine how different types of engagement are correlated with different academic outcomes. Despite this knowledge, previous research has not explored the role of office staff and other support staff in understanding how and why parents are engaged in their children's education. In addition, there are few case studies which holistically examine schools in their community context. My research is focused on the ways in which school staff (teachers, administrators, and office staff) work together to successfully engage parents in a Title 1 elementary school. This research also examines what practices are most successful in engaging parents. The data collected for this case study thus far includes forty surveys completed by parents between February 1, 2017 and March 1, 2017. This research is rooted in Dr. Joyce L. Epstein's framework of overlapping spheres of influence and uses this framework to examine how different stakeholders unite to educate children. Preliminary findings suggest that while research often overlooks the role of office and support staff in cultivating and maintaining relationships with parents, these individuals are an important part of the school community and often have the most regular contact with parents. In addition, differences between the cultural capital of school staff (and across different school staff members) and parents are crucial to understanding parent engagement. This presentation discusses the implications for future research and the practices of school staff (teachers, administrators, and office staff).

## **Sofia Duenas**

### **The Road to Reclassification: Educational Goal Setting & English Language Learners**

This research aimed to examine the impact frequent goal setting activities have on Long Term English Language Learners (LTELs). Research conducted by Schippers, M., Scheepers, A. and Peterson, J. (2015) found that through conducting an intervention in which students were asked to write down their goals, mitigated the achievement gap among gender and ethnic groups, and by its second year had closed said gaps by approximately 90%. This process is important for all students, but one of the populations most in need of goal setting interventions are English Language Learners (ELLs). According Kim and García (2014), ELLs who have been identified five or more years before high school, often fail to understand why they are still characterized as ELLs and did not feel language development supports could help them. While they had high aspirations, these were not aligned with their achievement patterns. LTELs are students who have been in California schools for 6 years or more and have not met the state mandated English proficiency requirements (Olsen, 2010). This project explored the impact of conducting regular goal setting activities with 25 LTELs in their sophomore year of high school, using two tools over a five-month period: a weekly grade check form and the Road to Reclassification process (Soto & Owens, 2009). This research suggests that as students become more comfortable discussing their progress, they are more likely to set individual goals independently. In addition, their goals become more targeted and specific. This study revealed that as students set goals, they became more self-aware and are better equipped to identify behaviors which contribute to their success. Lastly, students were increasingly more likely to use resources which would help them monitor their progress, including mobile phone applications and their teachers. This presentation

discusses future implications for students and how institutions go about encouraging them to take ownership over their education.

## **Marika Fahndrich and Carina Santiago**

### Body Composition

According to the Center for Disease Control and Prevention, over 64% of Americans are classified as overweight or obese. Accurately measuring body composition is critical because of the known association of excess body fat with a number of chronic diseases. Body Mass Index (BMI) is often used by public health agencies as a primary method for assessing overall health for the general population. However, when differentiating between an individual's fat mass and fat-free mass, calculating BMI does not provide this type of meaningful information for health assessment. There are quick and relatively easy methods available for evaluating body fat deposition (%BF) which can be used to provide a more accurate determination of overweight and obesity rates. This study compared three body composition assessment techniques: Bioelectrical Impedance (BIA) using Tanita SC-240 body analyzer, BIA using Tania BC-418 lower body/upper body segment analyzer, and Air Displacement Plethysmography (ADP) using Cosmed BodPod. A second question investigated in this study relates to lifestyle factors linked to higher levels of body adiposity. There is conclusive evidence that lack of physical activity correlates with higher %BF but it remains unclear if daily sleeping and eating patterns directly contribute to weight gain. Twenty college-aged female subjects participated in the three body composition measurements and responded to four questions related to the average number of hours of sleep they received each night and how regularly they eat breakfast each week. Statistical analyses did not yield significant differences ( $p > 0.05$ ) between the variables. There were trends that both methods of BIA resulted in lower %BF compared to the ADP; those who slept 7-9 hours/night had slightly lower %BF than those who slept 6 hours

or less; similarly, those who ate breakfast 5-7 mornings/week had lower %BF than those who ate breakfast 4 or fewer days/week. Speculating on the trends found in this study, perhaps a larger sample size of 100 or more subjects would result in levels of significance, especially in the comparisons of body composition assessment techniques.

## **Victoria Rickon and Cinzia Fissore**

Faculty Mentor: Cinzia Fissore

### Temperature Sensitivity of Soil Carbon

There is large interest in understanding the role of soil carbon (C) under warmer conditions. Specifically, we need to better understand how much carbon could be lost to the atmosphere from soils if the climate warms. Since carbon cycling processes in soils are enzyme-mediated, production of CO<sub>2</sub> in soil is temperature sensitive. This aspect of soil respiration was investigated by exposing soils to varying temperatures. In order to test this, 20 grams of 3 different soil types were put into separate jars. Each set of the 3 soils was incubated at 5°C and 30°C for 23 days. Every week samples' CO<sub>2</sub> concentration was measured; the samples were also weighed and watered to maintain constant moisture. Initial C content in each soil was also measured. Our incubation results indicate that greater soil C loss occurs in soils incubated at higher temperature. Also, at both incubation temperatures, orchard soil had greater soil C loss than the other two soil types. Specifically, orchard soils lost 6% of their original C when incubated at 30°C and 0.6% of their original C when incubated at 5°C. While potting soils, which originally had 56% C, had greater instantaneous CO<sub>2</sub> respiration, overall, they lost less than 1% C. Many of the results can be attributed to the activity of the microbes in the soil, which tend to be more active in warm moist environments rather than dry, cooler ones. From the data gathered thus far, it appears that rising global temperatures may account for an increase in soil respiration and

consequently CO2 emission, which may contribute to the greenhouse effect. This becomes especially concerning with the rate global climate is increasing, which can result in even more CO2 emissions entering the atmosphere from the soil.

## **Krista Fonseca**

### **Feminism and Masculinity: Creation of Identity for Men Growing Up in Pakistan**

Mainstream discourse on feminism tends to frame feminism in a way that would be negative towards men, when in reality, it empowers both men and women. Masculinity takes different forms in the East and the West but obtains the same tendencies of honor, strength, power, and hierarchy. Commentaries on masculinity are commonly glorified in Eastern and Western societies. This creates a situation in which the identities of young men are formed through masculinity, where masculinity is practiced through aggression, control, and restraints on emotions or activities seen as feminine by society. Feminism provides a choice in which practicing tradition views would be an informed choice rather than a forced practice. In what ways can Islamic Feminism be practiced so that it can help expand the ability of young Pakistani men to form identity? In this project, I will research the way in which modern Islamic Feminism reshapes Pakistani young male masculinity in a positive light. Using the ethnographic research article *Youthful Muslim Masculinities: Gender and Generational Relations* by Peter E. Hopkins to understand the varying forms of masculinity taught to young men. I will also use *The Reinvention of Feminism in Pakistan* by Afiya Shehrbano Zia to combine a feminist perspective to reveal new inventions of masculinity.

## Lauren Galantai

### Exploring the Relationships between Mobile Application Technology, Competition, Fitness Motivation, and Enjoyment

Fewer than half of American adults meet the recommended guidelines for aerobic physical activity (CDC, 2016), which may contribute to the high rate of obesity in the US (NIH, 2012). This trend may be due to a lack of motivation, and/or lack of social support, to exercise. Mobile fitness applications, like Fitbit and Strava, have been introduced to help increase physical activity through the use of technology (Bauer & Kriglstein, 2015). The current study explores how fitness technology and friendly competition may interact with self-efficacy, motivation, effort, and enjoyment in fitness. Forty healthy adults (30 F, age 18-61,  $M=22.6$ ,  $SD=7.4$ ) were assigned to 1 of 2 experimental groups, Fitbit ( $n=12$ ) or Strava ( $n=13$ ), or to the social context-free pedometer control group ( $n=15$ ). The Fitbit group tracked their steps, while the Strava group timed their run through a specified 0.2-mile course (the pedometer participants either tracked steps or ran the course without social context). Each experimental group competed in counterbalanced 1 week of app-based competition and 1 week of non-competition tracking. The social settings of competition differed in each experimental group; Fitbit participants competed against friends, while Strava participants competed against strangers. During the non-competition and competition phases, each of the groups showed significant positive correlations between competitiveness, enjoyment, effort, self-efficacy, and motivational styles ( $p < 0.05$ ). Interestingly, the Fitbit group had a significant relationship between enjoyment and intrinsic motivation during the non-competition phase,  $r(12)=0.630$ ,  $p < 0.05$ , but lost it during competition, where a significant relationship was found between enjoyment and extrinsic motivation,  $r(12)=0.578$ ,  $p < 0.05$ . Similarly, during the competition phase, the relationship between extrinsic motivation and competitiveness also became significant for the Fitbit group,  $r(12)=0.631$ . For the Strava group, during competition there

was a significant negative relationship between effort and intrinsic motivation,  $r(13)=-0.580$ ,  $p < 0.05$ . It appears that the type of tech-based social context that an individual engages in has an influence on motivational styles and enjoyment in fitness activities. Competing against friends appeared to increase extrinsic motivation and enjoyment, while competing against strangers resulted in a negative relationship between effort and intrinsic motivation. Having a more nuanced understanding of the complex relationships between motivational style, mobile fitness applications, and social context may not only have implications for altering personal fitness behaviors, but also may impact adherence to fitness-based treatment regimens.

## **Charlene Gantan**

Wave Exposure and Algin Concentrations Directly Correlating with the Growth and Recovery of Brown Algae, *Macrocystis Pyrifera* in the Onset of Increased UV Exposure on Intertidal Shores of Southern California Beaches

Algae continues to play an extensive role as primary producers of the oceanic ecosystem, especially in cold, marine, shallow waters. As such, particular conditions allow certain brown algae (kelp) to flourish and the *Macrocystis pyrifera* (*M.pyrifera*) is the ideal genus of kelp due to its astounding ability to grow up to two feet a day especially in the intertidal shores of Cabrillo Beach in San Pedro, California and other intertidal shores of Orange County, California. It was predicted that the kelp in the high wave exposure areas would have longer average length due to the nutrient availability due to greater exposure to the waves but lower density of individual *M.pyrifera*. In this study, the UV ray exposure, salinity readings, lengths (centimeters) of every *M.pyrifera* in the low wave exposure (lwe) areas and high wave exposure (hwe) areas of the shores were factored into a 3 way ANOVA analysis for any significant differences between the three factors and postHoc HSD tests to specify which of the three factors are significantly different. Additionally,

concentrated algin, a polysaccharide needed to stabilize cell walls of brown algae such as *M.pyrifera*, was cultured and exposed to varied amounts of nitrogen, phosphorous, ammonia, and calcium to determine nutrient ratios that either hinder to stimulate the density of *M.pyrifera*. Results for algin concentrations are still pending and will be published as soon as possible. The average height of a *M.pyrifera* stipe in the hwe was 214 centimeters and an average of 119 centimeters in the lwe area. Overall, a direct correlation of high wave exposure and salinity suggested that longer frond lengths of *M.pyrifera* grew in higher salinity of HWE areas therefore proving the hypothesis correct ( $p=0.002$ ) But there was little difference ( $p=0.7$ ) between the overall stipe size of *M.pyrifera* between the high wave exposure and low wave exposure for both shores. While wave exposure was confirmed as a factor for kelp growth, it is possible that the UV ray exposure varying within a season is responsible for the little difference between the densities of *M.pyrifera*. Further studies should examine kelp growth in intertidal shores of minimal UV ray exposure year round and kelp communities that are denser or have fully recovered.

## **Breana Gomez**

### **Blurring Lines & Crossing Boundaries: Grant Allen's The Woman Who Did**

Within Victorian literature, gender and sensuality play a key role in who the characters are and how they are perceived by others. Following the innocent, obedient, pure “angel in the house” persona, 19th century British women began to step away from traditional roles in an effort to separate from old ideals and gain more independence. In doing this, the “new woman” became an area of interest both socially and within literature, prompting the birth of a new literary genre known as “new woman” fiction which often questioned the roles expected of women being that the heroine often strives to deviate from societal norms. In looking at this trend, my study looks closely at England during the 1890's,

most commonly known as the fin de siècle. In researching this area, I am focusing on Grant Allen's *The Woman Who Did* (1895), examining what influenced the creation of this novel and how it is an important reflection of the time. In addition, I am also focusing on the social perceptions of the "new woman" and the "new woman" herself. By examining the culture and ideas regarding the New Woman, marriage, and gender roles, my research argues that while the new woman was a symbol of freedom and equality, she was often trapped within a man-made social construct.

## **Giselle Gonzalez**

### **Trends in the Hospitality Industry**

The demand of employment within the hospitality industry gives us an incomplete picture as to what competencies are required from recent college graduates to consider them proficient enough to immerse into a highly skilled work environment. Young individuals from the ages of 18 to 25, are interested in going into this industry, but are not hired enough. According to the Bureau of Labor Statistics, we see a gap among hospitality workers in which recent college graduates don't form a substantial percent of the overall work force. So, we begin to wonder: what is going on here? Is the lack of hiring due to a preparation gap based on their college experience or has the layout for requirements changed over time? Perhaps, we have entered a phase in the job atmosphere like that in which we felt a high school degree was not enough. Based on my analysis, upper management in hotels consider a college education vital, but not enough compared to other skills you may have been able to acquire elsewhere. Outside skills- such as hospitality training courses, among others, will be able to boost your overall probability of landing an interview and subsequently a position in this industry. Through my investigation, I intend to form a platform for recent college graduates to rely on in order for them to feel less discouraged and instead, more prepared. There has been little to no research done that suggests that upon

the completion of a college career, individuals need to add work experience to curriculum in order to become a valuable asset within this labor sector. Upon analyzing some of the literature presented on the subject of hospitality, this project will also involve the use of questionnaires, surveys, and interviews in order to expand my results. I have interviewed five individuals who hold high management positions in hotels and twelve college graduates as it is necessary for me to gain insight on hotel upper management positions in order to gain and support my research. By examining what hotel management finds most important in regard to preparation, I intend to highlight these competencies in order for endeavoring employees to find these suggestions useful and be able to apply them to their professional etiquette.

## **Katia Gonzalez**

### Does Neighborhood Matter? Neighborhood Effects on Adolescent Education

Neighborhood effects measure the direct or indirect effect of the neighborhood context on individual behaviors, such as economic self-sufficiency, violence, education, etc. We know that there is social inequality between neighborhoods depending on the city in which they are located. The neighborhood establishes what kind of home one can afford, the education children will receive, what kind of jobs are available, etc. Previous research has been done to analyze how neighborhood has an effect on education. Results show that neighborhoods with low socioeconomic positions and racial segregation have a negative impact on educational achievement. Del Bello (2015) disagrees and states that neighborhood effects have no correlation with academic achievement. Instead, he argues that peer relationships have an influence on education. This study tests Del Bello's argument by investigating the effects of the neighborhood where one lives has on the education of adolescents. I focus on how the community influences their school performance, learning motivation, and future plans. The data for this study was collected at two

different high schools in Southern California. Fifty-eight students from grades 10th, 11th, and 12th and two teachers served as subjects to determine if their neighborhood had an effect on student achievement levels and future success. I created a survey of 24 multiple-choice and 1 short answer question asking them personal questions about their life at home, school and their neighborhood in order to compare and contrast answers from both schools. I then conducted interviews with one student from each school with hope that their answers would be more in depth and could analyze the information to measure neighborhood or peer effects on education. I also used city and education census data to compare the two. These cities have major differences due to the gap of income and size, which influences the schools where adolescents are attending. In order to protect the identity of the studies, I gave the two cities a made-up name, Hillview and Ranchtown. Results show that students from Ranchtown have better opportunities to continue higher education because their socioeconomic status supports their motivation in schooling. On the other hand, Hillview students believe that if they lived in another area, they would be at an advantage. As of now, it looks like the effects on education come from the neighborhood rather than peers. Neighborhood has such a powerful impact on the lives of these adolescents.

## **Sean Hamilton**

[The Features Sharia Law and is it a Threat to American Law?](#)

The constitution and amendments establish the law of the land in America. But what happens when religious law conflicts with American law. After September 11, 2001, state legislators and some Muslims have debated whether Muslim religious law, known as Sharia, should be accommodated by state courts. Opponents fear that Sharia law compromises American law and values. Alabama and Oklahoma, for example, are two states that recently introduced bills to ban state courts from accommodating sharia-based requests. Legal experts like Jeremy

Grunert and Asifa Quraishi-Landes argue that the fear of Sharia law overcoming American law is not at the heart of the debate. Rather, Islamophobia, or anti-Muslim sentiment, is what drives the debate. My research poster will investigate the features of Sharia and where they conflict with Alabama's and Oklahoma's state law, and also consider whether it is possible to legally accommodate a diversity of religious legal practices among U.S. citizens and what might be the limits of this accommodation.

## **Jessica Hansen**

### **Pelvic adaptations and the implications on female ACL injury**

Terrestrial locomotion comes in different forms and is possible through various adaptations. The evolution of the pelvic girdle has made it possible for animals to become more efficient at maneuvering through dry land. In this paper, we focused on quadrupedal and bipedal forms of terrestrial locomotion. Athletes take full advantage of the strength and flexibility of the lower body provided by bipedalism. However, male and female athletes suffer different rates of injuries associated with locomotion in the same sports. Since women started participating in sports, doctors and researchers have noticed a greater amount of ACL knee injuries in female athletes compared to male athletes. Our study examines the evolutionary pelvic adaptations between animals that utilize different forms of locomotion, including the horse, the chimpanzee and the human, and how the human female pelvis may put female athletes at greater risk for ACL injury. We conducted a meta-analysis to obtain our results, limiting information to peer reviewed scientific articles and parameters with specifically searched phrases. These key phrases included gender differences in 1) lower body mechanics, 2) cutting maneuvers, and 3) running, as well as 4) biomechanics of running, 5) pelvic differences between males and females 6) horse locomotion, and 7) chimpanzee locomotion. We collected images of a pelvis from a horse, chimpanzee,

and a human, male and female, and compared differences in size, bony landmarks, muscle attachment and activation, and forces placed on the hind/lower limbs during activity. Our results show how the horse and chimpanzee pelvis permits a bent-hip bent-knee gait distributing forces more evenly along the limbs, and varying amounts of muscle attachments. These pelvis' do have greater attachment to the spine decreasing range of motion and have flat ilia that are not able to support the upper body. The human pelvis can support the weight of the upper body while still having multiple ranges of motion with the hip joint and full extension during stride. The human female pelvis is wider with a larger sub pubic angle and oval inlet, and smaller more medial acetabula, compared to the male pelvis. We conclude that the structure of the female pelvis can be linked to decreased hip strength and unbalanced thigh musculature increasing knee valgus, although other factors may be involved. During sports, the female pelvis does play a role in lower body mechanics possibly putting female athletes at greater risk of ACL injury.

## **Kayla Heiss**

### **Language Acquisition in a State of Poverty**

Children today are entering school systems with little to no expressive language due to specific language impairment, a neurodevelopment disorder characterized as a child having a primary deficit in producing speech and using language at the usual rate despite apparent typical development otherwise. Horwitz et al. (2003) estimated that up to 18% of children aged 18-38 months had specific language impairment. These children are at risk for later poor academic and social development, and it is not uncommon for them to develop behavioral and emotional problems that require extensive special health services. It is important to identify the factors that contribute to specific language impairment when other genetic predispositions and physical disabilities are not obviously present. Poverty serves as a consistent contributor to children who fail to combine

words in speech or learn to use speech at all by 38 months. Poverty is so pernicious to expressive language and vocabulary acquisition because it is associated with a number of negative environmental factors such as low maternal education, increased family size and minority backgrounds. With identifying the risk factors for later language impairment in children, parents and practitioners can implement early intervention when appropriate. Further research should seek to understand how the specific types of rural and urban poverty experienced by children differentially contributes to expressive language development and how individual risk can be assessed and later treated through therapy.

## **Alexander Hernandez**

### **Implications of Motor Development and Play Behaviors in Children with Autism Spectrum Disorder**

The aim of this literature review is to assess previous research done on autism spectrum disorder in children and the implications it has on motor skill development and play behaviors. Research suggests that children with autism spectrum disorder have prominent deficiencies in motor skill acquisition and preference for repetitive and restricted interests. Do the motor deficiencies observed in children with autism spectrum result in minimal engagement in play and affect their peer relationships? Research indicates that children with autism spectrum disorder lack proficiency in the motor domain, resulting in withdrawal from activities that are primarily motor based. Rather children with autism spectrum disorder prefer activities that are repetitive and ensure their success. Research in the realm of autism spectrum disorder and motor development is important for earlier diagnosis, as motor deficiencies linked to autism spectrum disorder can be observed as early as 6 months of age.

## **Priscilla Hernandez**

## Confinement in *Les Yeux Sans Visage/Eyes Without a Face* (1960)

The 1960 film, *Les Yeux Sans Visage* directed by Georges Franju, uses elements of the macabre to tell a story of disfigurement, detention and destruction. After her face is distorted in an accident, Christiane, a young woman, must cope with a shrouded existence and the atrocities committed by her father. The film proves to be beyond its time period with both captivating cinematography and technological innovations such as its gruesome special effects, creating a compelling, surreal picture. In my presentation, I will analyze Georges Franju's cinematic depiction of confinement and how it creates a fascinating atmosphere of horror. First, I will present the ways in which the *mise-en-scène*, all the visual elements on screen at any one time, and the iconography, the symbols and their meaning in the film, can serve to imprison a character and their identity. Then, I will examine the many perspectives of confinement, including that of the characters and even the viewer. Constrained physically and mentally, each of the characters must find a new purpose and escape from their own respective prisons. Not only setting herself free, the main character, Christiane is able to release others from the binds that detain them. Analyzing how the idea of being confined is nuanced, based on not just physical but also psychological predicaments, I will explore who is actually trapped. The audience's experience is parallel to the characters, both hoping to escape yet attracted to the visceral and chilling story. Lastly, I will connect the figures of confinement to the intention of a horror film and collective fears they hope to represent.

## **Miranda Hidalgo**

### Family Court in Modern Iran

Family court handles matters regarding family law, this includes divorce, marital disputes, child custody, adoption, etc. Family courts in modern Iran are often criticized for limiting women to the extent in which they

are granted divorce. Whereas, a man could divorce his wife given that he pays compensation. Women can only sue their husbands for divorce if there is solid evidence of the man being insane or deceptive at the start of the marriage, or if he is sterile. In terms of child custody, the child is able to gain custody in his or her best interest, but guardianship still remains with father or paternal grandfather. Family courts in modern Iran base their laws on patriarchal structures and often lead to unfair or unequal rulings for women. Henceforth, my topic will be exploring women's fight for equality in the family court system, and how women's experiences within the family court structure differentiate from that of a man.

## **Maxwell Hoversten**

### **The Development of Chilean Democracy Post-Pinochet**

This project evaluates how Chile's 1980 Constitution and the Pinochet dictatorship in which it was redacted influenced the subsequent development of Chilean democracy, a process that continues on to this day. More specifically, Chilean democracy has manifested within a political framework that, being conceived by an authoritarian regime, has not granted sufficient spaces and opportunities for actual democratic participation. This became apparent after interviews with professors, nonprofit actors, and public sector leaders from a variety of positions on the political spectrum. Analyzing historical records, current events, and the insight provided by the aforementioned interviews makes it clear that inadequate provisions of democratic mechanisms in Chilean society have produced a climate of faithlessness in traditional political institutions, leading to the public protests and activity "outside the system" that have come to dominate national headlines. As such, this project emphasizes the importance of substantive avenues of public participation in the health of a democratic society.

## **Christina Ibarra**

## A Case Study of the Metro Gold Line Eastside Extension

In the past twenty years, light rail development has expanded rapidly across the United States as a result of federal policies. Previous research on light rail development has focused on positive environmental effects and weak economic returns while tending to ignore the social effects on communities impacted by construction such as displacement and economic redevelopment. This case study analyzes the community effects of the Los Angeles County Metropolitan Transportation Authority's (MTA) Gold Line Eastside Extension on the communities of Boyle Heights and unincorporated East Los Angeles. Were promises made by Metro and local governments kept and noticed by community members? How did light rail development impact community members and what are the implications for future extensions? This case study uses qualitative data gathered from interviews with both community insiders (residents and business owners) and outsiders (MTA personnel), field notes, and public documents as well as quantitative data from the U.S. Census and transit statistics gathered from 2000 to 2016. While the Eastside Extension of the Gold Line is a relatively new project (opened in 2009), noticeable urban renewal and economic revitalization efforts have taken place in tracts along the Gold Line's corridor. There is room for improvement to encourage more community participation and equitable economic development for minority business owners and residents in the plan area. There is also room for Metro and other public agencies to keep promises from pre-development phase. The study suggests light rail to be one aspect of the larger neoliberal development in the city, which further grows class divisions and change the images of neighborhoods to fulfill capitalist visions at the expense of actual community members.

## **Cassandra Irwin**

Which NFL Player Will Tear Their ACL?

The anterior cruciate ligament experiences the most degradation among male athletes in the National Football League when compared to other professional male sports. Found within the distal femur, the ACL absorbs the most restraining force in moving the knee and can easily be obstructed from a quick change in motion causing unwanted twisting of the ligament resulting in a tear. This experiment will determine the overall likelihood of an NFL player tearing their ACL based on data gathered on those who have already experienced injury. In accordance with Dr. Mai's study examining performance-based outcomes after ACL reconstruction, NFL players surmounted the greatest hardships and revealed a legitimate pattern in ACL tears. This pattern arose from a multitude of variables that were involved in the injury that will be statistically tested for significance in the experiment and then will be comprised into a biological model that relates only the most important variables. Using tests such as chi-square and ANOVA on the extrapolated data reveal the difference between expected and observed variables relating to injury by assessing any correlations between them. This study will focus on the NFL players that have experienced a major anterior cruciate ligament injury under a wide array of conditions examining how exactly the injury happened in order to determine why it happened. With this information, the prevalence of the injury occurring in NFL players at a specific age or on a certain type of turf opposed to their BMI and history of injury can be constructed into an equation that overall determines the likelihood of ACL injury defined as a type of risk factor. Using the data gathered for each player, this model equation can be applied to the existing knowledge of each player to predict the chance of the injury to occur. The research for assessing the potential health risk of an ACL tear in professional male athletes is still in progress.

## **Alyse James**

Theater as a Catalyst for Social Change

Theater is often looked at as an activity reserved for white, middle- and upper-class individuals. However, this perception does not consider the ties between theater and activism. There is an immense amount of research that shows there are strong connections between theater and marginalized groups. The wildly popular musical Hamilton uses theater as a platform to comment on our own political climate, as well as offer representation for marginalized groups. The connections between theater and activism are important, because theater reflects human stories and desires, in a unifying way. When you tie that in with activism, you can then unify people into action, and in a time where people's rights are being taken away by the minute, it is important to find ways to unify people to act up against those oppressing forces. With this in mind, what kind of theater experiences successfully move audiences towards social change (social progress towards a more equitable society)? How do we make theater an accessible experience, that anyone regardless of social capital can experience? The results of my research will give insight on the ways in which audience members are impacted by theater and will address which kinds of theater have stronger impacts on audience members, and the different variables that affect audience reaction. My research will also give insight from the creating point of view and will address the ways theater makers go about making theater more accessible and the various elements they look at when making theater with the intention for social change. The results of my findings show that, the performances that made audiences witnesses to the events happening in the show (the format of Experimental theater shows), rather than passive spectators (the format found in traditional theater) were more successful in encouraging audience members to take action against oppression in their own communities. From my results I've found that one of the main factors that come into play when making theater accessible, is transportation and figuring out ways to provide transportation to people who don't live near a theater. Another important aspect was community outreach; going out into the community and asking people what kinds of

stories they would want to see at the theater. Many of the theater artists I interviewed, stated that community partnerships, were one of the biggest assets when making theater more accessible.

## **Imran Javaid**

### **Evaluation of the Effects of Essiac on *Caenorhabditis elegans* and In Vitro Models of Multiple Myeloma**

Essiac is an herbal compound that is widely used as complementary medicine by cancer patients. Studies have shown that Essiac promotes apoptosis in ovarian and prostate cancer cell lines yet increases cell proliferation in breast cancer cell lines. Essiac has also been shown to have cytotoxic, anti-proliferative, antioxidant, anti-inflammatory, and immunomodulatory properties in another study done. Although the Task Force on Alternative Therapies of the Canadian Breast Cancer Research Initiative has recommended further study into the efficacy of Essiac as an alternative cancer treatment, little research has actually been done on Essiac. The purpose of this novel study is to investigate the effects of Essiac on wild-type N2 *Caenorhabditis elegans* (*C. elegans*) and RPMI-8226 Multiple Myeloma cell lines. In this study, we first performed a dose-response assay on adult *C. elegans* grown on Essiac + *E. Coli* OP50 bacteria seeded agar plates at four concentrations of Essiac: 100% Essiac + *E. Coli* OP50, 50% Essiac + *E. Coli* OP50, 25% Essiac + *E. Coli* OP50, and 0% Essiac + *E. Coli* OP50, which served as a control (n=100 worms per concentration). Preliminary results show that *C. elegans* grown on 100% Essiac + *E. Coli* OP50 seeded plates had the highest percentage lifespan on days 7 and 14 of their lifecycle and the highest average lifespan overall, compared to *C. elegans* grown on the 50% Essiac + *E. Coli* OP50, 25% Essiac + *E. Coli* OP50, and 0% Essiac + *E. Coli* OP50 seeded plates. Preliminary results show a trend in improved longevity and health of *C. elegans* exposed to Essiac. Using the results from the dose-response assay of Essiac on *C. elegans*, we then studied the dose-dependent cytotoxic and

anti-proliferative activity of Essiac on RPMI-8226 Multiple Myeloma cell lines. This study is ongoing and preliminary results will be discussed. The findings from this research can be used for further investigation of Essiac as a potential anticancer medicine.

## **Amanda Keller**

### **A Misunderstood Condition: A Qualitative Study of Type One Diabetes Related Stigma and Self-Esteem**

The effects of health-related stigma have been the subject of a substantial amount of research on conditions like HIV/AIDs, COPD, and type two diabetes. It has been found that those who experience health-related stigma often suffer consequences such as a hesitance to disclose information about their condition and an avoidance of social interaction for fear of being judged or rejected by others. However, there has been a lack of research surrounding the effects of stigma on people with type one diabetes. The aim of this study is to analyze the impacts of type one diabetes-related stigma on the self-esteem and identity of adults with type one, and to also examine how these experiences influence the way one feels about their condition. For the purpose of this study, ten semi-structured interviews were conducted over the phone with participants over the age of eighteen and who had been diagnosed with type one for at least one year. The findings suggest that most participants have not experienced type one diabetes-related stigma but have instead experienced stigma associated with type two diabetes which participants identified as being due to misinformed judgments and the assumption that their condition is self-inflicted. The findings also reveal that type-one diabetes has had largely positive impacts on self-esteem and identity due to camp experiences and positive interactions with friends, family, and health professionals. These findings not only uncover a social tendency to stigmatize illnesses that are perceived as self-inflicted and sympathize with diseases that are caused by uncontrollable factors but also identifies

how the causes of illnesses impact the social construction of disease stigma. The findings also reveal that camp experiences have a strong impact on the self-esteem and identity of those with chronic illnesses and how these programs can be utilized as a form of disease prevention.

## **Jimin Kim**

### **Specific Communication between Termite Species for Survival**

Different species of termites use vibrations and chemical signals (pheromones) to communicate in a specific and calculated manner. These eusocial organisms use these forms of communication in a variety of settings, which include but are not limited to facing competitors and predators, collecting food and defending the nest. In order to have a well-rounded approach to potentially eliminating these insects in situations where they are pests, it is essential that we understand how they communicate. Therefore, the goal of this study was to evaluate how we can use the forms of communication found in termites, in order to remove them from residential settings. Specifically, a literature review and meta-analysis was conducted, to better understand how different species of termites use vibrations and pheromones to communicate. Pubmed was searched with the “Free full text” filter for studies on termite communication published up to November 2015. The keywords used were pheromones, signals, and communication which were buttressed by the focus of study, “termites”. Out of the 68 search results found, 14 articles focused on the idea of vibrations and chemical release by termites while the other 53 articles focused on aspects other than communication. Of the 14 articles, 9 focus on vibrations only, 4 focus on chemicals only, and 1 focuses on both vibrations and chemicals. The results show that specific vibrations led to specific behaviors in defense, identification, and communication. For example, termite soldiers drum their heads repeatedly against the substrate to create vibrational alarm signals when faced with external threats. Upon intake of signals, workers retreat while

more soldiers are recruited to the source signal. Additionally, termites use pheromones to avoid conflict; they follow conspecific pheromones and avoid heterospecific pheromones. Thus, in species where individuals followed conspecific pheromones, there were lower mortality rates than in species that followed heterospecific pheromones. These fixed responses in the entirety of the termite colonies suggest that accurate and unique communication starts with the basic vibration and chemical release. By mimicking termite vibrations and chemicals, we can induce termite relocation away from residential settings.

## **Ruth Leon**

### Analyzing Transfer Factors and Mushroom Supplements as Antibiotic Alternatives

Transfer factors (TFs) are protein molecules scientifically shown to have the ability to transfer antigen specific cell-mediated immunity from immune donors to non-immune recipients. They have been shown to activate mechanisms of the cell-mediated immune system, which is affiliated with the T cell branch of the adaptive immune system, while simultaneously demonstrating no significant effects on the B-cell mediated immune function, or humoral immunity. Due to their demonstrated abilities to transfer cell-mediated immunity, TFs have become a target for immunotherapy treatments of immunodeficiency disorders associated with persistent pathogenic infections as well as for cancer treatments. Additionally, as widespread use of antibiotics has

resulted in increased antibiotic resistance, TFs may be a potential alternative to treating infection. The purpose of this analysis is to compare effectiveness of TFs for treating disease to a secondary immune stimulating homeopathic supplement, shiitake mushrooms through evaluation of current literature in a meta-analysis along with a cell viability test using the Jurkat T cell line. The use of functional mushrooms has been shown to modulate the immune system as well as inhibit tumors, inflammation, and microbial action therefore, it is another alternative to synthetic drug use for treatment of disease.

## **Ashley Lindke**

### **Differences Between Female and Male NCAA Athletes Concussions and the Head-Neck Segments Involvement**

Studies have recently shown that there are major differences in concussions sustained in both female and male NCAA athletes. It has been proven that women tend to have withstood more concussions playing NCAA sports than men. With further research done, it has been suggested that these differences in amount of concussions accumulated between female and male athletes is due to the differences in the head-neck segment of the body. The objective of this research is to determine whether or not the head-neck segment of the body is in fact different in female and male athletes, causing women to be more prone to sustaining a concussion. We searched for papers that had data showing that female athletes were more prone to concussion as well as papers showing that parts of the head-neck segment had any differentiating factor between the two genders. Five studies showed that women were getting more concussions than males based off of collected data from athletic training concussion reports, while three studies have shown that women have higher peak angular acceleration and displacement of the neck, while also having less isometric strength, neck girth, and head mass. These differences may be the main cause for the amount of female concussions

had in comparison to the amount male athletes withstand playing collegiate sports, also taking into account that concussions are self-reported injuries (it is more likely for a male athlete not to report a concussion after trauma) and that in certain sports played by both females and males the protective equipment is much different causing for potentially more dangerous incidents to happen during play. Through understanding what contributes to the higher amount of concussions endured by female athletes, we will be able to provide better protective equipment, rules, and standards for the sports played at the NCAA level.

## **Christina Locke**

### **Mysticism in Abrahamic Religions**

The goal of mysticism is to obtain a personal and unique relationship with one's god. Mysticism exists in a number of religions and in most cases has to do with some form of sacrifice or inhibition of pleasures, typically in the form of asceticism or isolation, as a mechanism for achieving unity with the divine. Each of the three Abrahamic religions, Judaism, Christianity, and Islam, have their own mystical practices and sects, such as those associated with Kabbalah in Judaism, monasticism in Christianity, and Sufism in Islam. This paper addresses the history and practices of select mystical traditions in these religions, with attention to practitioners (e.g., Julian of Norwich, Rabbi Karo, and Nahid Angha) of each faith and differences and similarities between them. While certain differences in understandings of self and god permeate these forms and practitioners of mysticism, perhaps the most significant similarity between them is that they are consistently linked with scholarly endeavors, which help to rationalize and systematize certain understanding of religious experience and journey.

## **Katrina Locsin**

## Demography and Survivorship of Riparian Trees in the West for of the San Gabriel River

Riparian tree species are used for experiments because of their dynamic nature and their part in complex ecosystems, which add biodiversity in their habitats (Sarr et. al, 2011). Thus, if there is an alarming decrease in riparian tree species, then biodiversity in the area will decrease as well. Different species contrast in their reactions to disturbance depending upon the kind of refuge accessible to them, their dispersal abilities, their mode of reproduction, and life history characteristics that affect persistence through floods and recovery (Swanson et. al, 1998). In this experiment, the survivorship of seventeen different riparian species from the San Gabriel River were analyzed to determine if diversity has changed between 2010 and 2015 since species diversity is inversely related to survivorship. This experiment compares the survivorship of seventeen different species of riparian trees in constrained and unconstrained channels. To do this, 10 by 10 m plots were measured out and the diameter of each plant species were measured. The data was inputted into Excel and a t test was done along with ANOVA to compare diameters between each species. Means were calculated using t-tests and SPSS ANOVA. This experiment compares the survivorship of seventeen different species of riparian trees in restored and unrestored areas. This fails to reject the null hypothesis that all seventeen riparian species examined would react in the same way to disturbances in both restored and unrestored over five years. Therefore, species diversity from 2010 to 2015 has not changed.

## **Joshua Lopez**

### Lung Cancer Screening in Survivors of Previous Cancers

Lung cancer-screening with low-dose CT (LDCT) has been shown to decrease mortality in high-risk patients. The United States Preventive Services Task Force recommends LDCT for patients age 55-80 with at least

a 30 pack-year history of smoking. Lung cancer screening in patients with a previous history of malignancy raises a complex set of issues. Patients with a previous history of malignancy may be at higher-risk for developing lung cancer. Those with a history of solid tumors are at risk of cancer recurrence or metastatic disease to the lung. The goal of this project was to see if the same management strategies can be used in assessing nodules among these patients. We analyzed data from a database of lung cancer screening performed at a National Comprehensive Cancer Network designated comprehensive cancer center and identified all patients enrolled in the lung cancer-screening program who had a previous history of cancer. Patients were enrolled in the lung cancer-screening program if they met NCCN guidelines for screening and if their treating oncologist estimated their median survival to be greater than 5 years. Patients were excluded if they were already undergoing chest CTs as part of surveillance for their previous cancer. After a discussion of the risks and benefits of lung cancer-screening, patients underwent LDCT. Patients with negative scans underwent repeat annual LDCT. Management of all positive scans was determined in a multidisciplinary lung cancer-screening board. From 2012-2015, 142 patients with a previous history of cancer were enrolled in our lung cancer-screening program. The mean age of patients was  $65 \pm 9$  years. 58 (40%) were current smokers and the mean smoking history was 44 pack years. Breast cancer was the most common previous cancer diagnosis (51/142, 30%). 20 patients (12%) had a previous, remote history of lung cancer, but were not undergoing active surveillance. Of the initial scans, 89 (62%) were positive, with a mean nodule size of 8 mm. A total of 7 cancers were detected (5%) – 6 new primary lung cancers and 1 metastatic melanoma. Patients with a significant smoking history who also have a previous history of malignancy may be at risk for development of lung cancer. In conclusion nodule assessment in these patients is more complicated due to the possibility of metastatic disease. In our case a new primary lung cancer was much more common than the identification of metastatic disease.

Further studies are warranted in this cohort of patients in order to improve screening guidelines.

## **Lindsey Macdonald**

Faculty Mentor: Roger White

### Assortative Mating and its affect on modern household income inequality in the United States

Household income inequality has been rising in the United States since 1970. Only a portion of this inequality is explained by the underlying wage inequalities. A variety of other factors account for the remainder of the trend. Specifically, empirical evidence suggests that assortative mating has contributed to the rise in household income inequality; however, the impact of this phenomenon is debated and, thus, remains an open empirical question. Assortative mating is a mating pattern and a form of sexual selection in which similar individuals mate with one another more frequently than would be expected under a random mating pattern. With respect to household inequality, this pattern may have implications through the individuals with similar education levels being more likely to marry or cohabitate. To explore this potential relationship, we use data from the American Community Survey to create a regression model to compare the education level of spouses. We then construct two contingency tables, one for the distribution of pairs by education level and another for the distribution of pairs by random matching. The distributions are then employed to create corresponding Lorenz Curves and the calculation of associated Gini Coefficients. This permits determination of the degree of household income inequality that can be attributed to this sorting of spouses.

## **Brianna Martinez**

## Together Defeated, Together Alone: How James Joyce and Carlos Fuentes Rewrite National Identity to Bridge Irish and Mexican Literary Traditions

Mexican and Irish nationalism are tied to one another not only through a history of religion, immigration, heritage, and colonialism, but also through a history that is characterized by defeat and solitude. These themes are especially evident in the literature of the twentieth-century Irish revival, as well as in the literature that emerged from the late-twentieth-century Latin American Boom. The Latin American Boom was led by authors such as Jorge Luis Borges, Gabriel Garcia Marquez, and Carlos Fuentes. These authors were heavily influenced by modernist writers such as T. S. Eliot, Ezra Pound, William Faulkner, Virginia Woolf, and James Joyce. Latin American critics argue that Spanish language and literature were enriched during the Boom, precisely because Latin authors drew from English-language modernist works; the same can be said of European and American modernists who themselves drew from other languages, like French, in order to improve English language and literature. Carlos Fuentes himself cites James Joyce as profoundly influential to his writing. Fuentes' seminal novels *Terra Nostra* and *Where the Air is Clean* echo both *Ulysses* and *Finnegan's Wake*. Like Joyce, Fuentes uses his work to question both loyalty to the state and loyalty to literary traditions. Fuentes employs the Joycean writing techniques of stream-of-consciousness and language experimentation; moreover, Fuentes brings Mexico City to life as a character, similar to Joyce's characterization of Dublin. Both authors present works that are bleak in tone and cynical of religion, authority, and the state. In my essay, I will make a comparative analysis of James Joyce's *A Portrait of the Artist as a Young Man* and Carlos Fuentes' *The Death of Artemio Cruz*, connecting negative national identity to the protagonist's coming-of-age in each novel.

**Jasmine Martinez**

## The Effect of Wave Intensity on Limpet Distribution Within the Intertidal Zones of Southern California

Limpets are mollusks that reside in the rocky, intertidal areas found along the coast of Southern California. They influence rock-platform ecology by feeding upon microscopic algae that cover parts of the intertidal zone. This study addressed the question of how wave exposure affects the distribution of limpets in intertidal zones. The study was conducted on two species of limpets: *Lottia scabra* and *Lottia strigatella*. These two species were chosen because of their physiological differences. The *Lottia scabra* has a shell with strong radiating ribs that originate from the apex of the shell and run along the entire slope of the shell. The *Lottia strigatella* has a more smooth and flatter shell. Limpets were surveyed in respect to their abundance in response to wave exposure. The different wave exposures were separated in levels of low, medium, and high tide, which corresponds to the amounts of waves that limpets are exposed to. In order to survey these limpets, 10 foot transects were used to set perimeter or line across a random area within the intertidal zone from low to high tide. In addition, 2.5-foot quadrats were used to mark off a small and exact area, within each tide level, so that the two limpet species in each area can be identified and counted. Both species preferred areas of low and intermediate tidal height, which can be explained by their desire to prevent dislodgement from the rocks during the day when they are conserving water. Experimental tests indicated that *Lottia scabra* was much more abundant within areas of low and intermediate tides, while *Lottia strigatella* preferred areas of middle tidal height. Despite both species being found within areas of high tide, neither species preferred that area. In regard to population, *Lottia scabra* was much more abundant throughout all tidal heights than the *Lottia strigatella*.

**Jessica Matadamas and Alvin Alejandrino**

Faculty Mentor: Alvin Alejandrino

## Population Genetic Analysis of *Amusium pleuronectes* in the Coral Triangle to Identify Distinct Populations or a Species Complex

The Coral Triangle is the geographic area that includes Papua New Guinea, Indonesia, the Philippines, and Malaysia, is well known for its high diversity of marine communities. Because of this high diversity, many conservationists work toward maintaining the stability of the ecosystem and thus avoid overexploitation of species that inhabit the Coral Triangle. *Amusium pleuronectes* (Mollusca: Bivalvia: Pectinidae) is a commercially important scallop that is found within the Coral Triangle. However, it is not known whether *A. pleuronectes* in the Coral Triangle is a single species or multiple distinct species. Determining whether *A. pleuronectes* is a single species or not is important for conservation efforts as overexploitation of a species has negative biodiversity consequences whereas overexploitation of a population has less impact. In this study we used molecular data to determine if *A. pleuronectes* belong to distinct populations or multiple species given the large geographic area it inhabits. Existing cytochrome oxidase I (COI) gene were downloaded from GenBank, which are from southern China. Using polymerase chain reaction (PCR), we tried to amplify COI of *A. pleuronectes* individuals from Malaysia. The PCR products will be sequenced and aligned using Geneious R10. Models of genetic evolution will be identified, and phylogenetic trees will be reconstructed in order to analyze the relationship of the individuals. We hypothesize that *A. pleuronectes* is a species complex as it has a wide distribution around the Coral Triangle. To test this hypothesis, we will also construct haplotype networks using the TCS software and statistical analyses using Arlequin and the Automatic Barcoding Gap Discovery (ABGD) softwares. Preliminary analysis show that one population exist in south China. Due to the difficulty of amplifying the COI gene of the individuals from Malaysia, we have not been able to incorporate those data in the analyses. We predict that the Malaysia individuals will at least be a distinct population from those in south China and the TCS, Arlequin, and ABGD tests will determine

distinct species. We hope that by conducting this study on *A. pleuronectes*, there will be an initiative to better manage fisheries around the Coral Triangle in order to conserve this commercially important species.

## **William Maxton**

### **Black Male Students' Perception of their Experience and Purpose in Higher Education Institutions**

Institutions of higher education, apart from Historically Black Colleges/Universities, in the United States have consistently had low retention of black men. HBCUs have had a higher satisfaction and retention of black men due to the large black presence of students and faculty along with the feeling of support and mentorship from their population. This is concerning since their female counterparts have been steadily obtaining more degrees and keeping a high retention rate in American colleges for the past few decades. This research attempts to gain a sense of how these men are feeling, to gain insight to these trends. Is it the structure of these institutions that pushes black male students to consistently transfer and drop out of school? Do these men share a similar perception of themselves and their purpose in institutions of higher education, and does that affect their retention? By using social media such as Facebook, Twitter, and Instagram as a platform to reach out to black students from across the country, 82 black students were surveyed. These 82 black male and female respondents has shown that, despite being satisfied at an HBCU, most black male participants were not involved in any fraternities, clubs, or organizations. This research attempts to gain insight on black males' perception of their experience and purpose in college by analyzing interviews and focus groups. From a small private liberal arts college institution in Los Angeles County, 6 black male students have been part of 2 separate focus groups, mediated by the researcher. These focus groups consisted of a conversation of three men in

each group. Findings in the conversations suggest that these men all study with majors with the intent of making a large sum of money as fast as possible. They feel a pressure to help take care of their families and can raise a family on their own. Most of the men feel conscious of professors/faculty and peers have lower academic expectations of them. The student athletes feel that they are expected to perform less academically than their white student athlete peers. Their sport is their sense of community. Black men in colleges are pressured to prove their capability academically and physically which makes for an exhausting experience. Along with the pressure to quickly be making money by leaving the institution as quickly as possible, perhaps this why these men leave their institutions too early.

## **Tess McPheeters**

### *A Comparative Study of Captive-Bred vs. Wild-Bred Juvenile Apes*

This observational study and comparative analysis were conducted to analyze the difference in behaviors between captive-bred and wild-bred juvenile apes, Hominoidea. These differences could show areas in which zoos could improve upon creating a more naturalistic environment for captive apes. The socio-behaviors of apes in the wild have been closely studied, and the intensive care that goes into raising a juvenile falls upon not only the mother, but also other members of the fission-fusion group. If a mother has more than one juvenile in the wild, some of the task of raising the older juvenile falls on the older females in the intermingling of the groups, while the mother focuses her attention on the younger offspring. The observational study was conducted at The Philadelphia Zoo, for 11 weeks, 3 days a week, one hour each day, I observed two juvenile white-handed gibbons, age one and a half and age four. Every three minutes I recorded what behavior both juvenile males were exhibiting. For the comparative analysis, I found articles on what juvenile apes do in the wild, and what normal behaviors are exhibited. Comparing

the two, I found that the captive-bred juvenile gibbons did not have as much inter-grouping social interaction as wild-bred apes. For the older juvenile gibbon, I observed, 44% of his time was spent alone, while the younger juvenile gibbon (age one and a half) spent only 8% of his time alone. This shows that the mother's main focus is the younger juvenile. For a four-year-old gibbon, he would still need constant interaction and relationships that develop his behavioral skills, showing that time alone is not a natural occurrence. This is due to zoos only having one small familial group of apes. A possibility to increase the normal socio-behaviors for captive-bred apes would be zoos having more than one family/group of a particular species of ape, and those different groups having the ability to interact in order to increase not only the relationships, but the complexity of the social hierarchy for the animals. A more diverse social group for the apes in captivity could benefit juveniles in many ways.

## **Christina Mecklenburg**

### *Biodiversity in Sacred Spaces: A Case Study of Buddhist Temples in Myanmar*

Biodiversity is highly essential for natural landscapes to thrive and continue development of species, generation after generation. Many religious and spiritual ideologies emphasize the need to live a life of reciprocity with the land and animals; therefore, harboring biodiversity rather than exploitation. To see what role sacred places in Myanmar play in regard to biological conservation efforts, nine temples in Myanmar were examined via observation, photography, and transect data. These temples ranged in location between Yangon in the southern part of the country and Mandalay in the northern-middle part of the country. The number and types of plant species, the number and types of bird species, and the number of depictions of plants and animals were examined within each temple and its grounds. The major trends exhibited in the data are that temples located in urban settings had lower amounts of plant species than the temples located in more rural settings, which exhibited higher

amounts of plant species. Bagan exhibited the most bird species, as well as the highest number of total species exhibited when the total numbers of bird and plant species were combined. The data collected is being analyzed further to determine statistical significances within the data sets, as well as to determine whether sacred places in Myanmar seem to harbor biologically diverse environments. If the analyzed data confirms that sacred places in Myanmar harbor biodiversity within their jurisdictions, then this may indicate an influential means of spreading information in regard to the important concepts of conservation and preservation of natural environments in Myanmar.

## **John Motte**

### **Evoking Two Senses: Julia Margaret Cameron's Revolutionary Ties to Synesthesia**

In this paper, I will argue the connection between the wet collodion process, used by 19th century photographer Julia Margaret Cameron, and how it evokes the idea of sound. I will focus on two photographs she titled, *Whisper of the Muses* and *The Echo*. The argument will be made that the presence of light, in photography, is just as crucial as its absence. In order to gain a sense of depth in sound, there needs to be an absence of said sound in specific places, in order to fully appreciate the sound that you do hear. The exact same can be said about the collodion process, considering the need for an absence (and presence) of light in specific areas, in order to achieve an optimal finished product. This idea of synesthesia was embraced by avant-garde artists at the time, such as James McNeill Whistler, Vincent Van Gogh, and Paul Gauguin, who explored the similarities between color and sound. I will be arguing on behalf of the relationship between the wet collodion process and sound. Sound is born as a unique phenomenon, which exists in its own real time, never to be repeated exactly the same way twice. Photography takes on the task of

encountering equally unique moments in time and makes it possible to revive these unique moments in the form of photographs.

## **Ryan Nakamura and Rachel San Angelo**

### Determining the Nature of the Antibacterial Properties of Traditional Chinese Herbs and Fungi from the Yunnan Province

The Yunnan Province is well regarded as one of the most biologically diverse regions in the world. This southeastern region of China has avoided glaciation throughout many of history's ice ages, which has allowed the region to sprout vegetation and fungi that are unique to the area. Herbs and fungi have been used for medicinal applications in traditional Chinese medicine as early as the Shang dynasty (14th - 11th century B.C.). Although these medicines are well documented in Chinese manuscripts, the chemical mechanisms behind how they work are not as well understood. Homeopathic medicine can be an affordable, renewable, and less toxic alternative to western medicine pharmaceuticals. Therefore, it would be useful to explore the medicinal properties of these herbs and fungi that have been used in traditional Chinese medicine for centuries. Eight different herbs and fungi were collected from various medicinal shops in the Yunnan Province and will be tested for their antibacterial capacity. The chemically active components of the herbs and fungi will be extracted using various organic solvents through steam extraction. The purity and identity of these chemicals will be determined through spectral analysis. Plates of various bacteria will be treated with and without these chemicals utilizing the disc diffusion method to determine the nature of their antibacterial properties.

## **Juan Navarro and Robert Kaaret**

### Response of Mangrove Species to Salinity Changes in the Mai Po Nature Reserve

Mangroves worldwide are under threat due to the massive effluent pollution, habitat loss, and land conversion that their coastal habitats undergo. These unique plant species serve a key role as primary producers by providing for the abundance of wildlife in their ecosystem. Mangrove disruption can prove devastating for all of the trophic levels within an ecosystem. Due to this urgent concern, our team sought to investigate how successful three mangrove species were within the Mai Po Reserve in Hong Kong in terms of stomatal conductance and water potential. The reserve was originally a collection of tidal shrimp ponds, known as gei wai, used for aquaculture practices. Now, it is mainly managed for roosting and migratory birds. Mai Po contains a few ponds with introduced freshwater, many brackish water gei wai and an intertidal zone connecting to the eastern shore of Deep Bay. Our team used stomatal conductance and water potentials as measurements of three mangrove species' success within these three different locations. Our three species of mangroves were *Aegicirus corniculatum*, *Kandelia obovata* and *Acanthus illicifolius* (Spiny Bear's Breech). Our team chose to sample two freshwater ponds (18 & 19), four gei wai (12,13, 14 & 16/17) and the intertidal zone. For each location, we sampled a total of nine plant individuals of each species except for when these were absent. We hypothesized that the three species would have the highest stomatal conductance and water potential rates in the intertidal zone because of the natural tidal flushing. Furthermore, we expected individuals in the freshwater shrimp ponds to have the lowest measurements since this location had the most human intervention. Mean stomatal conductance indicated that *Kandelia* and *Aegicirus* preferred the brackish gei wai

overall. The pre-dawn water potentials for *Kandelia* and *Aegicirus* were lower within the freshwater ponds, in contrast to Spiny Bear's Breech. Spiny Bear's Breech also had a low mid-day water potential in the freshwater pond. The results disprove our hypothesis that the intertidal zone would be heavily favored by all three species. However, the low stomatal conductance and water potentials within the freshwater ponds indicate that freshwater conditions prove unfavorable to all three mangrove species. These results recognize the detrimental effect that freshwater ponds can have on mangrove species worldwide. Therefore, it is pivotal that Mai Po and other wetland reserves address this growing concern for the preservation of both mangroves and the species that rely on them.

## **Carmela Nevarez**

### Perceptions of Success in Intact or Non-Intact Families

Many sociological researchers perceive that nuclear or intact families are the best type of family for an individual to grow up in since the individual can easily have stability and all that is required to grow successfully. A nuclear or intact family consists of a family with two intact parents, and a non-intact family usually refers to being raised by just one parent. Instability is an added stressor to a child living in a non-intact family, and can inhibit them from reaching success in life. Do individuals who grow up with an intact family have an advantage in terms of success over the individuals that grow up with a non-intact family? Surveys and interviews were conducted at a small liberal arts college in Southern California to further understand this question. The surveys were sent to the student e-mail list and responses were submitted online. The interviews were done on a word of mouth basis. Both the interview and survey results suggest that people who grow up with an intact family perceive themselves to be more successful. These individuals perceive themselves as more successful since they are confident with themselves. This confidence could have

arrived from the attention of both parents. Comparing the literature review with statements gained through interviews and survey results, the study shows that people perceive themselves as successful when coming from an intact family.

## **Mandie Nuanes**

### Sixteenth-Century Ottoman Court Culture and its Effects on the Appearance of Women's Voices in Court Records

The 16th-century Ottoman court records (sijills) have revised the history of women in the Middle East and North Africa, since the records indicate a rejection of conventional wisdom that women were passive victims of a patriarchal court system. Therefore, it is known that women's voices can be found throughout the sijills. To think that women's voices appear in court records solely because women recognized their own autonomy, and thus, refused to be silenced would be too simplistic. My research poster argues that court culture that existed in the Mamlukid period gets carried over into the sixteenth-century Ottoman court system, and the amalgamation of the two cultures creates a culturally adaptive, meticulous form of record keeping. By looking at court procedures I will attempt to understand not only the effects of the sixteenth-century Ottoman court culture on women, but more specifically, why women's voices were recorded at all let alone with precision.

## **Marissa Ochoa**

### Biodiversity in the Religious Iconography of Myanmar

In the pagodas of Myanmar, the most prominent figure is the Buddha, who is often placed at the center of a shrine or room. On either side of his image, he is frequently surrounded by smaller figures, and at the base of the shrine, lions and nagas stand guard. The pagodas of Myanmar range in age from 500 years BCE to the late 20th century, but the peoples'

dedication to them have not wavered, despite their locations. While some are found within heavily populated cities, others are located in more isolated, natural landscapes. We hypothesized that increased biodiversity surrounding a pagoda would lead to decreased nature imagery, while decreased biodiversity would increase the number of plant and animal depictions. To test our hypothesis, we documented and photographed nature imagery from nine different pagodas throughout the country. We have currently analyzed over 2,000 photographs, and still intend to add more images. Religious iconography was tallied at each site based on organism type (plant vs. animal), the medium used (gold, jade, wood, etc.), and its purpose (narrative, decorative or ritualistic). Pagodas were categorized on a spectrum of “imposed”, where natural features were kept intact, versus “embedded”, where nature is lost within the shrine. We found that Shwedagon and Sam Buddhe Phaya, an extreme representation of embedded pagodas, surrounded entirely by cities, had the highest number of nature images depicted throughout the shrines and temples. On the opposite end, Bagan and Laykyun Sekkya, imposed spaces enclosed in dry forests, had the lowest number of depictions. However, plants were more often depicted than animals at nearly every site, and stone was the most popular medium utilized.

## **Cassandra Olvera**

**Inflammatory Bowel Disease (Ulcerative Colitis and Crohn’s Disease) Increases the Risk of Colorectal Cancer through Constant STAT3 Activation of TNF- $\alpha$ , IL-6, and NF-kB**

Colorectal cancer (CRC) has been one of the top deadliest cancers in the world affecting people. According to the American Cancer Society, the death rate for individuals with CRC was predicted to be 595,690 deaths in the U.S. for 2016. Treatments for treating CRC are 5-fluorouracil, leucovorin, and oxaliplatin, which target DNA to inhibit further proliferation. Resistance has been observed to develop in some treatments

alone, however, the success of combination treatments has increased interest in research to find alternative treatments that will prevent and destroy the continuation of CRC. Inflammatory Bowel Disease (IBD), whose subcategories are, Ulcerative Colitis and Crohn's Disease, have been found to increase the risk of CRC due to its prolonged inflammation of the intestine. IBD is an autoimmune disease that starts attacking itself due to mutagenesis and a disorder of the immune system, where the digestive system and intestines are constantly inflamed. Several studies show that severe inflammation can then lead to abnormal cell formation, known as dysplasia or precancerous cells that can become cancerous over time. Previous studies have shown that the risk of CRC increases with both IBD conditions by 10 percent to 15 percent compared to patients without IBD. It has been found that during inflammation, triggered by IBD, myeloid cells of the lamina propria release pro-inflammatory or anti-inflammatory cytokines triggered by NF- $\kappa$ B. TNF- $\alpha$  is a cytokine that triggers the formation of pre-malignant intestinal epithelial cells and tumor formation in the presence of IL-6 that works by stimulating pre-malignant cells to proliferate and survive in a microenvironment as long as NF- $\kappa$ B is continually activated. TNF-  $\alpha$  can invade and damage DNA by producing mutations, induce angiogenesis, avoiding apoptosis, and becoming resistant to anti-inflammatory cytokines. STAT3 is a signal transducer and activator of transcription 3, which is expressed and encoded by the STAT3 gene in humans. Patients that develop IBD at an early age most likely develop CRC later on if no treatment is received. It is hypothesized that TNF-  $\alpha$  and IL-6, secreted during severe inflammation through IBD can trigger CRC malignant cell and tumor formation through over expression of the transcription factor, STAT3. Here, we demonstrate a meta-analysis of data, which shows that IBD increases the risk of CRC, whose cells trigger inflammatory cytokine responses through activation of NF- $\kappa$ B; this increased inflammatory response triggers an overproduction of cell growth and survival by the avoidance of apoptosis through STAT3, which can lead to the development of CRC.

## **Ariana Ornelas and Robert Kaaret**

Effects of Elevation Above the Thalweg on Species Composition, Water Potential, and Stomatal Conductance in the California Sycamore, Arroyo Willow, and Mule's-Fat in the Angeles National Forest.

Plant species occurring in periodic or permanent inundation by shallow water are considered to be characteristic to wetlands. Species which occur in wetlands are often subject to highly variable moisture conditions and exercise different mechanisms in order to tolerate these conditions. In this study, we consider how elevation above the thalweg effects species composition, water potential, and stomatal conductance in the California Sycamore (*Platanus racemose*), Arroyo Willow (*Salix lasiolepis*), and Mule's-Fat (*Baccharis salicifolia*) in Monte Cristo Creek, in the Angeles National Forest. To determine density, we conducted a survey of woody plant individuals occurring along a 62 meter transect from the thalweg to the edge of the bank using 1×12-meter plots. Of the 148 individuals surveyed, 54 were indicators of wetland. A frequency analysis determined only some areas along the transect to be considered wetland. Individuals occurring further from the thalweg are prone to experience less water and, as a result, increased water stress. However, pre-dawn and mid-day water potentials demonstrated no significant differences as elevation above the thalweg increased. The behavior of individuals as they respond to water stress can be analyzed by their stomatal conductance. Stomatal conductance measurements of the Arroyo Willow were taken every two hours. Arroyo Willow occurring at 36 meters had higher stomatal

conductance than those occurring at 12, 20, and 46 meters. Although the Arroyo with the highest stomatal conductance occur at 36 meters, their change in elevation actually places them closer to the thalweg.

## **Abimael Osorio**

### *Regulated Spaces and Meaning in Downtown Los Angeles*

Space is the physical manifestation of socioeconomic conditions that governs people's interactions. Boundaries are created along wealth lines, expressing racial and economic divisions, with groups of people with greater economic power expressing their boundaries with greater distinction. The denizens of Downtown Los Angeles, including the homeless, bus riders, pedestrians, and drivers, all navigate an environment constructed by great economic and political powers. I wish to understand how these spatial expressions of boundaries manifest themselves in Downtown Los Angeles, and how they influence the interactions that individuals have in navigating this environment. In this study I employ phenomenological observation of the city space, taking care to note the fine distinctions between private and public space, the actual and metaphorical signs that serve as reminders of appropriate behavior in a given environment, and, most importantly, how regulatory structures govern that space. Furthermore, the non-white population of Los Angeles has had a historically bad relationship with governmental structures that enforce regulations on space. One of my central research questions, then, is has this history of conflict affected the private regulatory structures that govern Downtown Los Angeles? Likewise, does this history visibly affect interactions that denizens of the city might have with the municipal

district? I have found that the internal districts within Downtown segregate populations into defined locations. Additionally, observations regarding what roles governmental or private regulations play in this have shed light on this phenomenon of segregation and incredible alienation between the different peoples of Downtown Los Angeles.

## **Colleen Perez**

### **Factors Affecting Parent Involvement in Elementary and Middle School Years**

Parent involvement in a child's education has consistently been found to have a positive association with a child's academic success profoundly during early and middle childhood years. Research concluded that demographic factors contribute to the variance in involvement in a child's education during elementary and middle school years. This review of literature puts into perspective the ways in which demographic factors, such as parental education levels, socioeconomic status, ethnicity, age and gender promote and inhibit parental involvement during these earlier years of schooling. From these demographic factors, research suggests that parental education level and socioeconomic status showed more significant correlations to academic achievement in comparison to ethnicity, age, and gender. The research literature primarily focuses on maternal involvement, future studies need to expand their models to include the involvement of the father-figure and extended family members.

## **Abby Pittman**

### **The Wiles of Women**

The Arabian Nights is a compilation of oral stories from the Middle East and South Asia that were first translated and compiled into French by the Orientalist Antoine Galland between 1704 and 1717. Through a powerful frame story, The Nights reconstruct prevailing medieval Muslim morals and values, especially on the subject of female sexuality. The frame story follows a king Shahryar, whose heart has been hardened by the adultery of his wife; cuckolded, Shahryar murders his wife and her slaves, then declares he will marry a new virgin every night, then kill her at dawn. This went on and on until Scheherazade, the main female protagonist and the vizier's daughter came up with a plan to save the women of the land. She would tell the king a story each night, stopping at the climax of the story, allowing her to live another night to finish the story and begin anew. Eventually, she conceived, and the pair fell in love because of Scheherazade's wit and cleverness. The tales end with redemption, a well-trodden path found in many religious traditions, including Islam. Oozing with sensuality the tales are full of exploration of human sexuality within almost every bawdy story. The Nights seem to characterize female sexuality as chaotic and disruptive. At times, the language of The Nights, much like the Qur'an, the central religious text of Muslims, appears patriarchal. A closer examination reveals, however, that the role of women in The Nights is as complex as the role of women portrayed in the Qur'an. I will draw comparisons between the Qur'an, analyzing the verses pertaining to adultery and sexuality, specifically 24:2, 24:3, and the Arabian Nights, exploring specifically the wives of women introduced in the frame tale.

## **Jennifer Preciado and Kay Sanders**

Faculty Mentor: Kay Sanders

The Effects of Child Poverty on Academic Achievement from Early Childhood to Elementary School

Studies have shown that students consistently underperform when living at or below the poverty line. The 2017 Federal Poverty Level for a family of 4 is defined at \$24,600 of yearly income. This encompasses about 21% of children currently enrolled in US school systems. Low-income students earn lower grade point averages and test scores as related to their peers, stifling academic success. Academic achievement can be measured in terms of grades, GPA scores and end of the year exams. A family's socioeconomic status is so influential it can define how a child will perform in school. There are many states which have begun increasing education research initiatives, including longitudinal research, in order to identify to what extent poverty impacts academic success. The purpose of this review is to outline the effects of poverty on academic achievement, as well as share findings on how a child's socioeconomic status directly impacts their test scores. With the research that has been found, results have varied from state to state and amongst income groups. The hindering effects of poverty appear to compound as students advance through subsequent grades and pursue higher education. Further research can serve to identify ways to help low income families with underperforming children. Additionally, methods for allocating education funding which targets low income districts and students can be supported through this research.

## **Andrea Quiroz**

### Extracting Key Elements from Yelp Reviews Using Probabilistic & Statistical Methods

Online reviews have greatly influenced the way we, as consumers, behave. In a time in which 60% of consumers read restaurant reviews either occasionally or regularly, and 74% trust a business more after reading positive reviews, review content for restaurants is highly of interest to examine. This paper presents how the application of TF-IDF and Multinomial Naive Bayes to review text can create an alternative way

for users to find restaurants that stand out from a corpus. TF-IDF weights are examined closely in how they function to produce relevancy scores of words to documents. For evaluating sentiment, Multinomial Naive Bayes is the popular choice because of its ability to perform well with varying vocabulary sizes. It was found that a combination of these two functions can provide excellent recommendations based solely on review text.

## **Rilind Radoniqi**

### **The Effects of Early Developmental Exposure of Chlorpyrifos on the Nervous System of Danio Rerio (Zebrafish)**

Acetylcholinesterase is an important enzyme that breaks down acetylcholine and other choline esters that function as neurotransmitters; it hydrolyzes acetylcholine and cleaves it into choline and acetate. Like other major enzymes within the human body, there are different antagonists that can inhibit the activity of acetylcholinesterase.

Organophosphate pesticides are a group of potent irreversible inhibitors of acetylcholinesterase, preventing this enzyme from deactivating acetylcholine at the cholinergic synapse. In this study, the organophosphate pesticide Chlorpyrifos (CPF) and its bioactive oxon (CPO) are used to examine their impact on the development of cholinergic nervous system of Zebrafish (*Danio rerio*), a widely used developmental model. Zebrafish embryos are exposed to sub-lethal concentrations of pesticide, 10  $\mu$ M of CPF and 1 $\mu$ M of CPO (embryos were fixed in four percent PFA at 12, 24, 36, 48, 50, and 72 hpf). To detect any cytoarchitectural changes caused by exposure to CPF and CPO, ChAT positive neurons are visualized via whole mount immunohistochemistry and confocal microscopy. Preliminary results show differences in the cytoarchitecture of spinal neurons. However, additional trials are ongoing to confirm and extend the preliminary results and elucidate the impact of CPF and CPO on the development of Zebrafish nervous system.

## **Jacob Raynaud**

Faculty Mentor: Ann Kakaliouras

### Success and Leadership Skills in College Athletics

Many Americans are infatuated with the idea of going to college to get a job you love and that also pays well, but they also do not realize that high paying employers are looking for graduates with a certain set of leadership skills. Leadership skills are a huge benefit when looking for any job, especially high paying ones such as engineering as well as business job employers look to hire employees with quality leadership skills and a sense of wanting to be successful. This project investigates student athletes at Whittier College, their conceptions of success, and how they obtain leadership skills. I have gathered data from interviews and surveys of baseball team captains and players, which brought me to two main conclusions. First, understanding what leadership skills student athletes learn, how they learn them, and from whom they learn them. I further support this claim with eight interviews and twenty-eight surveys of Whittier Baseball players, three interviews in which I questioned former captains who have graduated. These interviews as touched upon in my analysis section, deeply discuss the correlation between the leadership skills they learned playing baseball at Whittier and how their new bosses want to hire these unique individuals. Second, this project suggests how those skills that athletes learn increase student athletes' chances at finding a high paying job they desire after college as discussed in my literature review and analysis section of my paper.

## **Kaela Reisfelt**

Untitled Project

Divorce is considered to be a significant risk factor in the development of children, specifically in their development of internalizing and

externalizing behavioral problems. The purpose of this literature review is to examine the research on the long-term relations between divorce and externalizing behavior problems such as aggression and internalizing behavior problems such as anxiety. This paper will focus on children 5-15 years of age. Children experiencing divorce and parental neglect have an extremely high chance of developing long term behavioral problems due to changes in family economic resources, declines in parenting quality, and high levels of parental conflict. Divorce alters the lives of children and these changes are responsible for the effects that are associated with parental separation. However, research also implies that many limited school-based intervention programs for children are focused around improving children's emotional well-being and parent-child communication.

## **Paola Reyes and Kayla Morales**

### *Analyzation of Venus's Orbit Around the Sun*

What effect does gravity have on Venus's orbit around the Sun? This experiment is meant to calculate the effects of the gravitational pull affecting Venus and to observe its orbit around the sun, by finding the positions of Venus over a period of time. From what has been known for decades, the rotational path of Venus is similar to the shape of an ellipse. With the information we gather from our research, we will be able to understand the effects of the sun's gravitational pull on Venus. We went to the roof on top of the Science Learning Center at Whittier College. Venus was observed through a telescope over the course of a month, once a week. Each time we set the telescope to find Venus, which would direct us to the region where Venus was located. We then manually found the exact placement of the planet by using the controls on the telescope to

shift to exactly where the planet was visible. Once the telescope was positioned as accurately as possible we recorded its exact coordinates. When observing we used a mobile device to take a photograph of the coordinates of Venus, which were 00:40.6+ 11 degrees 37, listed on the telescope. Our current data is the position of Venus on March 2nd, 2017 which was 00:40.6+ 11 degrees 37. When locating this data, we discovered that Venus, as well as everything else in the solar system, is constantly moving. For example, when we would finally be able to locate Venus and be able to see it clearly through the telescope, Venus would move out of frame after a period of time. By the end of this experiment, we hope to be able to analyze and further understand why Venus orbits around the sun as opposed to just floating off into space.

## **Amanda Rickon**

### **Development and Confirmation of an Immunochemistry Procedure for the Detection of Acetyl-cholinesterase Inhibition in Zebrafish Embryos**

Organophosphates are a widely used class of pesticides. They act by irreversibly inactivating acetyl-cholinesterase (AChE), the enzyme responsible for degrading acetylcholine at the synapse. Thus organophosphate exposure results in a wide array of neurological symptoms both in target insect species and non-target vertebrates. Therefore, it is important to understand the effects of organophosphate exposure on both terrestrial and aquatic life. The objective of this study is to develop a whole-mount immunohistochemistry method to visualize the effects of organophosphate exposure on the development of the zebrafish (*Danio rerio*) nervous system. This method will be used to determine the effect of two types of organophosphates, Chloropyrifos (CPF) and its

bioactive oxon form (CPO), on the development of the cholinergic nervous system in the zebrafish model system. The basic zebrafish whole-mount immunohistochemistry method was optimized for visualization of cholinergic neurons using AntiChAT. Optimization included determining appropriate primary and secondary antibody conditions, incubation times, wash conditions, and the necessity of the epitope retrieval step. This method will be used to examine the effect of organophosphate pesticides on the developing cholinergic nervous system of zebrafish. We expect to see that the cytoarchitecture of the spinal neurons will be less organized in the pesticide exposed embryos.

## **Christian Rivera**

[He/She/They/Them – Even in Pakistan, it Exists](#)

In Pakistan, a third gender identity exists. The person does not consider themselves as a man or a woman. Even though this is proven and "legal", discrimination still happens as society often degrades these types of people for not conforming to the regular ideals of gender. Many fundamentalists see this as a way of promoting homosexuality, and believe this interferes with God's way. Secularism isn't acknowledged, which is a major issue with conservatives both in Pakistan and the US. There is hardly any protection for these people in the workplace, and in many accounts in Pakistan, educators and other employable professionals have been driven away from their field of work because of this discrimination. But why should this even be an issue if there is a written and court ruled identity for these people? In Pakistan there is hardly any representation for the people who face these issues. In the United States, the issue still persists. Traditionalist and transphobic groups do not make this easier, as their religion interferes with this identity. I will be exploring and utilizing articles such as "Homosexuality in Islam", "Desiring Arabs", and "The Effeminate of Early Medina" as they pertain to the view of homosexuality and its history. Other scholarly sources will also be used to further my

research in regards to transphobic attacks on Pakistani people(s) who have a mandated right. These injustices are very unfortunate and many go unrecognized. It is important to acknowledge these situations so that the third gender can have an easy and welcoming transition into the world.

## **Hannah Rodriguez**

### Religious Interpretations of Family Planning in Contemporary Egypt

Across the globe family planning is seen as a controversial matter in relation to religion. This study aims to examine the many perspectives that relate to the use of contraceptives in Egypt from the 1980s to the early 2000s. According to the Pew Research Center, in 2010 it was estimated that about 95 percent of Egyptians were Muslims. Many of these perspectives may be rooted in Islam, due to the religious tendencies of the region, and may provide some insight into the beliefs of Muslim women. Along with these perspectives, the social realities of the use of contraceptives in this country will be provided. Included in this research is the word of Islamic law, or shar'ia, on the use of contraceptives, the social realities of Muslims and the use of contraceptives, the family and contraception, governmental support for contraception, and the opinions of the opposition. This study aims to unpack the question: what does contraception use look like in Egypt and how does this relate to Islam? As published in the Population Reference Bureau, it appears that most forms of contraceptives are approved by Islamic law, and that where there is access to contraceptives, their use is common. Contraceptives are provided by free government health clinics, non-governmental organizations, and private voluntary organizations. Some jurists and those who promote the beliefs of early Islam, like Salafis, oppose contraception because they believe it is "infanticide", or the killing of an infant, as stated in Islam and Family Planning. Also, these groups do not agree with the use of contraceptives because they believe if fewer Muslims are being created, they are deviating from the correct path of maintaining a large Muslim

population worldwide. Proponents of contraception have taken a more modern approach to the issue, while maintaining the influence of Islam. This study will examine the use of contraceptives in different sects of Islam and in different regions of Egypt. Contraception is not only important for its material value, but is also important for maintaining the autonomy and agency of women. The autonomy and agency of women in Islam may be seen as a contested issue, and will be explored as the basis of this project.

## **Alexandra Roggero**

### **Daesh, Sex Slavery, and Islam**

In the summer of 2014, Daesh, also known as ISIS (the Islamic State of Iraq and Syria), conquered the Yazidi district of Sinjar in Iraqi Kurdistan and kidnapped some 3,000 to 5,000 women and girls. Soon after the mass abductions, the terrorist group announced their intention to traffic the captured women and girls; some were presented as sex slaves to Daesh fighters and the rest were trafficked in Daesh's sex trade. My research project will investigate Daesh's justification for their modern-day resurrection of concubinage and the implications for women in the region and in the West. How does Daesh interpret traditional Islamic sources, the Qur'an and hadith (the sayings and teachings of Prophet Muhammad), in order to support concubinage? How can we compare these interpretations to other, more mainstream Islamic interpretations on this issue? To answer these questions, I will examine Daesh's English-language magazine *Dabiq*, particularly their writings about the abduction of Yazidi women and girls as well as their use of scripture to support their actions. I will also consider how religious scholars have treated the recent patterns in female abductions by jihadist groups, such as Boko Haram in Nigeria, and how both Daesh and Boko Haram are benefiting economically and politically from this. The aim of this project is to not only acknowledge the plight of

Yazidi women under Daesh, but also to create a conversation around women's roles and female sexuality in Daesh-held territory.

## **Jose Romero**

### *Assessing Water Consumption in Los Angeles' Urban Farms – A Case Study*

Urban farms have grown in number and popularity in the past few decades in cities such as Chicago, New York, and Los Angeles. While much research has been conducted about the crop output and the societal, ecological, and economic benefits of expanding urban farming, there is limited information concerning the amount of irrigation needed in small urban farms, since they are not regulated. Cities such as Los Angeles have had an increased interest in urban farms because of the combination of the demand for local healthy organic produce, and the lack of vast farmland. This study has the scope to quantify water usage of an urban farm located in Bell, California, used here as a case study. By investigating the irrigation system at a specific urban farm, I was able to estimate how much water is needed to operate the 1.5 acre farm. In order to obtain this data, I measured irrigation systems, efficiency, and regime at the farm. Since the farm primarily used drip tape, I multiplied the amount of water emitted from each irrigation hole every hour with the number of drip tape holes distributed across the farm. Additionally, I factored in the other forms of irrigation present on the farm, including misters and hoses to create a grand total of water use in gallons per week and in relation to crop yield. I observed that the irrigation varied from section to section, depending on crop type and water needs. Around 6,400 gallons of water were needed to produce 54 lb. of produce in an average week. My study highlights the fact that water conservation is not currently optimized in urban farms and more water is needed to produce vegetables in urban farms than in intensive agriculture production systems. Consequently, water conservation implementation should be promoted to include water meters, sensors, or valves, as well as drip and tape irrigation systems. This

study improves our understanding of the water use implications associated with the growing demand of urban farms in Southern California, which is of the utmost importance considering that the region is subject to drought. More studies are needed to properly quantify water usage on other urban farms and to see what tools, such as water meters or valves, would be economically viable to support this practice.

## **Ashley Sagouspe**

Where in the World? Phylogenetic Reformation of *Aplysia parvula*, *Bursatella leachii*, and *Dolabrifera dolabrifera*

A marine species found around the world is considered circumglobal. However, populations that occur at different parts of the world may be different but are classified as a single species due to lack of morphological differences. Understanding whether a species is circumglobal or consists of multiple species is important because we may be underestimating species diversity of the marine environment. This leads to the question: are circumglobal species one or multiple species? To test the hypothesis of a single circumglobal species or multiple species, we are examining the genetics of three species of sea hares (Mollusca: Gastropoda: Anaspeida) known to have circumglobal distributions: *Aplysia parvula*, *Bursatella leachii*, *Dolabrifera dolabrifera*. Using polymerase chain reaction, the cytochrome oxidase I (COI) gene is amplified from individuals of each species from multiple localities around the world and analyzed. The COI gene is mitochondrial gene which evolves quickly, making it optimal for testing populations and species relationships. COI will be statistically evaluated using the Automatic Barcode Gap Discovery (ABGD) and Arlequin programs to determine if each species consists of multiple species. A haplotype network will be created for each species using the TCS software as a graphical representation of the relationships. We predict *A. parvula*, *B. leachi*, and *D. dolabrifera* are each a multiple species complex. Currently, the COI gene has been difficult to amplify.

Previously amplified sequences are being solicited from collaborators so they can be analyzed through ABGD and Arlequin. Specimens of *Aplysia parvula* come from Spain, the Bahamas, the U.S. Virgin Islands, western Panama, Hawaii, which may constitute at least three separate species. *Bursatella leachii* from the Caribbean and western Panama may constitute two separate species. *Dolabrifera dolabrifera* from Guam and Hawaii may be separate species from those found in Peru and those found in Cape Verde. One limitation of this study is the relatively small number of individuals of each species (4 *parvula*, 2 *leachii*, 22 *dolabrifera*). A collection of more specimens to include in the study will help provide support for the increase in known species diversity, and thus give a more accurate species count of the marine environment.

## **Gabriela Salgado**

### Exploring Ethnic Identity in the 626

The purpose of this study is to examine how the ethnic identities of first and second generation Asians and Latinos are influenced by interactions with one another. Previous scholarship on interactions between Asians and Latinos have focused on either solidarity in politics or housing laws as the basis for these interactions. This research focuses on culture as a common ground for first and second generation Asians and Latinos living in the San Gabriel Valley, an area located fifteen minutes from East Los Angeles and known for having a large Asian and Latino population. Despite the current demographics of the area, it was only fifty years ago that the housing market in the San Gabriel Valley opened to non-white, non-black homebuyers for the first time. Many second and third generation Latinos and Asians took advantage of this opportunity and began to inhabit areas such as Monterey Park, which resulted in white flight, thus further establishing Latino and Asian neighborhoods. In order to understand how ethnic identities are formed amongst these two groups, a theoretical framework on ethnic identity will be used as a base for this

study. Literature reviews of existing scholarship along with interviews with alumni of high schools within the San Gabriel Valley will be utilized to gain better understanding of the influence of daily interactions on ethnic identity.

## **Michael San Angelo**

### Quantifying Binding Constant Values for a Group of Anticancer Copper-Based Ligands

The family of anticancer complexes that include the transition metal copper known as Casiopei 'nas® show promising results as anticancer drugs. The interaction of these compounds with DNA has been observed experimentally and several hypotheses regarding the mechanism of action have been developed. These include the generation of reactive oxygen species and/or base pair intercalation. To advance in the understanding on how these ligands interact with DNA, we present the binding constant of 6 Casiopei 'nas® with three unique sequences of DNA using UV-vis spectroscopy. The DNA sequences include two 10-mer sequences and an 18-mer sequence. The binding constant values for CasIIIa, CasIVgly, CasIIgly, CasVIgly, CasIIIEa, and CasIIILa to UV1 DNA ( $5.00 \times 10^5 \text{ s}^{-1}$ ,  $4.00 \times 10^5 \text{ s}^{-1}$ ,  $4.67 \times 10^5 \text{ s}^{-1}$ ,  $6.00 \times 10^5 \text{ s}^{-1}$ ,  $3.00 \times 10^5 \text{ s}^{-1}$ ,  $2.67 \times 10^5 \text{ s}^{-1}$ , respectively) were similar based on their backbone structure and specific aromatic aspects. Although the compounds had similar binding constant values based on their structure there was a lack of correlation between the binding constant values and IC50 values, suggesting that the mode of cell death is not solely base pair intercalation. An interesting result was found when ligands had varying binding constant values for the three unique DNA sequences.

## **Kristina Sanchez**

### Effects of Stressors on Subsequent Generations of *C. Elegans* Immunity

Genetic and developmental mechanisms in *Caenorhabditis elegans* (*C. elegans*) can provide a basic understanding of the equivalent mechanisms in humans. Studies have shown that an organism's genetic information can be negatively or positively affected by environmental factors, such as stress, which can carry over into the following generation. This means that a change in the expression of genes can be affected by the circumstances of the previous generation, and may or may not be advantageous for ensuing generations. For example, one study found that when *C. elegans* are exposed to a nutritional stress, their subsequent generations are more obese, and that this was due to inherited small regulatory RNAs that served to accommodate for the starvation. In addition, other studies have shown that *C. elegans* are more susceptible to infection by *Salmonella typhimurium* when their predecessors have experienced a nutritional stress, as they exhibit increased programmed cell death of the germ line, that normally aids in their immunity against this pathogen. Therefore, in this study we investigated the impact of three different stress conditions (nutritional, thermal, and oxidative stress) on the immune response of progeny from stress challenged *C. elegans* worms. Briefly, the F1 and F2 progeny of *C. elegans* worms exposed to these different types of stress will be challenged with *S. typhimurium* and assessed for their ability to respond to the pathogen and survive. We hypothesize that subsequent generations of *C. elegans* that have undergone and survived a specific stress will inherit small RNAs that will impart stronger immune responses and health span when challenged with the same stress their predecessors experienced. Consequently, it is expected that the stresses posed on the parental generations will be advantageous for the F1 and F2 generations with respect to immunity against *S. typhimurium*. Preliminary trials show a trend in increased response to *S. typhimurium*.

**Ruben Solorza and Lauren Swanson**

Faculty Mentor: Lauren Swanson

## Implications and Benefits of Argumentative Style Exam Questions in a College Science Course

Argumentation in the field of science can be a powerful assessment for instructors to critique students' comprehension of key concepts. However, there is much debate as to why there is diversity in the range of ability for students to construct strong arguments. This study analyzes the structure of responses from students in a science course to understand where specifically students struggle or succeed in building an argument. By analyzing these concepts, future implications can be made when constructing science courses and exam questions. Undergraduate students (n=13) enrolled in a 13-week environmental science course focused on soil science in Spring 2016. This course required a co-enrollment with a sociology course focused on the food and food systems. Participant majors represented varied with five pursuing a science-related major (e.g., Chemistry). Surveys and course exams were collected and analyzed. Exam essay questions prompted students to make and justify claims, take a position, and occasionally produce counter arguments. Students correctly took a position when asked to, but major differences occurred when asked to justify their claims. In cases where students struggled to use correct terminology or fully grasp the question being asked, students ignored certain parts of the prompts. Participants from a science background did not always out perform their non-science major classmates. Science major participants greatly varied when compared to each other. Although the science majors tended to have a stronger terminology comprehension, some failed to accurately justify claims with evidence. The main issue for a large majority of participants overall was constructing counter arguments. These findings suggest that argumentation is a skill that must be developed and practiced continuously in classroom lectures and assignments that use real life scenarios. Implications from this study extend to both assessment design and teacher practice.

## **Dylan Stolte**

### Perspective in Holy Motors

In the film Holy Motors (2012), there is an unpredictability and uniqueness that is rare in film regardless of country of origin. The film centers around a man who takes on multiple personalities and roles throughout the film, none of which seem to be connected at first glance. The purpose of this presentation is to show, through the use of perspective in the film and an analysis of the film from different perspectives, that the film does not have one definitive meaning and is in fact meant to be a commentary on both the world of show-business and the world itself as a whole. First, through the use of entertainment, one gains a perspective on the world that can be analyzed by studying mise-en-scène. A second perspective can be gained by the use of opposition in the movie. The prior perspectives contribute to the socio-cultural understanding of this film; since the filmmaker is not trying to sell one point but instead a story reflecting the culture of the world we live in, the use of entertainment and opposition come together to form a stage on which the director's perspective on society is shown. A power-point, as well as images and videos taken from the film, will be used in addition to an essay as a means to support said points.

## **Jasmine Tong**

### The Rise of eSports and its Effect on the Sports Industry

This paper will introduce eSports, or professional video gaming, its rapid rise to popularity, discuss the debate over whether eSports should be

classified as a sport, analyze its presence in the United States and globally, and research causes for the current lack of female participation. Research was conducted through a review of literature, qualitative analysis, and quantitative analysis. Qualitatively, professional eSports athletes and several people who work on the business side of eSports were interviewed to find out the current status of the sport, its future, where they want to see eSports long-term, its revenue potential, and marketability. These interviews were conducted both in-person and over the phone, and consisted of ten pre-set questions that covered these topics. In-person observations were also a part of this project's research, through attendance at the international Dota II eSports tournament in August 2016 to observe the environment and examine areas of growth for the industry. Notes and information were documented, and integrated into the research paper. Quantitatively, a survey of ten questions was conducted through survey monkey for a diverse demographic of people to discover what they know about eSports and whether they consider it a sport. Results from this survey showed that despite its popularity, a significant number of the population had never even heard of eSports, displaying a large segment of the market that has not been reached so far. However, the vast majority of those who did not know what eSports is were older, showing a difference in the preferences of activities by age. The sponsorship and naming right revenue received from large companies also has unlimited potential. This presentation will discuss the topics of whether eSports can be categorized as and considered a sport, the high level of collegiate participation in eSports compared to the level of competition in South Korea, the low amount of female participation in eSports, and why the gender disparity is so high. Viewers of this presentation will obtain a knowledge about eSports and its potential as a large business, a thorough understanding of sports business and how eSports, a new industry, fits in with traditional sports, and will understand traditional sports revenues and demographics. Attendees will also gain knowledge about a quickly rising business and why those who currently work in business or sport management should

look towards eSports to predict future industry trends and revenue sources.

## **Nicoletta Torre**

### Friendship Project

Research on children's friendships indicates there are developmental and gender differences in the types of characteristics children look for in friends and how they resolve conflict with friends. For example, MacEvoy et al. (2016) found that the characteristics that third through fifth grade children seek in a friendship may include companionship, loyalty, and trust, and these characteristics depend on gender and age. In addition, children who resolve conflicts with positive strategies are more likely to be accepted by their peers whereas children who choose negative strategies are more likely to be rejected by their peers (Joshi, 2008). It is argued that conflict resolution strategies progress from least to the most sophisticated strategy throughout the child's life based on developmental changes (Joshi, 2008). Furthermore, previous studies have been able to detect sex differences within children's friendships. When comparing boys to girls, girls tend to engage in more intimate behavior within their small groups of friends, whereas boys tend to gravitate to less intimate behavior in larger groups (Eder & Hallian, 1978). The present study will examine developmental and gender differences in friendship characteristics, interactional styles, and conflict resolution. As a project for PSYC 345 Developmental Methods, three researchers will interview (on April 11) second and fifth grade students from Lydia Jackson Elementary School in small same-grade focus groups (9 to 12 2nd graders and 9 to 12 5th graders). All researchers have successfully completed the NIH Web-based training course "Protecting Human Research Participants" and have received training in conducting interviews with children. The 15-minute focus group (conducted separately for second and fifth graders) will consist of four focus-group questions with follow-up questions as

necessary: 1. “What do you look for in a friend?”; 2. “How do you spend time with your friends?”; 3. “How do you solve problems with your friends?” 4. “If you had a problem, what is the best thing a friend could do for you?” The researchers will digitally audio-record and hand-write children’s responses during the focus group discussion. At the completion of the focus groups, researchers will transcribe the recordings of the focus group discussions to analyze the qualitative data and identify developmental and gender differences in the types of characteristics children look for in a friend, their interactional style with their friends, and how they resolve conflict with their friends.

## **Tucker Vejsicky**

### **Law Enforcement Perceptions of the Black Lives Matter Movement**

Since 2013, the Black Lives Matter movement has brought to light the conflict between African-American communities and law enforcement agencies across the country. While the movement has given the Black community a platform to voice their opinions on this tension, news outlets and social media platforms have dampened the image of the movement by focusing on its dysfunctions. Therefore, many of those who have not participated in the movement might not view it as a productive way to promote social cohesion between law enforcement and Black communities. The country’s perception of the Black Lives Matter movement has been on display in the press and other media in numerous pieces of research, yet the perception of law enforcement employees has received minimal coverage. In this project, I will delve into police employees’ perceptions of the Black Lives Matter movement to get a better understanding of how the BLM movement has positively or negatively shaped the relationship between officers and the Black community. Using survey research and a simple random sample, I collected responses from employees at the Forensics Department of a Southern California police department. I hypothesized that the employees

would view the BLM movement as an impediment to positive community relations between the Black community and law enforcement agencies. It is to be noted that the conclusions only pertain to the findings in this report, and that they do not allow for a complete generalization across all law enforcement. Although the findings only pertain to one police department, they may provide insight into other law enforcement agencies. The results illustrate that employees perceive that BLM has created a disconnect between communities and law enforcement, but that both police officers and the Black Lives Matter movement are not being proactive enough to create unification and understanding.

## **Matthew Voegtle**

### *An Analysis of Mycorrhizal Communities in a SOD Infected Redwood Forest*

Sudden Oak Death (SOD) has killed millions of tanoak trees over the past twenty years. The tanoak is a foundation species in the redwood forest, an ecosystem type valued for its uniqueness and biodiversity. As efforts to prevent the transmission of SOD have been largely unsuccessful, current research efforts are focused on understanding the ecological implications of high tanoak die-off in the redwood forest. A critical component of a healthy forest is the interface between root and soil elements, and microorganisms play a significant role in facilitating nutrient transfer from the soil and plant roots. Both bacteria and fungi assist in nutrient cycling between the soil and plant organisms, and fungi which inhabit plant roots are called mycorrhizal fungi. This class of fungi has been shown to create a sort of network between trees in a forest, but relatively little work has looked into the rhizosphere of the redwood forest. However, the tanoak is the main host for a highly diverse subset of mycorrhizal fungi, called ectomycorrhizal fungi (EMF). The loss of tanoak individuals may therefore have an unexpected impact on forest health from the perspective of root fungal communities. We set out to create a pilot study of the redwood forest's rhizosphere from sites suffering from long term,

moderate length, and short term SOD infection, and three particular types of fungi were studied: EMF, arbuscular mycorrhizal fungi (AMF), and dark septate endophytes (DSE). All sampling was carried out in or near the Los Padres National Forest, in the Big Sur region. For clarity, EMF fungi colonize tanoak roots, while AMF and DSE colonization was studied in redwood roots. The results of this pilot study do show some differences between the long term infection site and the other sites, with a significant reduction in DSE colonization observed in the long term infection site. Additionally, redwood roots from the long term infection site showed a greater probability of containing no fungal structures as compared to the other two sites. These results may reflect a root level response to SOD infection, and could imply a reduction in a redwood tree's ability to uptake soil nutrients.

## **Sasha Weller**

### **The Genetic Modification of *E. coli***

The purpose of this research is to find new mechanisms that affect gene expression under various environmental conditions. The presence of genes *cheA*, *cheB*, *H858* and *uvrC1* in *E. coli* are suspected contributors to its resistance to high concentrations of alcohol and bleach. These genes encode for the flagella, pili, fimbriae and cell wall and are hypothesized to enable it to survive in these harsh conditions. We hypothesize that once expressed, these selected genes will enable *E. coli* to survive harsh conditions of high concentrations of bleach and ethanol. To support our hypothesis, the genes need to be tested for expression under normal conditions, then those expressed need to be isolated to test for resistance in varied concentrations of alcohol and bleach. First, *E. coli* was grown in two separate normal environmental conditions to test for expression of genes; *E. coli* was grown at 37°C in an incubator and 37°C in a shaker to test for motility gene expression. Our results, shown via PCR, consistently indicated the expression of the *cheA* and but not of *cheB*, *H858*, and *uvrC1*

in *E. coli* grown in the incubator. These results demonstrate that this artificial selection could accurately represent what occurs in nature. To confirm differences in expression, mRNA will be isolated and quantified using a nanodrop spectrophotometer. In addition, we will then convert the mRNA to cDNA and quantitate the DNA to confirm upregulation of *cheA* gene.

## **Jessica Willis**

### **The Impact of Family Dynamics on Adolescent Substance Use**

Adolescents, aged 10 through 18, with poor family dynamics are most susceptible to engaging in substance use. This review aims to unveil the connections between parental attachment, family cohesion, and deviant peer association, and adolescent substance use—tobacco, alcohol, and cannabis. Literature suggests that youth without a secure attachment, a relatively stable family cohesion, or some parental control, are more inclined to develop a substance use disorder than those with positive family dynamics. Results indicate that deviant peer influence has a positive correlation during adolescence with youth's age, as well as with youth's likelihood to engage in substance use. However, positive parent-child attachments and relationships are found to be protective factors against this finding. This literature's main critique is that it is not highly culturally diverse, but the findings per each ethnicity are consistent throughout the studies. Overall, to protect against substance abuse, parents should become more involved in their adolescents' lives.

## **Katrina Wong**

### **Balance Exercises to Reduce the Risk of Falls in an Aging Population**

With advancing age, the aging population faces several health issues. Among them, falling remains one of the most prevalent problems. Older adults show a decrease in balance ability, and this is strongly correlated

with an increased risk of falling. As a result, health professionals have turned to evaluate various interventions to help aging adults reduce their risk of falling. Physical activity programs, such as strength training and Tai Chi, are one of the most common interventions to improve balance; however, there has been a debate over which exercise intervention is the most reliable and optimal to improve balance. The purpose of this community service learning project was to look at the effects of an 8-week task specific balance exercise program on static and dynamic balance in a group of eight community-dwelling adults (60-95 years) at the Whittier Senior Center. The balance exercise class consisted of an exercise and discussion component that met three days a week for an hour and a half. During the exercise portion, participants engaged in balance exercises such as single leg standing, tandem walking, sit-to-stands, and walking with their eyes closed. Exercises were adjusted to each participant's ability level by varying the base of support, speed of exercise, positioning of the arms and head, and number of repetitions per exercise. In addition, topics related to falls were discussed once a week. Topics included how to stand up from a fall, how to fall safely, and environmental modifications to reduce the risk of falls. Throughout the program, anecdotal information was recorded. Following the 8-week balance exercise program, all participants noticed significant improvements in their balance and ability to carry out daily community-dwelling living tasks and activities. Detailed results will be discussed at the conference.

## **Cesar Zamora**

Gastropod use of de novo synthesis for secreting antibacterial compounds

Complementary and alternative medicine (CAM) has risen in popularity in recent years due to media, affordability, and anti-vaccination movements, but, most importantly, its rise in popularity is due to bacteria's tendency of becoming resistant to traditional antibiotics. Currently, most infections are targeted through the use of antimicrobial

drugs either by killing the bacteria/pathogen, or making it difficult to grow in that environment. As a result, most antibiotics are outdated, thus, making drugs less effective or not effective at all. If the drugs are ineffective, it is known as antibiotic resistance which, by definition, is bacteria's ability to resist the effect of antibiotics through its change in suitable environments. As a result, antibiotic resistance has become an epidemic due to the fact that illnesses that were once easily treatable with traditional antibiotics have become dangerous infections that are more difficult to eliminate, which then can result in acquiring a permanent host or spread of the infection. Therefore, this study will focus on *Cornu aspersum*, the brown garden snail's antibiotic properties. The *Cornu aspersum* species was selected due to the lack of information and is hoped to contain similar antibacterial properties as the *Archachatina marginata* whose antibacterial properties have been widely experimented. Subsequently, it is hypothesized that *Cornu aspersum* will contain antibacterial properties that can be utilized as alternative medicines such as in ointment. In this experiment, six selected bacteria (*Streptococcus pyogenes*, *Bacillus megaterium*, *Pyogenes aerogenus*, *Staphylococcus saprophyticus*, *Enterobacter coli*, and a protist unknown) will be utilized to test to see on which type of bacteria the snail's sequestering fluid will be most successful and if it will make a difference whether the bacteria are either gram positive, gram negative, or both. Preliminary results have demonstrated zone of inhibition on agar plates; appropriately a quantitative approach is being developed in order to calculate the minimum inhibition concentration with the use of DI water. More runs will be performed in the near future; however, preliminary studies suggest promising results.

## **Samuel Zanetta**

Ethnography of the Altadena Town and Country Club and Private Space

Since their creation, country clubs have been perceived to be places of privilege and wealth, and a majority of private country clubs in the United States are not ethnically diverse, are perceived to promote exclusivity and are more than often owned by white males. Through multiple days of participant-observational research and a number of in-depth interviews, I examine a specific country club known as the Altadena Town and Country Club located in Altadena, California. This study examines whether or not the Altadena Country Club as a social structure promotes exclusivity. This ethnographic study provides; a general history of the creation of the Altadena Country Club, how it functions today, inside views of the club from members, non-members and employees, an understanding of how different people use and interact with this private space, and a historical examination of how the creation of country clubs initiated a trend of “gated” communities. The data I have collected shows how the Altadena Country Club specifically challenges some of the negative stereotypes associated with country clubs and private spaces today. This study also illustrates how these private clubs affect the communities around them. This research is significant because many people perceive private clubs as places that by their existence promote ideologies of exclusivity. My investigation found, however, that the club’s exclusivity is not promoted by the space itself, but mostly by the behavior of members who are under the influence of alcohol, and children who are yet to understand the privilege of their membership.