A Comparative Analysis: Does Climate Change or Terrorism Pose a Greater Threat to the United States' National Security?
Amanda Pardo

This thesis establishes that climate change is indeed a threat to national security. In the eyes of the public and government, however, terrorism seems to be the greatest threat to our national security. This leads me to question: does terrorism or climate change pose a greater threat to national security? By performing a comparative analysis of the threat that climate change poses to national security versus the threat that terrorism poses to national security, I will determine which phenomena truly poses a greater threat. I will do this by analyzing the Department of Homeland Security’s top five Critical Infrastructure and Key Resource sectors and analyze how climate change and terrorism each pose an independent threat to these sectors. To establish which one is a greater threat, I have created a quantitative scale and have measured the following aspects to determine threat: probability, capability and severity, vulnerability of the United States to these two threats, as well as the time period in which these threats could occur. I hypothesize that climate change aggregatedly poses a greater threat to national security than terrorism. I believe this is an important topic because not only do these threats have the potential to impact our future generations, but they have the potential to impact the affect the population’s immediate safety. By establishing which one is a greater threat, we can accordingly alter federal and state policy and begin preparation to ensure the health and safety of the population.

A computational comparison of the proposed reaction mechanism for water oxidation by mononuclear Mn or Fe catalysts.
Dong Woo Chang

One of the most concerning subjects in the 21st century is the need to develop alternative sources of energy to replace current dependence on fossil fuels. Among possible sources of fuel, water is the only truly carbon-free, abundant electron and hydrogen source for clean and sustainable energy. The idea of a water oxidation catalyst to facilitate the production of fuel from water and sunlight is inspired by Photosystem II (PSII) in plant photosynthesis. In PSII, a manganese catalyst (Mn₄Ca) oxidizes water to produce protons and oxygen. Some synthetic water oxidation catalysts exist, but they are based on expensive transition metals including ruthenium (Ru) and iridium (Ir), which cannot be utilized at large scale due to their prohibitive cost and scarcity. We investigate modifying water oxidation catalysts to include manganese (Mn) or iron (Fe) centers in place of Ru or Ir for water oxidation catalysts. In this research, we employ density functional theory (DFT) to calculate the quantum mechanical wavefunction of these proposed Mn and Fe catalysts and investigate their suitability relative to functioning Ru and Ir catalysts. We present thermodynamic and kinetic features of mononuclear Mn and Fe catalysts with different ligand structures and compare to the most effective Ru and Ir catalysts’ behavior. In comparison to working ruthenium catalysts, whose redox potentials (E₁/₂) range from 1.67-2.07 with ΔG values for the critical O-O bond forming step of 6-14 kcal/mol, our proposed manganese catalysts potentials are calculated to range from 0.63-2.31 with ΔG values of 9.7-19 kcal/mol with iron showing similar behavior. Accordingly, Mn and Fe show promise as mononuclear water oxidation catalysts, although additional optimization of their details chemical properties remains. These results will permit us to isolate problematic steps in the water oxidation mechanism for light metal catalysts and suggest chemical modifications to improve these critical steps.
A Factory Education
Andrew Earle, Chris Schulz

“If you want to change the world, change the metaphor. “Joseph Campbell
George Lakoff, PhD, world-renowned Berkeley linguist and author of the book “Metaphors We Live By”, describes metaphors as such a profound part of how we understand the world that they literally shape our perception of reality. In this seventeen-minute documentary, he teams up with Hermine Marshall, PhD, and an expert on early childhood education, to explain why the entire paradigm we have used to think about education in this country for the last 100 years may need a complete overhaul. Along the way we meet Deborah Frank, a passionate high school literature teacher, and a few of her students who are taking their education into their own hands and pushing for changes in the teaching at their school. We suggest that real change is going to come from the bottom; it starts by getting people talking about these ideas and questioning the status quo. So watch the film and pass it on. “A Factory Education” was made as a class project for Vandana Thadani’s Educational Psychology class last semester.

A life stage study of Hyla cinerea exposed to atrazine: Quantifying body burdens and metabolites
Amanda Ballard

In the US, pesticide exposures pose a risk to amphibians via dermal uptake. Agricultural developments have overlapped with amphibian territories, causing exposure risks. This may be a contributing factor in the widespread global decline of amphibian populations. This study was designed to measure pesticide body burdens after two life stage exposures to determine how multiple exposures affect the ability of frogs to take up and metabolize pesticides. During summer 2013, the exposure of atrazine on green tree frogs was tested. Atrazine is one of the leading pesticide active ingredients in the US. Green tree frogs were reared from embryos through two weeks post-metamorphosis. At Gosner stage 28, a subset of tadpoles was exposed to 20 ppb atrazine, an environmentally relevant value. At two weeks post metamorphosis, all frogs were exposed to atrazine, in an aquatic or terrestrial environment. Atrazine and its metabolites, deethyl-atrazine (DEA) and deisopropyl-atrazine (DIA), were extracted and concentrations were quantified using Liquid Chromatography-Mass Spectroscopy. All exposed individuals showed measurable atrazine, DEA and DIA body burdens. In the aquatic exposure, there was a significant difference in the body burden variability between pre-exposed and first exposure frogs (p=0.05). This suggests that multiple exposures may have a physiological effect on the uptake and metabolism of atrazine. In the terrestrial exposure, the atrazine body burden was significantly greater in the pre-exposed frogs (p=0.04). This suggests that prior exposure to atrazine may increase atrazine uptake at later life stages. Future research should delve into the physiological pathways associated with the metabolic pathway.

A Preliminary Study on National Identity and Foreign Policy Attitudes among Armenian Students
Talin Bagdassarian

This study, "A Preliminary Study on National Identity and Foreign Policy Attitudes among Armenian Students," was conducted by Talin Bagdassarian under the mentorship of Dr. Feryal Cherif. Few studies examine the influence of patriotism, nationalism and ethnocentrism on the process of foreign policy formation. However, attitudinal studies suggest that these concepts inform public opinion about foreign policy. Therefore, the study of national identities and their correlation to foreign policy attitudes is fundamental in understanding how individuals come to form their opinions regarding foreign policy. Although there is an extensive literature on
patriotism and nationalism, there are only a handful of studies that examine the relationship between these concepts and foreign policy attitudes. Using original survey data, I examine how levels of patriotism, nationalism and ethnocentrism amongst Armenian students influence foreign policy attitudes. First, I examine the determinants of patriotism, nationalism and ethnocentrism amongst Armenian students and subsequently analyze their relationship to foreign policy attitudes. To facilitate these analyses, I am surveying students at Yerevan State University and the American University of Armenia, the leading public and private universities in Armenia respectively. I am currently in the process of conducting my survey and plan to have a preliminary set of results by mid-March.

A Quantum Chemical Investigation of Iron-based Water Oxidation Catalysts
Kevin Joerger

Dependence on unsustainable, environmentally problematic fossil fuels presents a critical issue for our world as we move through the 21st century. Among possible sources of clean and sustainable energy, water oxidation catalysts are a technology of great interest. These catalysts ideally will use only water and sunlight to produce a renewable, transportable, storable fuel source. Many effective water oxidation catalysts are based on expensive, scarce transition metals such as ruthenium, and thus cannot be implemented on a large scale. However, recent studies have shown that iron coordination complexes may be able to serve as efficient water oxidation catalysts. Here, we use quantum chemistry calculations based on density functional theory to investigate several iron-based water oxidation catalysts. Density functional theory calculations were utilized with the B3LYP functional and the LanL2DZ basis set. The effect of water solvation was adjusted for with the IEFPCM solvation model. The detailed nature of the bonds formed between the catalyst and water is investigated through bond length and electron density calculations. Competing reaction cycles are explored to determine which provides a better picture of the true cycle as well as to understand the effect of chemical modifications of the catalysts to their overall performance. It is found that optimally designed iron-based catalysts may show oxidative properties comparable to ruthenium catalysts. Complemented with experimental studies, these results will help guide the development and implementation of water oxidation technology and reduce reliance on energy produced through fossil fuel combustion.

A Steep Learning Curve: Los Angeles Unified School District and the iPad
Andrea Smith

This research seeks to examine the role that technology plays in the reform of the American education system, with an examination of best practices of implementing technology in the classroom in LAUSD. Currently, LAUSD is implementing a 1:1 technology plan, giving iPads to both students and teachers in every school. While this project is investigating the effect that technology has on the present and future of American educational reform, LAUSD’s tech initiatives will be used specifically as a case study. Thus, this research asks: how can a large, demographically heterogeneous school district like LAUSD best implement 1:1 educational technology in the classroom in a feasible, scalable, and sustainable manner? Therefore, this research will employ a survey to help understand the growing educational technology landscape in Los Angeles’ public schools. Addressing topics of the state of educational technology, Common Core Standards, the future of technology in the classroom, amongst others, this survey will be used to measure the status of educational technology in the greater Los Angeles County of Schools. The sample of this survey will be every Los Angeles County School District’s Chief Technology, Chief Information Officer, or technology thought leader, to gauge the status of educational technology in the classroom in schools both in and outside of LAUSD. From this, a
theoretical projection of a feasible, scalable, sustainable LAUSD will be proposed. Recommendations for alternatives and improvements to be implemented to ensure the feasibility, scalability, and sustainability of this program and others in the future will also be provided.

A Theory of Property: Using Locke to Answer, Can Whales Be Owned?
Andrea Fisher

Research suggests that U.S. Navy sonar use is coincident with changes in behavior, internal injuries, and mass strandings of whales that enter into U.S. territory. Andrea Fisher adopts a theoretical approach to address the questions: can transnational whales be owned, and if so, how has this been accomplished? A close interpretation of John Locke’s, Second Treatise of Government, accompanied by theoretical and historical analysis of the related concepts, property, sovereignty, territory, and the commons, provide a fundamental understanding of how property has been viewed. With this foundation, the whale and sonar case study helps uncover what Locke has failed to address in his theory of property: the need to identify ownership of indirect property and the need to consider whether individuals within an owned space consequently become owned. A whale’s movement in and out of U.S. territory exemplifies that ownership of a space does not automatically signify ownership of an individual in that space. This research ultimately reveals a new theory of ownership, where defining individuals as either definite property or incapable of being property is key to appropriation without waste. Application of this new theory to the whale case study implies that we should either “privatize” whales, which ideally would signal the owner’s responsibilities and obligations to protect them, or on the contrary, consider a whale property to no one but itself. If we adopt these approaches we then will have potential to end the mass killing of whales.

Abstract Human
Jennifer Sotelo

Gestures found in dance and the human form can be used as a medium to explore dehumanization in oppression. As people are imprisoned or deported, ultimately their rights are stripped. The United States is one of the worst culprits with the highest incarceration rate in the world.* Imprisoning a person literally restricts physical mobility leading to loss of bodily control. This imposed state also chips away at their inherent human dignity. In my work with deported immigrants and incarcerated individuals, I realized that detention impedes on communicative and expressive freedom, as well as the ability to have relationships, leaving individuals with nothing but physical bodies. Immigration and incarceration issues are often treated as political problems rather than a human crisis when the faces of those who are suffering are forgotten. I have used the metaphor of dehumanization to design a performance art installation, depicting people stripped of identity through the images of disassembled bodies: faceless and de-personalized. Investigated themes in my work include symmetry, representing a loss of human connection; dehumanization, represented literally through the design; light and projection, representing a sense of containment; and movement, showing physical restrictions on the struggle of the human journey. My interdisciplinary approach combines dance and design to present a visually engaging work that is also informative. It incorporates human forms and typographic elements to depict the experiences of victims of oppression from the standpoint that examines the issues happening before us. *Population Reference Bureau

Achilles' Sorrows: Wartime Trauma from Ancient Greece to the Twentieth Century
Ian Balisy
Determining the place of wartime trauma in history is a complex task. If we consider the material in textbooks, we would unavoidably come to the conclusion that war, violent loss of life, is an integral part of history; where, then, do the studies of war violence and wartime trauma lie in regards to historical scholarship? Certainly, wartime trauma and posttraumatic stress have formally been subjects of psychological and neurological study for a brief time now. But in most historical scholarship, war and wartime trauma are relatively disconnected; or, the trauma aspect is not dealt with at all. This should, I think, be a rather surprising phenomenon for a number of reasons. Not the least important of these reasons is the necessarily direct relationship between war violence and wartime trauma. Another reason, and the subject of this study, is the prevalence of both in historical primary sources, literature, art and drama. In order to effectively address the topic within the limits this project, I will use three historical periods as case studies: Ancient Greece, Shakespearian England and twentieth century Europe and America. Early historians such as Thucydides and Xenophon from Ancient Greece frequently provide striking accounts of the horrors of war and offer a compellingly perceptive understanding of posttraumatic stress. Contemporary dramatic works from the tragedian Euripides afford insights no less, and often more, compelling; and, as some modern scholars have done already, the titans of Ancient Greek literature, the Odyssey and Iliad, contain a wealth of insight on the subject. Moving forward, the plays of Shakespeare provide characters and contexts that serve as excellent examples of the importance of wartime trauma and posttraumatic stress. In the literature and art that speaks to the horrors and aftermath of the wars of the twentieth century, writers such as T. S. Eliot, Wilfred Owen and Tim O’Brien offer equally compelling depictions of war violence and trauma. Such sources shed considerable light on the place of wartime violence and trauma within history.

**African Americans in Los Angeles**

Nadia Kelifa, Toni Richardson

This project explores the black community in Los Angeles between 1910 and 1920 by carefully examining the work people did, the neighborhoods they lived in, and the structures of their households. This research is particularly interested in the second wave of African Americans who migrated to the city after the local black community was well established. Borrowing from social scientific methodologies (data collection and analysis), we collected information from the US Census Index for 1920 Los Angeles, and extrapolated information about the African American population. We considered neighborhoods, occupation, household structure, and education as well as places of origins. This allowed us to identify the largest African American community in the state of California in 1920. We also collected the same data on every ethnic population in Los Angeles (we also took a sample size of the white community, since they made up approximately 95% of the population). We relied on a sample size of 20%, as the total black population at the time was around 20,000. This sample, gave us a good idea of the black experience at the time, but we would like to get a larger percentage, with the goal of collecting information on the entire black population. Broadening our study this way will allow us to test our sample size against the smaller sample to see if the earlier conclusions prove correct, and thus, allow for a deeper understanding of the community. Since this kind of study has not yet been done by other historians, we will rely on historiographic research, as well as other population studies to compliment and lend meaning to our primary research. This work will lend to our understanding of the African American’s experience in Los Angeles.

**Afrocentric Hair in the Work Place**

Autum Nailes

Research shows that individual African Americans are judged differently based on variation in phenotypic traits such as skin tone (Blair et al, 2004). Though anecdotal evidence suggests that
variations in hairstyle may also be associated with differential judgments, research has yet to examine this possibility. Via two studies, the current research fills this gap. In Study One, participants (N = 198) made judgments on thirteen different hairstyles of Black women in order to determine which hairstyles are perceived, on average, as more versus less Afrocentric. Results showed that the Afro was the most Afrocentric hairstyle (M = 6.43, SD = 1.19) and that the straight hairstyle was the most Eurocentric (M = 5.30, SD = 1.47). Study Two utilizes these results examining how perceptions of Black female job applicants with more or less Afrocentric hairstyles are perceived in the job market. Participants will view a resume and photograph for a Black woman applying for a customer service manager position. The woman presented will wear either an Afro or a straightened hairstyle. Participants will rate the candidate based on competence and warmth (Cuddy, Fiske, & Glick, 2004). Because Afrocentric hairstyles are more reflective of a stereotypical African or African American, it is hypothesized that Black women who wear their hair in an Afro will be viewed more negatively than Black women with straight hair. Findings are relevant for better understanding workplace discrimination.

Algorithmic Construction of Permutations of High Dispersion
Juan Carrillo, Carlos Cruz

Given a collection of objects, a permutation is a function that re-orders the objects into a potentially new arrangement. An example of a permutation of the first five positive integers is (3,5,1,2,4). Here the number of objects being permutated is called the block length of the permutation. We investigate the notion of dispersion, which measures the extent to which objects are “scattered” or “dispersed” under the action of a permutation. Dispersion is a numerical value between 0 and 1, where larger values indicate a low level of redundancy in linear patterns found present in a graph of the permutation. The purpose of our two-fold investigation is (i) to shed light on the behavior of dispersion as block length increases and (ii) to construct permutations with dispersion as large as possible. For small block lengths (of at most 12), we compute the average value of dispersion via computer for all permutations of a given block length. The calculation is intractable for large block lengths, and so we produce estimates using sampling techniques. Empirically, dispersion appears to follow a distribution with mean 0.81 and extraordinarily small standard deviation. This small standard deviation poses an obstacle to finding permutations with large dispersion via pseudo-random sampling, and so we developed and analyzed heuristic algorithms to overcome this challenge. With our algorithms we were able to construct permutations whose values of dispersion are substantially larger than those of randomly selected permutations. The algorithms were progressively more effective at producing permutations with large dispersion for a fixed block length. However, the increasing complexity of each algorithm also made each one more time consuming. Permutations play a role in applications such as coding theory, experimental design, and radar equipment, and so our research has the potential to impact our understanding of some fundamental questions in these areas.

Analysis of Crow Behavioral Responses to Emetic Eggs as a Potential Method For Reducing Predation on Least Tern Eggs at Venice Beach, CA
Abigail Faber, Lena Hunt

The California least tern (Sterna antillarum browni) is a federally endangered migratory shorebird that breeds in the bays of the Pacific Ocean. Least terns are ground nesting birds that settle near the water, making their eggs particularly vulnerable anthropogenic destruction. In light of this, a few fenced-off breeding areas have been set aside to allow the least terns to mate and hatch their eggs on the beach—including one on Venice Beach. Unfortunately, the fenced-
off area attracts scavenging crows (Corvus brachyrhynchos) that prey upon the eggs. In an effort to reduce predation, our research team deployed quail and least tern eggs containing a chemical emetic. The behavioral response of crows to the experimental eggs was then monitored over the summer of 2013. This study reports on the development, testing, and analysis of crow response to emetic eggs recorded on motion-activated video/audio cameras before and during the tern nesting period.

**Ancient and Contemporary Cosmol**

Gabriela Sanchez

One of the most basic understandings we have of being is that nothing comes from nothing. This principle “ex nihilo nihil fit” first arose out of the theories of Parmenides and set the precedent of our understanding of matter and being for the following thousand years. In this study I explored supporting and contrasting theories in the laws of physics: examining motion, energy and the origin of the cosmos as we understand it today in order to gain a better understanding of the truth of this principle. Ultimately, though Parmenides was incorrect in denying the existence of change, his logic is sound and it raises with it the question of our purpose. There is a line that exists along the divide of philosophy and science where these two fields meet. And as we attempt to formulate theorems for the purpose of our existence, we find the conversation between the two focuses of study often fall short. The aim of this project is to raise awareness of the similarities and differences between the thinkers of ancient Greece and the contemporaries as they have collectively shaped our understanding of the universe today.

**Angels on the Battlefield - The Nursing Profession and the Influenza Pandemic of 1918**

Theresa La

Each year, the CDC estimates that the influenza virus, commonly called the flu, kills approximately 36,000 Americans each year. Despite claiming so many lives, many Americans hold the belief that the flu does nothing more than cause fevers, body aches, and other uncomfortably symptoms for about a week or so. As healthy, strong adults, there is no need to fear the flu - that is only a fear that concerns the elderly and the extremely young. Some years however, the influenza virus will mutate itself into a more deadly strain and burst the bubble of security by striking down the stronger and supposedly least vulnerable of the population – young adults between the ages of 18 – 45. For example, this year the CDC reports a sharp increase in the number of young adults who have become victims of the flu all across the country. Hospitals across the country are also reporting a significant increase in the number of patients who have come in due to the flu or flu-related complication. Based on these higher numbers all across the country, the CDC has categorized this year’s flu outbreak as a pandemic. This is not the first that there has been Influenza pandemic in America. History will show that the Pandemic of 1918 was the deadliest influenza outbreak America has experienced. Actively participating in World War I by 1918, America was a country in full battle mode. Everyone contributed to the war effort, including the medical community. Thus, many hospitals had a limited staff, because physicians and trained nurses had been sent overseas as a part of the war effort. When the influenza virus came and a pandemic broke out, the medical infrastructure was incapable of handling the situation. The remaining physicians were very much in demand and could only afford each patient a cursory visit before moving onto the next deathly ill patient. The tasks of caring for, treating and supporting the patients, fell upon the nurses. Answering the call, the nursing profession served on the front lines of the battle against the influenza of 1918, both on military bases and in civilian homes. As this paper will show, the influenza pandemic of 1918 would forever change the role of nurses and enabled it to become a better-established profession. This paper utilizes primary sources from the Influenza Collection at UCLA Biomed, previously on
loan to Hannon Library, which provides first-hand accounts from nurses during this time period. Analyzing data from the US Government, including the military, and the diaries of nurses, allow for the exploration of how the nursing profession changed as a result of the Influenza Pandemic of 1918. It compares the nursing profession before and after the Great War, and studies the roles of both civilian and military nurses. Overall, this paper aims to explore not only how the nursing profession changed as a result of the Influenza Pandemic of 1918, but also how World War I changed as a result of the role of nurses.

Anglican Eucharistic Theology: The Present with an Eye on the Past
Christian Rodriguez

The Anglican Church, the product of the English Reformation in the 16th century, is a culturally rich church that maintains the celebration of the Eucharist as a central part of its liturgical life. Yet it is important to understand that there was much turmoil and strife to make the Anglican Church what it is today, especially concerning Eucharistic theology. As history shows, there were many different leaders of England and its Church that added to the debate on the real presence of Jesus Christ in the elements of the communion. Their theological disagreements would seed division in not only the church but state. For that reason, Queen Elizabeth I sought to end that division with her Settlement of Religion. Her actions did their best to reconcile the differing factions arguing over the nature of the Eucharist. The result was a settled Eucharistic theology which remains largely unchanged to this day. To truly understand modern Anglican Eucharistic Theology and practices, it is important to look at its history and examine the debate by using both primary and secondary sources to find what led the Reformers the Elizabethan Settlement. The intent of this paper is to consolidate various opinions from important English leaders on Anglican Eucharistic Theology into a single composition.

Application of Satellite Data to Model Water Inundation Levels at Edwards Air Force Base’s Rosamond Dry Lake
Simone Evett

Rosamond Dry Lake, located near Lancaster, California in the Antelope Valley region of the Mojave Desert, spans an area of approximately 22 square miles. Edwards Air Force Base uses the lakebed as an emergency landing, testing, and research site. While heavy storm events from the 1,200 square mile watershed replenish lakebed sediments, restore the runways, and sustain bird habitats, extended periods of high water inundation levels pose logistical problems for EAFB. This study applies a multi-model approach to predict inundation (associated with storms) and recession (associated with climatic and soil conditions) of lake water levels, and the impacts of urbanization in the watershed on these levels. Stormflows from the watershed are generated using a rainfall-runoff model created in GIS and HEC-GeoHMS that utilizes high-resolution satellite-based topography, land cover, and soil characteristics data. The stormflows along with precipitation observations and evaporation and infiltration estimates are used as fluxes for the lake water balance model – developed as part of this study based on hydrologic concepts and high-resolution satellite topographic data – to predict the daily evolution of lake water volume and area over a desired season. The model-predicted areas are compared to estimates computed using snapshots of LANDSAT satellite imagery. Initial tests of the model system predict higher levels of inundation than observed. Future work includes further model calibration and the development of a generalized model in Matlab that accepts multiple storm events over a series of years, allowing for better understanding of seasonal relationships and the impacts of increased urbanization on stormflow.
Argentine Ant (Linepithema humile Mayr) sugar-bait preferences in a coastal sage scrub community invaded by Castor bean (Ricinus communis L.)
Sam Martin, Jessica SanLuis, Brittany Saulsbury

In Southern California, Castor bean plants secrete excess sugars from specialized extra floral nectar (EFN) glands that attract visitation by Argentine ants, which in return patrol leaves and defend against herbivores. The objective of this study was to evaluate Argentine ant preference for sugar baits composed of different ratios of the three main sugars found in Castor bean EFNs (glucose, sucrose, and fructose). We found that Argentine ant sugar-ratio preference in terms of rate of arrival and maximum ants observed reflected the proportion of sugars made by the Castor bean. We also found that preference did not change between coastal sage scrub areas with differing levels of colonization of Castor bean. Since the Castor bean and the Argentine ant have no evolutionary or ecological history with one another, as both are non-natives in Southern California, it is likely that ground foraging ants prefer similar sugar-ratios.

Assessing Multiple-Paternity in Broods of the Trapdoor Spider Bothriocyrtum californicum
Therese Blanch, Marisol Castellanos, Gabriela Lopez, Massy Taimoori, Cecilia Rangel-Garcia, Maria Shibatsuji

In a recent genetic study, we found no evidence for inbreeding in B. californicum populations, despite the potential for adult males to mate with siblings and other relatives in their natal area. Since multiple mating by females is one way to avoid the costs of inbreeding, we are looking for evidence of multiple paternity in B. californicum broods. In 2012-2013, we gathered five B. californicum broods and their mothers from Kenneth Hahn State Recreation (SRA). Brood size was 67-167. In summer 2013, we genotyped each set of mothers and 50 spiderlings per brood for variation at the phosphoglucomutase (PGM) locus. One mother and her brood were all of the same genotype (AA), making them unusable for paternity assessment. Of the four other sets of mothers and broods, three showed a significant deviation from a Mendelian genotype ratio, given the adult female involved and her presumed male partner under a hypothesis of single mating. This is evidence that field-collected B. californicum females frequently mate with multiple male partners. During the balance of 2013, we will continue to search for additional sets of mothers and broods from Kenneth Hahn SRA, so as to expand our sample size for genetic analysis.

Assessing the Needs of Homeless Persons in Downtown Los Angeles: A Comparison Between Men and Women
Kayviann Hellers

In recent years, the number of homeless single women has increased dramatically. Up until recently, the large majority of homeless were men, with single men being overrepresented. This project will assess the needs of homeless women in Downtown Los Angeles and examine the differences between the needs of homeless men. It is hypothesized that the needs of homeless women will be significantly different from the needs of homeless men. Furthermore, it is estimated that homeless single women use the LAC+USC Medical Center more frequently than their male counterparts. Participants included homeless single men (n=45) and homeless single women (n=21) who were surveyed in areas surrounding the Medical Center. Women reported higher problems with Functional Disability or Basic Resources. Women also reported higher problems with Emotional Loneliness. These findings suggest that the two groups are unique and may benefit from tailored prevention and treatment approaches. As women become a large percentage of the homeless population, a better understanding of their needs is required in order to formulate solutions.
Assistive Technologies: Writing Guide  
Timothy Barrow, Mathew Fumo, Matt Goodman

A writing guide was developed to assist students’ writing skills at WISH Charter Elementary School who struggle with staying inside the lines while writing. Research was done in order to discover solutions teachers around the world use to correct this problem. Extensive design work involving drawings and Computer Aided Design models in SolidWorks were created to find a solution that will not only greatly benefit the students but will be cheap, safe, and easy to use. The result is a writing guide that features an angled clipboard-style surface with thin, adjustable templates secured across the paper to help the students write correctly-sized letters in a straight line and gain muscle memory more quickly. The writing guide is currently being manufactured and will soon be tested and further improved after receiving feedback from users and teachers.

Atomic Force Microscopy as a Means of Visualizing the Effects of Spices on the Aggregation of IAPP  
Paola Cota, Christina Cunha

Islet amyloid polypeptide (IAPP) is 37-amino acids in length and is secreted from the pancreas in conjunction with insulin. Similar to other amyloid proteins, IAPP has the ability to misfold and aggregate forming large plaques in the pancreas. The presence of these plaques is closely associated with Type II diabetes. IAPP aggregates have been found in the pancreas of over 90% of individuals afflicted with Type II diabetes. We are investigating the potential of various spice extracts to inhibit the aggregation of IAPP. Spices were first tested for inhibiting characteristics using a Thioflavin T assay. Results were visually confirmed using Atomic Force Microscopy (AFM). The effects of the spices on inhibiting IAPP aggregation were compared to a control sample that contained significant aggregation of IAPP fibrils. Of the spices tested sage, cayenne, cumin, parsley, peppermint, and sage with pomegranate demonstrated the most significant inhibition of IAPP aggregation.

Attachment Theory, Self-Esteem, and Allied Behavior  
Kristen Trudo

There is a wide gap in the research investigating straight allies. As Fingerhut (2011) explains in his research, allies are straight or heterosexual individuals who fight for the civil rights of LGBT persons. There are a wide range of ways that individuals may serve as a straight ally, from donating money to LGBT related causes to publicly advocating at a PRIDE parade, for instance. While previous research has looked at factors such as personal experience in investigating straight allies, research has yet to truly dive into personality factors that might play a role in an individual’s drive to be an ally to the LGBTQ community. One major factor that this study will investigate is self-esteem. One study by Jordan, Spencer, and Zanna (2005) indicated that individuals with high explicit self-esteem and low implicit self-esteem demonstrated more prejudice behaviors against Native American individuals. This study will aim to investigate whether or not these factors are pertinent to prejudice behaviors against the LGBT community. Further, another study by Robins, Tracy, and Trzesniewski (2001) found that self-esteem and emotional stability (i.e. Big Five Inventory) were positively correlated. My study will investigate this personality factor in order to further strengthen the self-esteem measures. Ultimately, this research will ask the following question: Is self-esteem related to an individual’s straight allied
behaviors? For my presentation, I will be discussing research procedures, as well as preliminary results of my survey study.

**Attitudes Toward Gay Men and Women Among Undergraduate College Students**

Thomas Costello

Factors causing negative and positive attitudes toward gay men and women were examined with a survey administered to 600 LMU and Pepperdine undergraduates. Embedded in the survey is a two-method approach. The first method of the survey measures attitudes toward gays and lesbians using the Modern Homonegativity Scale developed by Morrison & Morrison (2002). The second is an experiment drawn from the children’s book King and King, which sparked, renewed controversy in the debate surrounding California’s passage of Proposition 8 due to its portrayal of a gay marriage. One version contains a summary of the story and the picture of the kiss included at the end of the book. The second modifies the story and picture to depict a heterosexual couple. Respondents were then asked to answer a series of questions regarding the story on a 5-point Likert scale to measure their reactions. Regression analysis will be performed to determine which independent variables have the most significant effect. Preliminary results suggest that religiosity, the type of activities a student is involved in, and the views of a student’s parents will act as significant predictors. It is further hypothesized that even students with relatively positive attitudes will have more negative reactions to the story with the two princes than the more traditional story with one prince and one princess. Ultimately, this thesis challenges the view that homophobia is not a problem at the college level and sheds new light on the unique factors that cause homophobia among a younger generation.

**Autonomous Rover**

Andrew Bordenave, Chelsea Camacho, Benjamin Joseph

The concept of an autonomous car has existed in futuristic movies for years now. Recently, some car manufacturers have made cars that are capable of parallel parking without having the driver do anything besides say a command or touch a button. Google has held competitions for autonomous cars to navigate an obstacle course. These cars have numerous cameras and motion detectors to avoid collisions, respond to traffic accordingly, and follow traffic laws. The company has even made an autonomous car that drove a blind man successfully through town to get food and then returned back to his house. The Electrical Engineering Department thought it would be interesting to have two competing teams to create a small-scale autonomous vehicle that could perform similarly to the cars that are seen in the Google competitions. The department asked for an autonomous rover that is capable of navigating the PER 142 Electrical Engineering Lab. The rover will have to navigate to three different checkpoints and then cross a finish line. At each checkpoint, the rover will have to scan and record a specific barcode. While the rover traverses the lab, there will be obstacles placed throughout the room. The rover will have to navigate around these obstacles and avoid any collisions. Since this is being treated a competition, the team’s rover that completes the course in the fastest time and has no collisions will be the winner. The proposed solution consists of using an accelerometer to track the current location of the rover. Passive Infrared Sensors will be used to alert the rover if an object is close and will collide with it. A Ping))) Ultrasonic Distance Sensor will be used to measure the distance between the rover and the approaching checkpoints, as well as look for clear paths to traverse. A barcode scanner will be constructed to read the custom barcodes created. All of these functions will be controlled and directed by an Arduino UNO board. The board will communicate to each of the connected devices and analyzes the situation and react accordingly to each possible situation.
Autonomous Rover Team #2
Joshua M. Arakaki, Kevin Refermat, Phillip Thomas

To efficiently dissect and manage the complexity of the problem of creating a self-directed autonomous rover has broken down the overall system into six main modules: Avoidance System, Motor Actuation System, Navigation System, Positioning System, Barcode Reading System, and a Celebratory Routine System. Each subsystem are grouped into pairs and are assigned to each team member based on the team member’s interests and technical skills. The current progress of each subsystem continues to move forward in parallel due to this methodology. The rover body kit that was chosen for this project had to be a platform that allowed both teams to fairly operate on and have access to in order to maintain a fair competitive standing. The platform that was chosen was the Rover 5 Robot Platform which includes 4 independent motors, a gear box that can be adjusted for additional hardware components, and thick tank treads that help prevent slippage and promote better traction to the floor. With these parts we are able to add on sensors and other additional external parts to allow the rover to execute its primary objectives. In addition to the additional external parts this rover team choose not to purchase the motor actuation board that comes with the Rover 5 Robot Platform kit but instead opted to design its own on a Freescale HC12 development board. In conclusion the rover will be able to execute each module independently from one another so that the rover kit can still function properly even if one of the modules fails in real time during demonstration.

Autonomous Search and Rescue Quadcopter
Matt Hansen, Kyle Hargeaves, Quin Thames, Miguel Vazquez

Current search and rescue operations involve personnel putting themselves in harm’s way, as well as diverting these same personnel from accomplishing other tasks. This project delves into the possibility of using autonomous drones as a search and rescue team in order to keep people away from possible injury and allow effective use of all available resources. The project aims to use image recognition to find a designated target, a GPS system to transmit the location of the target, and a communication system between two devices. Combining these subsystems together to make one functioning search and rescue system will allow a quad copter to search a designated area for a specific target and then send the coordinates to a rover to interact with the target.

The quadcopter will start at an initial base station with a predetermined flight pattern. The quadcopter will use GPS location to follow this predetermined flight pattern. Once the quadcopter takes off and starts flying an image processing unit will be searching the flight path below the quadcopter for an orange star. The orange star represents the target that the search and rescue operation is trying to save. There will also be an orange triangle and blue star in the field to try and throw the image processing system off. The image processing unit will be using two forms of image processing to find the orange star. The first is color hue to find the orange and the second is the angle of the corners to find the star shape. These two processes will only allow the orange star to be found. Once the orange star is found a signal will be sent back to the base station and relayed to a rover. The rover will then go to the star and “rescue” it. The rover and quadcopter will then return to start and the search and rescue will have been completed. This project will lead to a more efficient manner of search and rescue during natural disasters as well as military combat. We hope to present a project very near completion with an explanation behind our thought process for this project. This presentation is meant to show the system in action as well as the progress in implementing the system.
Autonomous Search and Rescue Operation: The AR Drone 2.0 Coupled with Rover 5
Michael Fraser, Eric Macedo, Xavier A. Loza Morales

The project objective is to simulate a search and rescue operation using an autonomous quadcopter and rover team. This project aims to provide an alternative solution for situations involving hazardous and risky operations that humans are traditionally sent into. In those situations, aid for those in danger is delivered via another human being, which places another life in danger. The task will be completed using the Parrot AR.Drone paired with the Dagu Rover 5. A software package known as ROS (Robotic Operating System) will be utilized to navigate the drone and identify an orange target star. The drone will communicate the location of the star to a base station, which will communicate with the rover. The rover will then navigate to the target and make contact with it, indicating the rescue of the target object. Our project hopes to demonstrate that the use of humans for dangerous situations can be reduced if not eliminated by replacing a human rescue team with an autonomous robotic one. Once the success has been demonstrated, this enables safer rescue operations overall, and would influence the decision over whether a rescue team is worthwhile or not.

Balancing Restorative Justice with Constitutional Rights in the Modern Juvenile Justice System
Ryan Nielsen

As a unique correctional institution, the modern juvenile justice system is expected to promote not only retributive punishment for criminal action, but also “restorative justice” for offending minors. However, this progressive construction of law may disrupt the primary function of American justice: balancing criminal control with constitutionally guaranteed rights. Considering that 1.5 million juveniles are arrested per year, 800,000 are gang affiliated, & fundamental constitutional interests are at stake, this institution’s development and jurisdictional influence necessitates the highest degree of scrutiny. This qualitative research explores the relationship between the evolving juvenile justice system and its respect for juvenile rights. As the juvenile justice system undergoes reformation to include greater emphasis on a rehabilitative, personalized methodology that induces more State actors into its service, and allocate stronger paternal jurisdiction to be wielded by the courts, the juvenile system must be reviewed to ensure a legitimate balance between the interests of the State and rights of juveniles. Through an interpretive analysis of 17 socio-political journals regarding the construction of juvenile justice and 7 precedential cases of U.S. juvenile law from 1966-present, I conclude that the restorative juvenile justice system does not function as a constitutionally legitimate or effective practice. Through the perverse effects of parens patriae, there exists a failure to afford constitutionally operable rights, rendering meaningful justice for juvenile offenders unattainable. A careful re-tailoring of the system and greater affordance of due process rights are required to assure the juvenile’s interests are effectively recognized, and his needs for justice actualized.

Becoming Who You Are: A Citizen Who Dwells on the Border Dr. Martin Luther King as an Example Par Excellence of Personhood
Carolina Nunez
Using Spanish philosopher Eugenio Trías’s categorical imperative, “Act in such a way that the maxim of your conduct adjusts to your proper condition of being one who dwells on the border,” I will show that Dr. Martin Luther King exemplifies Trías’s concept of becoming a person. As beings we have a “condición limitrofe,” a condition of being on the border of the world as it currently is (W1) and the world that ought to be (W2). Becoming a person requires, as Pindar states to, “Become what you are”. In doing so, one must make a choice between human and inhuman actions, and hence, exercise reasoning on the border. King is an example of a being who dwells on the border, as he envisioned the world that ought to be, namely, a world of love, justice, equality, solidarity, etc. I will first elucidate Eugenio’s Trías concept of becoming a person found in “Ética y condición humana.” Secondly, I will examine Dr. King’s life and explain how he exemplifies this process of becoming a person. Thirdly, I will underscore the similarities and differences in the borders we experience throughout time; after all, our challenges are distinct from Dr. King’s, and therefore, we have to become different persons.

Being healthy together: Community organizing to build healthy communities
Marissa Montano, Amber Nailes

Recent studies have addressed issues concerning the dramatic increase in obesity rates. However, research has yet to thoroughly examine the pathways that community-based organizations (CBO) take in addressing obesity issues. This study concerns three CBOs participating in Communities for Creating Healthy Environments (CCHE), a national campaign concerning childhood obesity prevention. The objective of this national initiative is to improve access to recreational environments and healthy food in disenfranchised communities. Using process evaluation data, we compared the organizing strategies and policy campaigns of these organizations, whose campaigns addressed issues of obesity in their communities. In this poster, we demonstrate how organizing strategies and policy campaigns of CBOs may influence policy outcomes. Our current study aims to identify a range of strategies regarding how community organizations work towards addressing issues of environmental and food justice.

Blacks & Law Enforcement: Bridging the Gap
Alexus Payton

I find there to be no middle ground connecting urban society and Law Enforcement. There lies a space within a culture where the children of the community have developed an unhealthy relationship with the law. I find it important to contribute to the creation of a space where the two sides may converge harmoniously. The dynamic between the legal system and socioeconomically disadvantaged children is deteriorating quickly, as violence and anxiety are the only characteristics associated with law enforcement and lawyers. Children of color in inner city neighborhoods are taught as young as elementary school, that the law is not intended for their safety. An early negative association with the school system and disciplinary structure that many inner city students receive translates over to law enforcement and a greater societal construction as the students encounter the real world. As Steve Marabioli stated about disadvantaged children in his book, The Power of One, “Today, [they] have the opportunity to transcend from a disempowered mindset of existence to an empowered reality of purpose-driven living. Today is a new day that has been handed to [them] for shaping. [They] have the tools, now [they go] out there and create a masterpiece.” The discourse surrounding the Black populace has been bound upon a shared set of degrading experiences across the marginalized community. Thus, my research attempts to bridge the gap between youth and the law; transforming their beliefs about law enforcement and the legal system, providing education on how the law actually works and
how it can be used in the ways it was intended; to promote equality through integrity, resulting in the deterioration of the Prison industrial complex, the single most oppressive system in the United States. I intend to research the correlations between unequal education and mass incarceration from the Harlem Renaissance up until modern society to aid me understanding of the development of a system that has caused such a large disparity between Black society and the Law. The majority of inner city males who drop out of school, never receive their diploma or never continue to college (those who do not go on to receive their diploma or attend college are three times as likely to become incarcerated or unemployed), are highest within inner city locations such as New Orleans, Los Angeles, Chicago, Gary (Indiana), and the nation’s capital, Washington D.C. They are the group we, as society, misplace our efforts. Through my research I hope to discover credible and effective methods that would reform the educational and disciplinary inner city system, thus eradicating limitations placed on the attainment of equal opportunity for students who despite their potential, were limited educationally based on the location of residence and socioeconomic status.

**Branding Pidgin: Creating an Identity for Hawai’i Creole English**
Gina Hirose

Branding Hawaiian Pidgin can provide a better communication channel for cultural exchange. With any language there is a formal and informal speech. When I left Hawai’i to attend college in California I knew I would encounter cultural differences with Mainlanders. In trying to assimilate, I noticed language variances, which prompted slight criticisms towards me. In Hawai’i, Pidgin is the equivalent to an informal version of English, which had developed during the plantation days as a result of the influx of immigrants. On the Mainland, Pidgin speakers are stereotyped as sounding “uneducated” because of the unconventionality of the language, so they would alter their speech to fit in socially. Yet when they would return home, they would face criticism for sounding “too White.” I have found that we are in a constant state of transition, a language limbo. What if I could alter people’s perception towards Pidgin? I propose to create a physical transition space as a way of recreating the experience of language disconnects. Using design I will create a visual identity for Pidgin that will seek to give the language its own brand as a cultural and social identifier of Hawai’i. Through associating language with a brand, I want to demonstrate the social effects of branding as a universal connector. As a way of user-testing my brand, I will display my graphic solutions within a student gallery exhibition to gain qualitative feedback and revise my designs based on the feedback received.

**BVOC Content Trends in Plants around the Loyola Marymount Community**
Kristina Williams, Lauren Carlson

Biogenic Volatile Organic Compounds (BVOCs), such as monoterpenes and sesquiterpenes, are produced by plants and participate in ecological functioning, such as plant-to-plant communication and defense. When emitted into the atmosphere these compounds also play a significant role in air quality; analysis of BVOCs in leaf content will help to identify potential high emitters. This research focuses on quantifying seasonal trends of the BVOC content in specific native and non-native plants. Since spring 2011, leaves from 3 native and 1 non-native plants have been analyzed for their BVOC content. BVOC content is compared with average local temperature and rainfall. Each plant species is unique; however, over time the number of monoterpenes has increased while the number of sesquiterpenes has decreased. Data also indicates that overall BVOC content decreases when ecologically stressed from high temperature and drought.
Cartesian Configuration Three Degree of Freedom Robot
Jasmine Panosian

Automated robotic processes have become increasingly desirable in manufacturing where consistent, repeatable functions will produce a consistent quality of goods. CNC machining and Pick and Place movements, two popular manufacturing processes, are technologies that strive for greater control and precision with the linear robotic movements used in applications such as drilling or the mounting of small components. The three-degree of freedom, Cartesian robot configuration for CNC and Pick and Place movements is the design taken in this project. It develops the controls and comprehension for the contributing factors behind this configuration’s accuracy. The design of experiment approach and quantitative methods were used for the variable manipulations and the measurements of system responses. The functionality of this robot configuration is demonstrated through programmed movements of chess pieces on a chessboard by the robot’s magnetic end effector. This project highlights that maintaining precision and accuracy in movements is essential for repeatable outcomes of a system, such as how manufacturing processes must produce consistent results in the quality of their products. It also reveals how the performance of the electronic hardware used in the powering and programming of the robot structure can influence the expected outputs of the system, something emphasized through the testing and calibration process. This research demonstrates the importance of the robotic controls, in addition to the careful structure design, of the robot for maintaining precision in movements for this common Cartesian configuration.

Changes in Bone Health and Body Composition During Aerobic and Resistance Training: A Pilot Study of Cancer Survivors in Los Angeles County
Daniel Conti

Cancer treatment can negatively affect bone health and may increase the risk of osteoporosis among cancer survivors. Obesity can have additional negative effects on the skeletal system of cancer survivors. The IMPAACT (Improving Physical Activity After Cancer Treatment) pilot study assessed the effect of a 13-week combined aerobic and resistance training program on bone health and body composition in a cohort of 11 cancer survivors. Participants did not experience weight loss, but did experience an average decrease in waist circumference of 2.34cm (SD 3.24). Over 50% of the participants experienced a decrease in BMI and total percent body fat between pre- and post-assessment. These findings are consistent with healthy changes in body composition, such as decreases in central adiposity. Bone density changes were less dramatic, but statistically significant (p<0.05) increases in whole body bone density and femoral (hip) bone density were observed. Additional analyses of biomarkers of bone formation and resorption (bone remodeling) and of leptin and adiponectin (obesity) will be presented in order to allow for a side-by-side comparison of changes in biological pathways with the observed physiological changes. The findings from this pilot study support a positive effect of a combined aerobic and resistance training on bone health and body composition. This pilot study also supports the need for a larger, longitudinal intervention to fully evaluate the benefits of 180 minutes of weekly physical activity on the bone and skeletal health, of cancer survivors, after cancer treatment.

Characterization of seed predation in Castor Bean (Ricinus communis L.) plants in southern California
Ashley Brown, Sarah Choe, Nicole Forbes

The study characterizes the natural history of seed damage by an unidentified Lepidopteran
larvae found inside of the pods and feeding on the seeds of Castor Bean (Ricinus communis L.) plants. Castor Bean plants are invasive in southern California, where approximately $82 million is spent annually to combat invasive plant species. Extremely toxic for many animals, Castor Bean plants produce seed crops throughout the year that do not form long-term seed banks. The unidentified Lepidopteran species may be useful as bio control as our findings suggest that the larvae prey on the seed, reducing germination rates. Field collection of Castor Bean pods during the Spring months reflect three different levels of seed damage and an average of 6.2% ± 5.7% (mean ± SD) range of the standing seed crop with visible signs of damage. This study is currently analyzing the damage of the standing Castor Bean seed crop from the Fall months and is rearing seed pods in order to identify the Lepidopteran species. Initial observations indicate that there is less damage in the fall, relative to the spring. Further observations suggest that the seed damage occurs primarily to the seed elaiosome and secondarily impacts the seed coat. Additionally, presence of exuvia and frass suggest that the moths are emerging late summer or early fall, but further research is needed to further information on this unknown and potentially useful species.

Characterization of sugar diversity in floral and extra-floral nectar from the Coastal Coral Tree (Erythrina caffra Thunb.) in Southern California
Elizabeth Dawkins, Renee Maser

The Coastal Coral Tree (Erythrina caffra Thunb.) produces floral nectar (FN) that serves to attract pollinating insects, but also secretes nectar from extra-floral (EFN) glands that serves to attract predatory insects, such as ants. While studies on myrmecophytes (i.e. specialized plants that attract and interact with ants) have primarily focused on interspecific evaluations of EFN chemistry, the Coastal Coral tree offers an opportunity to contrast intraspecific nectar chemistry with differing evolutionary and ecological functions. We hypothesized that the richness of (molecular) sugar species, relative concentration, and diversity of sugars in FN and foliar EFN would diverge due to differences in the ecological role of the two types of nectar. High performance liquid chromatography with refractive index detection was used to identify the richness of sugar species (based on retention time), measure the relative concentration, and evaluate the diversity of sugars in FN and foliar EFN secretions. We detected sugar species unique to each gland type and report significant differences in the relative concentration of one sugar species common to both gland types. While the mean diversity index of sugars was similar for both gland types, the diversity of foliar EFN sugars was significantly more variable than that of FN sugars. The composition of FN showed little variation, and was reflective of its fundamental role in plant reproduction. Foliar EFN, however, demonstrated the variability expected of a context-dependent myrmecophyte that interacts with a facultative ant species assemblage across a mosaic of abiotic and biotic conditions.

Characterization of Yml, a novel mitochondrial intermembrane space protein
Jaee Tamhane

Defects in mitochondrial import pathways are implicated in many diseases including neurodegeneration, stroke and cancer. Specifically, defects in the mitochondrial import pathway utilized by Erv1 result in inherited cardiomyopathy and neuropathy. Currently, no effective therapies exist in the treatment of such diseases. Furthermore, whereas the role of these proteins in the model system yeast is well understood, the elucidation of how defects in these proteins lead to disease in higher eukaryotes is difficult. The goal of my research will be to help further characterize Yml, a novel mitochondrial intermembrane space (IMS) protein. As most
mitochondrial proteins are synthesized in the cytoplasm and transported across the outer membrane of the mitochondria; import systems are critical for proper mitochondrial function.

**Children of the Sea: Place and Identity**  
Philippa Adams

Children of the Sea is an animated screenplay that explores cultural identity by tying it to places and locations. The story follows a selkie (a shape-shifting seal who takes human form), whose loyalty to the sea is tested when a mysterious demon attacks the men in a fishing village. The protagonist, who has grown up on land, but was born in the sea, feels torn between the two homes as they place different demands on him, creating a metaphor for mixed cultural identity. Within the story, characters often use places and settings to inform and confirm their own identity. Research in the planning stages of the tale includes playing with Asian and Western mythology to depict cultural complexities; examining shape-shifting and “leveling up” in notable Japanese anime such as Attack on Titan and Revolutionary Girl Utena; and personal investigation of the writer’s own mixed cultural background, having grown up in England and China. Children of the Sea therefore explore the relationship between people and what they call home, and how severing oneself from one’s cultural ties can have deep implications, whether positive or negative. Once completed, the screenplay will be pitched as entertainment for American anime fans, a passionate niche community and a lucrative market.

**Circular Dichroism for Monitoring the Conformational Changes of Amyloidogenic Islet Amyloid Polypeptide**  
Blanca Malaspina, Travis Whyte

Islet Amyloid Polypeptide (IAPP) is an amyloidogenic protein secreted in the β cells of the pancreas. Similar to other amyloid proteins, IAPP has the ability to misfold, and form amyloid plaques in the β cells, causing cell death and the symptoms associated with Type II Diabetes. It is believed that inhibition of plaque formation can delay, or even prevent, the onset of Type II Diabetes. IAPP has a natural β-sheet conformation when forming the toxic species. Circular Dichroism (CD) is a powerful technique used in the determination of secondary structure of proteins, and can be used to determine a change in the secondary structure of IAPP when tested against potential inhibitors. Extracts of several common fruits were prepared as inhibitors, and analyzed for their ability to prevent the change of IAPP from its native form to its toxic configuration.

**Climate Change and Kelp Forest Ecosystems**  
Anthony Martin

Kelp forests are among the most productive ecosystems in the world. They provide to humans a great number of ecosystem services such as commercial and recreational fishing, CO2 sequestration, and coastal protection. However, these ecosystem services are subject to different sources of variation. For instance, climate change is one of the most pressing environmental issues predicted to affect many ecosystems including the kelp forests along California’s coastline. In this study we use an ecosystem model (Ecopath) and physical oceanographic time series of sea surface temperature and upwelling index to better understand how changes in oceanographic conditions associated with climate change might alter the structural and functional attributes of a kelp forest ecosystem along the coast of central California. Our results suggest two key relationships: the first is that production of understory algae and canopy kelp are inversely
related; for example, if canopy kelp production declines, understory algae production increases. The second is that as SST and upwelling increase, canopy kelp biomass density is greatly reduced, while understory algae increases biomass density. However, the increase in understory algae does not fully compensate for the biomass density lost as canopy kelp. As a result, the overall biomass density of the system is significantly reduced. This study highlights the value of integrating physical and biological time series, natural history traits and ecosystem models to help us elucidate interesting ecological interactions and enhance our understanding and ability to predict further effects in natural ecosystems under the pressure of environmental changes.

Coalition Formation Algorithms via Evolutionary Optimization
Carrie Giesen

We examined algorithms for coalition formation in an agent-based population model. Agents were randomly assigned a political position and resource value, and coalitions are formed through a utility function that balanced a desire to share resources with similarity of political positions. Agents moved in a grid and tested if they wanted to join with a randomly selected neighbor based on their respective utility functions in an attempt to find Pareto-optimal coalitions. Computing all possible coalitions to seek Pareto optimality is prohibitively expensive for even small populations of 10 agents. Thus, we developed some evolutionary, simulation-based approaches. Six different methods of coalition formation were modeled. The first three were "backroom pair"—two agents made decisions based on their own personal needs and not the entire coalition membership, "democracy"—over half of the agents in each coalition had to benefit from the joining, and "communism"—all of the agents had to benefit from the merger. The other three models contained the same stipulations as the first three—backroom pair, democracy, and communism—with an additional option. Agents were allowed to “jump” from their coalition and join another if it was beneficial to them. Through a variety of simulations, we have uncovered some patterns in the output of these algorithms, including consistency of joining the same coalitions as well as the importance of an agent's resources and political positions for joining. We have also found parameters that lead to different distributions of coalition structures and depend heavily on the performed algorithm.

Cognitive Training in an Addicted Population
Ben Spielberg

The business of brain training has boomed in the past ten years, and the technology is now available in nursing homes and centers for traumatic brain injury across the country. Addiction, however, shares similar values to both of these conditions. Inpatient residents at a treatment center were randomly assigned to participate in a customized brain-training program based on “Lumosity.” In addition to standard cognitive assessments, participants were tested in areas of emotional resilience, spirituality, and moral competency to evaluate the potential efficacy of a full implementation inside of a treatment program. Testing these hypotheses resulted in mostly null results, although it should be noted that the randomly assigned group appeared to have higher scores to begin with.

Color Polymorphisms of Salicornia pacifica at Ballona Wetlands in Los Angeles, California
Mark Lee, Shannon Powell, James Wu
The native halophyte *Salicornia pacifica* is a dominant species in southern California wetlands that has succulent shoots with variable pigmentation. Anthocyanins, the principal source of pigmentation in *S. pacifica* and color polymorphisms in most vascular plants, play an important role in stress tolerance in plants. This study utilizes a novel non-destructive technique to evaluate links between the variable pigmentation of *S. pacifica* and soil salinity by means of pixel-intensity analysis from digital images. We hypothesized that *S. pacifica* shoot pigmentation intensity would correlate negatively with soil moisture along a documented salinity gradient in Ballona Wetlands. However, neither soil moisture nor soil salinity significantly explained the variation measured in red, green, or blue pixel intensity from digital images of *S. pacifica* succulent shoots. We propose that future studies consider other factors associated with stress pigmentation in *S. pacifica*, such as the role of anthocyanin in protecting plant tissues from UV radiation.

**Colorings and Alexander Polynomials for Spatial Graphs**
Terry Kong, Alec Lewald

A knot is a closed loop (possibly knotted up) in space. A knot invariant is a quantity defined for each knot that remains unchanged if the knot is pulled, twisted or bent (but not cut!). Hence knot invariants allow us to determine when two knots are inequivalent – when one cannot be deformed into the other without cutting. Many knot invariants can be calculated from a knot diagram (i.e. the shadow of a knot in the plane, with information on which strands cross over others). This summer’s research focused on two particular knot invariants: the $p$-coloring of a knot and the Alexander polynomial of an oriented knot. In fact, we are looking at these invariants in the broader context of spatial graphs, where we embed not just a loop but a more complex graph in space (a knot can be thought of as a connected graph where each vertex has degree two). We have extended the definitions of $p$-coloring and the Alexander polynomial to spatial graphs. Our results consist of proving that the Alexander polynomial and $p$-coloring are invariants for spatial graphs, establishing parallels between theorems involving the Alexander polynomial for knots and for spatial graphs, and developing a table of Alexander polynomials for different families of spatial graphs. This research provides tools that will help with the larger task of classifying all embeddings of spatial graphs.

**Comparisons of desiccated and hydrated leaf hydrophobicity and surface structure of Xerophyta elegant in relation to the restoration of xylem activity after desiccation**
Mitchell Braun

Desiccation tolerance is the ability to survive through periods of extreme cellular water loss. Most seeds commonly exhibit a degree of desiccation tolerance while vegetative bodies of plants rarely show this characteristic. Desiccation tolerant vascular plants, in particular, are a rarity and only grow naturally in specific areas around the world. While the science behind the process of desiccating has been widely researched, the process of recovering from this state of stress, especially in restoring xylem activity after cavitation, i.e., the disruption of the water flow due to the formation of gas bubbles, is still relatively unknown. Water can enter a plant in two major ways: the roots or the leaves. Even though root pressure can be significant, it most likely does not provide enough water to completely restore xylem activity. To explore the influence of leaf water absorption on xylem restoration, the desiccation tolerant plant *Xerophyta elegans* was put through a desiccation cycle, and desiccated leaf hydrophobicity, surface structure, and morphology were compared to those of hydrated leaves. The change in the length and width of selected leaves were measured throughout the desiccation process to determine the impact that
this change may have had on leaf venation and the absorption of water through the leaf surface. Water has been known to physically enter through many different surface structures including stomata. Electron microscopy allowed for the examination of stomatal density and the presence of additional structures in relation to water absorption.

Complications from a Bunionectomy: A Case Study
Michelle Siu

21-year old female, recreational basketball player had a bunionectomy surgery for hallux valgus of the first tarsometatarsal with hammer toe surgery of the fifth phalange on her left foot on December 22, 2012. One-year post surgery, subject had zero degrees of flexion in the metatarsophalangeal joint and the proximal interphalangeal joint of the first metatarsal and phalange. At the start of the study, baseline measurements of metatarsophalangeal and proximal interphalangeal joint flexion were taken as well as dimensions, qualitative descriptions and images of the scar and surrounding tissue. Pain on a visual analogue pain scale was also taken. The subject received a set protocol of laser and manual therapy treatments three times a week, which will be expected to continue until May 2014. It is estimated that flexion of both joints will increase along with a reduction in pain, scar dimensions, and discoloration. These predictions are grounded in research suggesting that laser therapy promotes normal cellular function by providing cells with light energy that can be absorbed and used to reactivate normal homeostatic activity within cells. Due to these properties, laser therapy is understood to be pro-inflammatory, be able to reduce pain and promote tissue healing. The manual therapy treatments, on the other hand, are meant to restore normal joint function through the use of repetitive distraction and joint mobilization. Preliminary results show no observable changes in discoloration as well as no changes in joint flexion. However, current results show that the manual therapy and laser treatments have made progress in decreasing scar dimensions as well as reducing pain in the subject.

Computational comparison of stepwise oxidation in mononuclear Mn and Fe water oxidation catalysts
Brian Jay Castor, Dong Woo Chang, Nicole Jackson, Kevin Joerger

One of the most concerning subjects in 21th century is the need to develop alternative sources of energy to replace current dependence on fossil fuels. Among possible sources of fuel, water is the only truly carbon-free, abundant electron and hydrogen source for clean and sustainable energy. The idea of a water oxidation catalyst to facilitate the production of fuel from water and sunlight is inspired by Photosystem II (PSII) in plant photosynthesis. In PSII, a manganese catalysts (Mn4Ca) oxidizes water to produce protons and oxygen. Some synthetic water oxidation catalysts exist, but they are based on expensive transition metals including ruthenium (Ru) and iridium (Ir), which cannot be utilized at large scale due to their prohibitive cost and scarcity. We investigate modifying water oxidation catalysts to include manganese (Mn) or iron (Fe) centers in place of Ru or Ir for water oxidation catalysts. In this research, we employ density functional theory (DFT) to calculate the quantum mechanical wave function of these proposed Mn and Fe catalysts and investigate their suitability relative to functioning Ru and Ir catalysts. We present thermodynamic and kinetic features of mononuclear Mn and Fe catalysts with different ligand structures and compare to the most effective Ru and Ir catalysts’ behavior. Our results permit us to isolate problematic steps in the water oxidation mechanism for light metal catalysts and suggest chemical modifications to improve these critical steps.
Conditional Cash Transfers for Poverty Eradication: Identifying Factors that Lead to Successful interventions
Jennifer Cardenas

Antipoverty programs that utilize Conditional Cash Transfers (CTTs), payments that require beneficiaries to keep their children in school and to ensure their children receive medical checkups, are gaining attention worldwide. This project undertakes an assessment of two CCT programs: Brazil’s Bolsa Familia and Ecuador’s Bono de Desarrollo. Bolsa Familia is the largest conditional cash transfer program in the world, covering about 50 million people as of 2011 and it has been successful in decreasing poverty rates as well as increasing school attendance, vaccinations rates, and the use of pre-natal care. Ecuador’s CCT, on the other hand, has failed to deliver similar benefits. This study seeks to explain why some CCTs are effective and others are not. In order to evaluate what factors are most important in establishing successful CCTs, my project tests several hypotheses, including: coordination, at the federal, state, and local level; a strong civic education; the ideology of the country’s president; sustained support from Congress; and the existence of complimentary social welfare programs. The findings of this study will contribute to our understanding of successful CCT implementation and suggest reforms so as to increase the anti-poverty impact of CCT programs in the developing nations.

Conformational dynamics in Vt helix 4 induces actin bundling through vinculin tail dimerization
Korina Sandoval

Vinculin is a highly conserved and abundant cytoskeletal protein found at both focal adhesions and adherens junctions where it links actin filaments to the cell membrane. At these sites of adhesion, vinculin plays a major role in controlling cell shape, force transduction, motility, and cell migration. Vinculin also acts as a scaffold protein that binds to numerous ligands, including talin and actin. Actin binding by the carboxyl-terminal vinculin tail domain (Vt) induces a conformational change in Vt and promotes formation of a Vt dimer that is able to crosslink and bundle actin filaments. The nature of these conformational changes and the critical elements necessary for Vt dimerization are of interest. The Vt domain is a 5-helix bundle. We hypothesized that the kink in helix 4 caused by Vt P989, is necessary for the conformational change that occurs upon binding to actin. To test the importance of P989 and the kink it exhibits in helix 4, we mutated the residue to alanine (P989A) and glycine (P989G). Actin co-sedimentation assays were used to determine actin-binding affinity and bundling efficiency for WT, P989A, and P989G, while images from negative-stain electron microscopy and fluorescence microscopy was collected to qualitatively evaluate the bundling morphologies of WT and Vt mutants. Additionally, circular dichroism (CD) spectroscopy was used to evaluate the melting point and cooperativity of unfolding upon heating. Actin co-sedimentation assays revealed that the actin binding and bundling properties are maintained, while fluorescence and negative-stain electron microscopy showed altered actin bundle morphology of the mutants. CD melts exhibited altered Vt stability and unfolding kinetics caused by P989 mutations. Overall, our data indicates that the conformational dynamic properties of Vt helix 4 are important for actin-induced Vt dimerization and actin bundling.

(Con)strained Art Imitating (Meta)strained Life: "A Void" of Jewishness in Georges Perec's "La Disparition"
Michael Robinson
When a companion of French writer Georges Perec called his bluff, he had to do it: write an entire novel without using the letter e. Released in 1969, La Disparition, in English, The Disappearance, raised eyebrows for its tour-de-force convulsion of language (as did Gilbert Adair’s e-less, English translation—The Void—twenty-five years later) while being simultaneously scorned as novelty and highbrow kitsch. Its title, however, suggests a weightier, thematic core—things that went missing in both Perec’s work and life.

Perec’s parents escaped to France from the Polish pogroms. His father, Icek Judko Peretz—simplified to “Perec”—died from wounds received in the French Army. The fate of his mother—Cyrla—like one of Perec’s literary puzzles—remains indeterminate. Despite Perec’s offhandedness on how La Disparition came to be, likely, it is not coincidence that the French government issued an acte de disparition—a writ establishing the death of a missing person—for Cyrla on 20 August 1947.

“I am Jewish,” Perec would say. “For a long time, this was not evident to me; there was no association with a religion, a people, a history, a language, barely even a culture” (Benabou and Reilly, 23). For young Perec, such things—religion, people, history and so on—disappear. This presentation, though speculative, aims to show intersections between Perec’s traumatic childhood and his novel without an e that, perhaps, makes for a textual representation of a world without Jews—without fathers and mothers.

Constructing a GenMAPP-compatible gene database for Streptococcus pneumoniae to perform pathway analysis on microarray data comparing biofilm versus planktonic forms

Andrew Pita

Streptococcus pneumoniae is the primary cause of otitis media, community acquired pneumonia, sepsis, and meningitis. Biofilms form when S. pneumoniae asymptomatically colonizes a sterile site, such as the lungs or bloodstream. DNA microarrays can be used cheaply and efficiently to measure patterns of expression which ultimately determine the phenotype of an organism. Sanchez et al. (2011, PLoS ONE 6(12): e28738) used microarrays to compare gene expression over time between S. pneumoniae in a biofilm and free-floating, planktonic S. pneumoniae. We wanted to perform a pathway analysis on the data from this experiment in GenMAPP/MAPPFinder, but this requires a GenMAPP-compatible gene database for S.pneumoniae. Thus, the first step to accomplish the analysis was to create a database using XMLPipeDB, an open source program for building relational databases using XML files. We validated the database ensuring that the gene IDs present in the UniProt and Gene Ontology source data were found in the final database. Analysis of the microarray data found significant differences in the level of gene expression of 25% of all genes at 4 and 24 hours of biofilm formation, and significant differences in expression of 41% of genes at 12 hours of biofilm formation. At the 12 hour time point, MAPPFinder showed that most of the changes in gene expression involved genes related to carbohydrate transport, a result not reported by Sanchez et al., who focused on virulence genes. Carbohydrate transport might be important for biofilm formation because the cells form an exopolysacharide layer.

Constructional Implications due to the Effects of Soil Depth and Water Content on Noise Abatement by Greenroofs

Brandon Cudequest

The wide range of benefits offered by modular green roof systems is directly responsible for their growing popularity. Research into the acoustical benefits of these panels has already begun to take place; however, the purpose of this study is to dissect each substrate to construct a more
complete understanding of how the layers contribute to the panel’s absorptive qualities. The tests were designed to consider the myriad ways the design of such panels assist in the overall result-for instance, holes used for rainwater management. With the assistance of Florasource Ltd, a horticultural supply firm, two different soil depths were obtained, measuring roughly five and 10 cms each. The experiments were conducted in gradual fashion, going from completely empty panels to fully planted panels with additive increments of substrate type. With each soil depth a round of tests was also conducted where the panels were exposed to water in thirty-minute intervals prior to taking results. The tests, conducted at Western Electro-Acoustic Laboratory, comply with International Standards for testing the Absorptive Coefficients in a Reverberant Room (ASTM C-432). Based on results from these tests, customization of green roofs design for noise abatement will be discussed.

Cooperation Among Gender
Victoria Rocha

For my Honors Thesis, I have designed an experiment to test for cooperation among gender through a variation of the standard prisoner’s dilemma game. I want to test, in a laboratory setting, the gender stereotype that females are more cooperative than males. Two of my colleagues and I have previously collected data that looked at how often both males and females chose to cooperate when matched with a player of the same or opposite gender. For my thesis I would like to replicate the experiment with more subjects in order to have more concrete data to support or reject the hypothesis made referring to gender and cooperation. The experiment includes three treatments with five rounds within each treatment, for a total of fifteen rounds. The first treatment produced the baseline results. In the second treatment, subjects were told whether they were matched with another person of the same or opposite gender. The third treatment was the same as the second. The experiment that my colleagues and previously ran shows that there are indeed effects between gender and cooperation that should be further explored. Previous research shows that gender does play a significant role in cooperation and competition. Our data and also evidence from earlier findings show that people generally cooperate more often with members of the same gender versus with the opposite gender. In interpreting the results of our data, we believe that our experiment gives support to the hypothesis that people are more likely to cooperate with another person of the same gender. We found that cooperation increases dramatically when subjects are able to communicate, as shown in Treatment 3 of our experiment, which aligns with our hypothesis that communication would increase cooperation. From these results, we can see that there is much more to learn about gender and cooperation. I will be exploring this more in depth in my research to be presented at the symposium.

Counter-Hegemonic Notions of the “American Dream”: The Narrative of the Corner Store
Emma Mariscal

This essay explores the hegemonic narrative of the “American Dream” that has been engrained into U.S. culture and remains an iconic and compelling notion for contemporary immigrants. However, the complexities that comprise this “dream”: are often oversimplified and over-romanticized, particularly by the media, who fail to critically examine the full scope of the immigrant experience. This paper provides a narrative analysis of the Corner Store, a documentary that challenges the “American Dream” by providing a compelling counter-narrative that examines how this dream is actually perceived and experienced by immigrants. The narrative of this film reveals the obstacles, both mental and physical, that immigrants face. These obstacles include, but are not limited to, separation from family and the struggle of obtaining the wealth that the hegemonic narrative of the American Dream seems to assure. This paper’s findings
expose the ways in which Corner Store’s director, Katherine Bruens, utilizes the narrative elements of character, setting, and events, to demonstrate how the hegemonic narrative of the American Dream is partial, inaccurate, and does not account for the realities that many immigrants face.

Crisis of Identity and Ethics in the Modern Medical Establishment
Daniel Conti

The modern medical establishment and its practitioners find themselves in a vortex of change. The rate of technology and knowledge expansion is unprecedented. The altering legal and insurance landscapes of American medicine are driving innovation, cost, and physician/patient well being in unpredictable directions. An increasingly electronic, connected, and rapid culture will generate new expectations for medical professions. The increasing cultural and linguistic diversity of patients will create novel challenges in shared decision-making, beneficence, consent, and empathy. Strong, polarizing debates swirl around difficult end-of-life care, definitions of death, and the rights of the unborn. All these uncertainties, developments and controversies, seem to assault the medical field from every direction. None of this change is particularly novel for the medical field. The nature of the science, cultural context, and importance of medicine has always forced it to adapt continually. In fact, medicine faces deeper dilemmas than uncertainty and change. Medicine faces an ontological dilemma. In the last hundred years of its development western medicine, particularly in its fruitful turn to the scientific method and the privileging of technology in the clinical space, has acquired attributes that are fundamentally incompatible with an ethic of caring and the subjective dimensions of the experience of illness. Here in this study, using the philosophy and virtue ethical theories of medicine of Edmund Pellgrino we will explore a history of medicine, establish a conception of medicine respectful of its human core and lastly, some ethical implications of this humanistic concept of medicine will be elucidated.

Cutting the Strings: The Exploration of Long-Term Domestic Abuse on a Child’s Intimate Relationships
Allison Shorin

Domestic violence is highly prevalent in the United States. Between 8% and 12% of women (about 1 million) are battered by their intimate partner each year. The effects of domestic violence extend beyond the family nucleus and should be the concern of a wider public. In fact, we tend to think of domestic violence as only pertaining to the victim and the abuser, while we have not addressed that there is a third party involved—the onlooker. I hypothesize that domestic violence is a three-pronged issue: the abuser, the victim and the onlooker, with the abuser and the onlooker contributing to the victim’s worldview on relationships.

I became invested in the topic due to my cousin’s father, a physically and verbally abusive alcoholic. My cousin, now 17, has already been in an abusive intimate relationship and I wonder if this is the result of the relationship she has experienced with her father. However, I also question if this is also resulting from onlookers who have seen evidence but ignored the signs or ignored confrontation with the issue and in effect, validated his actions. I intend to research the effects of abusive parenting and community validation on a child’s domestic view of relationships and how this impacts the child’s future worldview. I will create a multi-sensory, interactive experience model that will integrate my research with the metaphor of a marionette—a puppet controlled from above using strings, and the marionette’s puppeteer, which is fittingly called a manipulator—to illustrate the direct effect of abusive parenting and onlooker validation on a child’s view of intimate relationships. The outcome of this research will bring to light how domestic violence and the community each factor into the development in a child’s view on intimate relationships.
Decline to Vote: An Empirical Examination of Low Voter Turnout in the City of Los Angeles
Brendan Hughes

As cities like Los Angeles grow larger and more ethnically diverse, the need for improving the quality of information about voting participation and barriers is essential. Recent studies indicate that voter turnout for mayoral elections in major metropolitan cities across the nation is between 27% and 34% on average. The 2013 Los Angeles Mayoral General Election garnered only 23%, according to the City Clerk. This statistic is far below the national average and the lowest of any two-candidate run-off election in Los Angeles in the last 100 years. Issues such as race-based voter intimidation, access to voting locations, and knowledge of mail-in ballots are all potential factors in voter turnout. This warrants the question: Why is voter turnout so low in the city of Los Angeles? This explorative research analyzes the alternative voting methods and election systems proposed by the Los Angeles City Council as ways of increasing voter turnout. The alternatives examined here are: all vote-by-mail (VBM) elections, alternative election dates, consolidated elections, and registration methods that target specific demographics of the electorate that sustain patterns of low voter participation. This research analyzes VBM turnout trends for Los Angeles elections held since 2000. Next, I compare the recent election costs and voter turnout for consolidated elections held in San Diego and San Jose with those of the Los Angeles. Finally, I use ArcGIS to map the demographic composition of voters who participated in the 2013 Los Angeles General Election. If voting in Los Angeles is more convenient, accessible, and welcoming to voter registration, then voter turnout is likely to increase in our diverse metropolis.

Design and Implementation of a General Control System Platform for Educational Purposes
Benjamin Horten, Kyle Peerless

In this study, the design and implementation of a general control system platform for educational purposes was performed. This project facilitates the understanding of control systems in mechanical engineering by creating a foundational system to position-control the rotation of a DC motor, and then ultimately using it as a teaching tool in the undergraduate Control Systems course at Loyola Marymount University. The objective of this effort was to lay the groundwork for future engineering educational applications by designing a controller and this mechanical platform with the vision that students in future classes will be able to design and build controllers for the device built in this project, and then plug their controller into the platform to observe the performance of their design. The project's first focus centered on both the circuit analysis of the controller that would produce the desired movement of the motor, as well as the construction of an aluminum platform that held all the necessary electronic components, the motor, and a cylindrical shaft that was attached the motor. Using mathematical analysis and knowledge of electric circuits, the circuit was planned utilizing variable-resistant potentiometers on a Wheatstone Bridge, a comparator, and a feedback amplifier to run the DC motor and rotate the shaft. Once the layout and planning finished, the circuit was constructed and soldered together by hand. With the circuit complete, a functional and aesthetic housing was created clearly displaying the shaft, potentiometers, DC motor, and electric circuit with LEDs corresponding to the direction of the shaft's rotation. With the platform in place, the project will be expanded in various directions before the device is used in the classroom. The next step is to create and analyze the performance of other types of controllers such as Proportional, Proportional-Integral, and Proportional-Integral-Derivative Controllers because the platform created in this research needs
to be compatible so that any of the above controllers can be plugged in and their performance can be measured and compared by students. Additionally, the system will be modeled and studied in MATLAB/Simulink to predict certain design behavior and compare the system's outputs to theoretical computer models. Finally, a rapid prototyped (RP) parts will be designed and added to the shaft and platform to more clearly illustrate the rotation of the shaft in response to commands given to it by the controller. This research is significant because in designing a platform that can be used with control systems developed by undergraduates, they will get to see the application of course fundamentals on a mechanical system. This is important and key to their understanding of the implementations of controls in larger engineering systems. In integrating various subjects together, this project will help the students to develop a deeper understanding of the topics of mechanical engineering.

**Design of Micro Hydro Power Generation to Urban Applications**  
John deMarinis, Simone Evett, Aisha Mckee

Micro hydro power generation (MHPG) is an appealing field to recover energy from small streams, rivers, channels and runoff. This research focused on the viability and the preliminary design of installing MHPG turbines in small-scale urban applications. The effort initially focused on applying the technology to Loyola Marymount University’s water distribution network. Energy and costs analyses concluded that MHPG may not be cost-effective or practical for the university. Relatively low pressure heads and small flows were identified as main causes for the limited benefit of the technology. As a result, the research effort shifted to the application of this technology to local wastewater treatment plants. The Los Coyotes Water Reclamation Plant, which averages 20 million gallons per day and includes a spillway head of approximately 5 feet, was selected for the analysis. The results indicated that with the use of multiple MHPG in parallel the plant could produce 9.2 kilowatts. SolidWorks software was used to develop an initial design of a small cross-flow turbine prototype to test the rate of power generation under controlled laboratory conditions in a model spillway and model weir. The protocols for installation and laboratory testing are currently being developed to improve the prototype, which will help optimize the system for potential large-scale applications.

**Designing Creative and Collaborative Learning Environments**  
Kelly Chronis

Creativity can be enhanced by the interior design of the classroom environment. The Von der Ahe Student Innovation Lab is an example of a learning space designed to promote collaboration and innovation on LMU’s campus. This classroom provides amenities like mobile furniture and an interactive board. Due to limited creative space on campus, graphic design classrooms must take on multiple functions. LMU design classrooms include the essential technology students need to complete digital work, however, the problem is that they are not reconfigurable and do not support the collaborative or hands-on activities which professors encourage. During my three years of classes in Burns 214, I have consistently felt like the classroom was hindering my creative potential and limiting my opportunities to collaborate with my peers. If the classroom is redesigned to accommodate the creative needs of both students and professors, future classes will have more opportunities to exercise the type of creative thinking that is essential for designers. Inspired by the design of the Student Innovation Lab, I propose that the Burns 214 classroom can be transformed using similar simple materials. My research will explore design solutions such as magnetic whiteboard walls, stacking stools, and space to display student projects. These features will improve students’ abilities to brainstorm, collaborate, and interact with peers. As a result, the classroom will be more than a computer lab but a multi-purpose, interdisciplinary environment that is conducive to creativity.
**Development of a Wireless Motion-Capture (Mocap) System for the Human Leg**
Lizbeth Rojas Sanchez

This research project is a work-in-progress that consists of the development of a motion-capture (mocap) system. The mocap system uses Shimmer wireless sensors that the user wears in order to measure the alignment of human joints with the earth’s gravity and magnetic fields. The objective of this research is to improve the accuracy of the measurements of joint angles of the human body. The joint angles are being determined from measurements of these fields by algorithms developed using trigonometry and linear algebra. The algorithms calculate the joint angles of the shoulder, elbow, hip, and knee from the sensor data. These measurements will be improved by comparing their accuracy against a professional mocap system that uses video cameras instead of the earth’s gravity and magnetic fields. The importance of this project is to make sure that once the mocap system is calibrated, the measured angles will be as accurate as possible.

**Dialect Variation of the Red-Winged Black Bird**
Haley Brown

A Comparison of Dialect in the Red-Winged Black Birds of Los Angeles vs. Massachusetts / Haley Brown Red-winged blackbirds, *Agelaius Phoeniceus*, are cosmopolitan across North America and combine both visual and acoustic signals for conspecific interactions. Breeding displays of the red-winged male are a common feature in the Ballona Wetlands and also occur in wetland habitats in Massachusetts. Anecdotal observations suggest that Ballona Wetland red-winged blackbird males appear to be singing a dialect that is distinctly different than those encountered in Massachusetts. This study compares male red-winged blackbird territorial songs recorded at the Ballona Wetlands to those recorded in Massachusetts. Using portable digital sound recording systems specialized for bird acoustics; song samples were recorded and then analyzed using Raven Bioacoustics Software from the Cornell Laboratory of Ornithology. The song spectrograms were analyzed for variations in frequency, pitch, duration, and structure. The results of these analyses are reported here and provide a template for future study protocols.

**Diet, time, and geography as variables of inter-colony aggression in Argentine ants**
Jorrel Sampana

The Argentine Ant, *Linepithema humile*, is a species of ant that is capable of forming supercolonies, where inter-colony aggression is absent and individuals can move freely between nests. However, it has been observed that the initial formation of these supercolonies involves aggressive actions between nests, suggesting supercolony formation involves some mechanism for selective acceptance and rejection of colonies based on recognition cues. In the current study, we are examining diet as a recognition cue, and its relation to intercolony aggression. Specifically, colonies from suburban locations were introduced to colonies from undeveloped land after being raised in a controlled environment, and switched from a wild diet to a common diet. Aggressive actions during colony pairings were measured after being freshly collected, and after being raised on a common diet after two weeks and four weeks. It was found that aggressive actions toward other colony ants decreased as time raised on a comparable diet increased, regardless of geographical location. This suggests that time spent raised on a common diet affects a recognition cue such that intraspecific aggression is decreased.

**Discordance Between Patient-Perceived and Physician-Assessed Disease Activity in Rheumatoid Arthritis**
Julia Ayeroff
This research examined the influence of rheumatoid arthritis (RA) disease severity, RA patient-perceived disease activity, and psychosocial factors on physician-assessed RA disease activity. Structural equation modeling was adopted to elucidate the complexity of relations among variables in the proposed model. The data of 104 RA patients were used to evaluate a model in which disease severity (DAS-28 Swollen Joint Count and Erythrocyte Sedimentation Rate), RA patient-perceived disease activity (Rapid Assessment of Disease Activity in Rheumatology total joint score and disease activity), physician examination-based joint tenderness rating, and psychosocial factors including perceived life stress (Perceived Stress Scale), depressive symptoms (Hamilton Rating Scale-Depression) and ethnic minority status (Non-White ethnicity) influence physician assessment of global RA disease activity. Structural equation modeling revealed a good fit of the data, CFI= .954; S-B χ2 (20)= 30.84, p = .057; RMSEA= .073. RA disease severity was positively related to patient-perceived RA disease activity, physician-rated joint tenderness and physician-rated global disease activity. Higher levels of patient-perceived RA disease activity and physician-rated joint tenderness were associated with higher levels of physician-perceived global RA disease activity. The level of depressive symptomatology and perceived life stress were related to higher levels of patient-perceived RA disease activity. Non-White ethnicity was positively associated with patient-perceived RA disease activity. However, Non-White ethnicity was found to be negatively associated with physician-rated joint tenderness. Findings confirmed the importance of a multi-dimensional framework in evaluating RA disease activity assessment. These findings suggest psychosocial factors such as ethnicity may affect concordance between patients' and physicians' disease activity ratings.

**Domestic Drone Surveillance and the Societal Definition of Privacy**
Christopher Eaton

Over the last decade, the United States has increased the size and scope of its surveillance apparatus. This new apparatus utilizes advanced surveillance technology, fear of another terrorist attack, and legal leniency to conduct its operations under the banner of national security. This research focuses on the sociological impact of this new surveillance apparatus on the American idea of privacy. I ask the question, has the use of surveillance unmanned aircraft systems (UAS) – or drones – by law enforcement changed the societal definition of privacy? That is, are the things once considered private, no longer thought to be so? This project will be an interpretive analysis of a concrete practice – the use of drones in domestic surveillance – in an attempt to understand what this practice means in terms of the American societal definition of privacy. I engage in a critical theoretical approach of Michel Foucault’s writings on panopticism in part 3, chapter 3 of *Discipline & Punish: The Birth of the Prison*. I also extensively use his work on power relations in chapter 5 of *The History of Sexuality, Volume I: An Introduction*, and the tenth through thirteenth lectures Foucault gave at the College de France in 1977-78 concerning security, territory, and population. The contribution of the research is not only a critique of domestic drone usage, but to elaborate on whether or not there is something different, or entirely new, about the prevailing security theories.

**Dr. Frankenstein's Moral Compass: An Analysis of the Mad Scientist from the Universal Films of the 1930's**
Melissa Kaufler

The famous exclamation, “It's alive! It's alive!” is immortalized in film history by the memorable and often misunderstood portrayal of Dr. Frankenstein in Universal's "Frankenstein" (1931) and "Bride of Frankenstein" (1935) – a portrayal that set the standard for the mad scientist archetype. These films tell the tale of Henry Frankenstein: a man driven mad by science that becomes
dramatically by his own creation and is then haunted by the consequences of his genius. His character reminds us that often times, we have only ourselves to hold responsible for creating the “monsters” in our own lives that reflect the demons inside of us. Dr. Frankenstein, despite his tumultuous path and questionable actions, is ultimately a good and moral being. This presentation will plot the arc of Dr. Frankenstein’s moral compass by dividing his moral evolution into six different stages and analyzing it through a non-religious lens that demonstrates the complexity of morality surrounding the human experience.

Dressed to Oppress: Reversing Marginalization through Fashion and Branding
Sara Layon

Throughout history, various people in the United States have suffered from oppression due to racial hate. Although it seems that our society has become more accepting of diversity, the truth is that we are still plagued with heavy intolerance today. As a victim of racial hate, I have come to wonder: what if I can use design as a vehicle for changing racist habits and attitudes? By putting people into the shoes of those marginalized, can I provoke activism and show that a climate of racism still exists today? Through the use of urban clothing design, I want to showcase the way people are inappropriately labeled and stereotyped due to racial hate. I will research, and interview people about their experiences with racial hate and translate those stories into clothing designs. Clothing can be used as an identifier, a storytelling device, and a form of expressions. By using clothing as a medium, I want to ironically emphasize how these different racial stereotypes are a wrongful and inadequate means of describing an individual. I will stage a display of clothing in a gallery space where people can try on these “labels” as a step towards understanding discrimination from a victim’s standpoint. The interactive opportunity will ultimately test the effectiveness of my designs. My hope is that wearing the clothing will allow the person to experience the discomfort of being stereotyped and be called to take a stand.

Early Childhood Education Across the Globe
Brianna Bruns

The following thesis will answer the question: What can the United States learn from the successful early childhood education and care (ECEC) programs around the world? In order to answer this question, exploratory research will be conducted via four case studies in a cross-national study. Finland’s ECEC program will be analyzed, due to its high PISA (Programme for International Student Assessment) test results. The United Kingdom’s program, Sure Start, is included because its national program was modeled after the US and yet its PISA scores far surpass America’s. France’s preschool will be analyzed due to the fact that it is one of the first universal preschool programs in the world. The ECEC programs in these countries will be compared to the US federal program, Head Start.

In order to judge the effectiveness of each country’s ECEC program, each program will be analyzed in terms of the policy levers that the Organization for Economic Co-operation and Development (OECD) has deemed as indicators of ECEC program success. Each country’s program will be analyzed and scored in order to judge its performance in each of the 5 policy categories. These include setting goals and regulations, curriculum and standard implementation, high teacher qualifications, engagement of parents and communities, and program monitoring. This thesis will uncover what characteristics the top scoring and successful programs have in common, and which of these characteristics would be feasible to be implemented into the United States’ ECEC program, Head Start.
Early Exposure of Alcohol and its Effect on Memory
Robert Berberyan, Brian Klein, Sam McGee

The research examined whether an early exposure to alcohol would be correlated with a poorer memory performance on a standardized California Verbal Learning Test (II). There were 18 participants, of which 14 produced sufficient data to be used for testing. Participants were given a background questionnaire that assessed demographic information, including age of alcohol exposure. Participants completed the CVLT (II), of which we used the gross total of the 5 trials for the Immediate Free Recall portion of the test. There were no significant results correlated between drinking age exposure and the Immediate Free Recall measure of memory. Due to the small amount of participants that reported an early exposure to alcohol, as well as a limited sample size, the results may not reflect an accurate representation of the tested age group.

Ecological Sustainability and Lifestyle: What Determines Willingness to Make Sacrifices?
Michael Hanover

The purpose of my research is not to advocate a probable scenario for the future of climate change, nor is it to discover which scenario people find most plausible. Instead, this study focuses on the aspect of climate change scientists can all agree on. Our current behavior patterns have created the grave situation we face today. Such a threat to the global environment will require us to make some degree of sacrifices, difficult decisions, and lifestyle changes. I target the following question: What factors influence an American’s willingness to make the sacrifices identified as necessary for addressing climate change? This research provides detailed insight as to which groups might be receptive to certain environmental policies and also expose demographic cleavages that could be the basis for future environmental education policies. In an age where behavioral change is increasingly inevitable, it will be extremely valuable for policymakers, scientists, and regular citizens to understand how to get the most out of target groups, and which policies or practices are likely to be most influential in addressing climate change.

Ecopsychology, Nature, and Peace: A Case Study of the Palace of Minos at Knossos
Jenna Homen

The discipline of ecopsychology focuses on the individual and his or her cognitive, affective, and behavioral relationship with the surrounding world. It argues that human minds and bodies have developed to their present state through thousands of years of direct interaction with nature – a relationship of both sustainability and struggle. I propose that Eco-psychology provided an important methodological approach to the art of the ancient world since it humanizes people and provide insight into their cultures and artistic practices. In this interdisciplinary paper, I offer an alternative explanation to conventional beliefs held about the Minoan culture of Bronze Age Crete, theories that attribute the array of nature motifs found in artifacts as evidence of religion and rituals. Through analysis of architecture, portable and usable art, and wall frescos of the ancient Palace at Knossos, it is evident that the relationship the Minoans had with nature was not solely religious, but rather a holistic appreciation of their surroundings that paralleled the harmony of this flourishing past society. By adapting an Eco-psychological view when examining the evidence of the Minoans, I ultimately produce a deeper understanding of the elusive Minoan culture and lifestyle, emphasizing the ultimate goal of archaeology – a practice focused upon “not digging up things but digging up people.”
Effects of Black Mustard allelopathy on the fitness and life history of Buffalo Gourds in Southern California
Gabriel Casagrande, Diego Rodriguez

Black Mustard is an aggressively prolific invasive species in Southern California. Allelopathic compounds secreted into the soil by Black Mustard can reduce seed germination rates and plant fitness in nearby species. Thus, Black Mustard shares in an amensalistic relationship with the majority of species within range of its allelopathic effects. Black mustard grows rampant on the hillsides north of Loyola Marymount University, and has displaced much of the native plant life. One native species, the Buffalo Gourd, has managed to persist within and around the expanses of Black Mustard growth on these hillsides along the Ballona Creek Trail. We hypothesized that increased proximity to Black Mustard would negatively impact Buffalo Gourd fitness. We found that Buffalo Gourds growing amongst Black Mustard had smaller mean fruit volume, a lower mean number of seeds per fruit, lower dry seed weight, a higher number of seeds per cubic centimeter of fruit volume, and a higher number of seeds per gram of fruit than Buffalo Gourds that grew outside of the range of the Black Mustard’s allelopathic inhibition. This indicates that the life history strategies of Buffalo Gourd change from K-selection to r-selection based on proximity to Black Mustard, as the reduced growth of fruit within Black Mustard appears to cause the Buffalo Gourd to produce fruit with smaller, more numerous seeds relative to fruit size, whereas fruit that grows in areas where Black Mustard is absent tends to have a relatively fewer number of larger seeds. Native plant growth, survivorship, and fecundity likely all decrease in the presence of invasive allelopathic species, and become at risk of displacement and disappearance from an area, as in the case of the Buffalo Gourds along Ballona Creek Trail.

Effects of Probiotics on Psychological Functioning
Catherine Race

It is well-established that the brain regulates the digestive system; however, it has only recently become apparent that there may be communication in the opposite direction—from the gut microbiome to the brain. Specifically, research on non-humans has shown that certain strains of probiotics affect psychologically-relevant neuromodulators. This proposed study will employ a double-blind, randomized design to examine the effects of probiotics (strains of lactobacillus helveticus r0052 and bifidobacterium longum r0175) on psychological functioning over 30 days. Participants are undergraduate students at Loyola Marymount University. It is predicted that there will be an interaction between experimental group and time point such that probiotics decrease depression- and anxiety-related symptoms. Such results would provide novel evidence that the gut-microbiome axis regulates psychological functioning in a clinically applicable way.

Effects of substrate salinities on node death in Salicornia pacifica
Giorgio Chirikian

Salicornia pacifica is a halophyte of the Ballona Wetlands known for its tolerance of high substrate salinities. This species is a shoot succulent with sessile decurrent leaf pairs that enclose the stem resulting in “succulent nodes”. It is probable that salt tolerance in the shoot depends on a balance of salt accumulation by growing nodes versus salt loss by nodal (leaf) death. Increased salt stress may thus result in an increased nodal death rate. For plants grown under conditions of controlled substrate salinity, new node growths in the first two months were significantly higher for treatments at 5 to 27.5 ‰; the optimal salinity range. Plants at supraoptimal salinities (27.5 to 60 ‰) had approximately 50 % fewer new nodes than optimal salinities. Nodal death was not observed at any salinity for first two months but subsequently increased, especially at optimal
salinities. The ratio of new nodes to dead nodes increased with increasing salinity. This suggests that node/leaf loss alone is not the mechanism of salt tolerance. Further studies will characterize water and salt fluxes through the plant. In this respect, the plants maintained in salinities alternating about 20‰ parts per thousand are of particular interest. Nodal death, both relative and absolute, were less than for constant salinities. It is possible that intermittent lower salinities provide water that would otherwise be withdrawn from older nodes.

**Emergency Room Usage by Los Angeles Homeless: The Role of Race and Problem Perceptions**
Adam Pines, Robyn Rutherford

This study seeks to determine whether significant differences existed between homeless populations in the Boyle Heights community surrounding the LAC + USC County Hospital, as they had experienced an increased influx of homeless patients. Participants were categorized by race (i.e., African American, Latino) and time spent homeless in Boyle Heights across various psychological factors as well as emergency room (ER) usage. A researcher-administered quantitative survey was used for data collection. Participants (N = 114) indicated their ethnicity, duration of homelessness within the community, and rated the extent to which certain psychological factors (i.e. stress and personal safety) were problems in their lives. A one-way ANOVA was conducted to evaluate psychological differences based on how long participants reported being homeless in Boyle Heights. Significant differences were found between these participants in their perceived stress (p = .01) and personal safety (p = .02), among other factors. Participants who reported 1-3 years of living homeless in the community also reported higher levels of stress and lower levels of personal safety than participants who reported 4 or more years of living homeless. In addition, an independent samples t-test revealed that African Americans exhibited higher usage of the ER than their Latino counterparts (p <.001). Our data suggests that homeless individuals may adapt over time to stress and personal safety. Our data also suggests that homeless African Americans are much more likely to use Emergency Room services than their Latino counterparts. Based on the research at hand, there are significant differences between homeless populations in this community. This is significant as it provides insight from the viewpoint of this special population about the state of homelessness in this section of Los Angeles. Future research may seek to explore the reasons behind such cultural differences.

**Emersion and temperature effects on growth rates and byssal thread production in two sympatric marine mussel species**
Rachael Sears

Marine mussels are exposed to various stressors on a daily basis; the most prominent of these stressors is their exposure to tidal variation. In order to better understand the effects of tidal variation, we exposed mussels to daily four-hour intervals in one of three treatments: heat, air, or seawater control. The trials were run on two species: *Mytilus californianus*, a species native to California, and *M. galloprovinicalis*, an invasive species thought to maintain high growth rates even under stressful conditions. Our research aims to answer the following questions regarding these two sympatric species: 1) Does recurring stress impact growth rates? 2) Does pre-acclimation to aerial exposure influence survival and/or growth of mussels that are then exposed to extreme high temperatures in air? 3) Are there tradeoffs between growth in body mass and growth of byssal threads, the protein-rich extensions used to anchor individuals to the rock? 4) Do any of these responses vary between the native and the invasive species? We predicted that growth rates of individual mussels will be negatively impacted by recurring stress, and that there are probably trade-offs in body mass and byssal thread production. Overall, our results indicated that acclimation to recurring stress of emersion did not significantly impact growth rates or
survival of either mussel species, either before or after being exposed to three days of extreme high temperatures (32°C). In *M. galloprovincialis*, there was a divergent temporal pattern of byssal thread production between mussels exposed to warm air and mussels held in seawater.

**Establishing the Future of the Eurozone through the Theory of Optimum Currency Areas**

Jaqueline Pierson

With the uncertain future of one of the world’s largest economic powers, the European Union, the global financial market is anxiously awaiting the next big move of the Eurozone. Because the Eurozone is such a large economic player, the decisions that are made will have profound effects around the world. At the root of the many problems currently plaguing the Eurozone, are the consequences that stem from a lack of fiscal unity, fragility in the banking sector, the negative affect of rating agencies, and the immense effect of asymmetric shocks. By examining the current literature on the Theory of Optimum Currency Areas (OCA) I contend that the Eurozone is a crucial point in its existence and decisions must be made immediately. The decisions should provide short-term relief to institutions and improve economic conditions of the European Citizens. These decisions will directly be affected by the long-term goal that is decided upon. Europe has reached a point in its history in which a decision must be made to carry out an integration project years in the making or resort but to the dysfunctional, conflict ravaged continent that we once knew. Regardless of which path is chosen, action must be taken immediately.

**Evaluating the Field Emission Characteristics of Aluminum for DC High Voltage Photo-Electron Guns**

Rys Taus

High current photoguns require high power laser light, but only a small portion of the laser light illuminating the photocathode produces electron beam. Most of the laser light (~65%) simply serves to heat the photocathode, which leads to evaporation of the chemicals required to create the negative electron affinity condition necessary for photoemission. Photocathode cooling techniques have been employed to address this problem, but active cooling of the photocathode is complicated because the cooling apparatus must float at high voltage. This work evaluates the field emission characteristics of cathode electrodes manufactured from materials with high thermal conductivity: aluminum and copper. These electrodes could serve as effective heat sinks, to passively cool the photocathode that resides within such a structure. However, literature suggests "soft" materials like aluminum and copper are ill suited for photogun applications, due to excessive field emission when biased at high voltage. This work provides an evaluation of aluminum electrodes inside a high voltage field emission test stand, before and after coating with titanium nitride (TiN), a coating that enhances surface hardness. The TiN coating effectively enhances the field emission characteristics of aluminum electrodes to levels usable in high voltage photo-electron guns.

**Evaluating Tutors’ Abilities to Detect Confusion in Computer Mediated Learning Environments**

Kevin Osorno

With the presence of the Internet, students are now open to a myriad of new ways to receive education that were not available two decades ago. The presence of new technology has sparked researchers to attain a better understanding of the implications of using technology in learning, particularly in online environments. Twenty students from an introductory physics course were chosen to participate in free tutoring sessions from third and fourth-year students who were well
versed in introductory physics. Each student was tutored for approximately one hour twice, once in a one-on-one setting, and once online using a peer-developed program with an interactive whiteboard with basic functionalities for educating. In order to better understand the efficacy of online tutoring, the video recordings for each session were examined to determine how effectively tutors were able to detect confusion among students in an online environment when compared to a one-on-one setting.

**Evaluation of Heat Treated Ti-3Al-2.5V Mechanical and Microstructural Properties**

Taylor Chavez, Molly Dearborn

Ti-6Al-4V alloy is used in the vast majority of applications in aircraft and aerospace industry due to its high specific strength, high temperature stability, and excellent corrosion resistance. These applications include turbine blades and airframe components. However, its low ductility results in very high costs associated with producing, processing, and machining the wrought form of this alloy. A new alloy, Ti-3Al-2.5V, is cheaper to produce and has the potential of improved ductility and formability compared to the Ti-6Al-4V alloy. As a result, in a joint project between ALCOA (Torrance, CA) and LMU, various heat treatments were performed on cylindrical tensile test bars in order to optimize the mechanical properties of Ti-3Al-2.5V. The objective of this project was to determine if the mechanical properties of the new Ti-3Al-2.5V alloy would match or improve those of the Ti-6Al-4V alloy. The yield and ultimate strength, percent elongation, percent reduction in area, and Rockwell hardness of heat treated Ti-3Al-2.5V were determined at five different solution treatments and five different aging treatments for varying hours. The samples were tensile tested on an Instron machine, and selected fractured surfaces were evaluated by scanning electron microscopy. The results indicated that optimum properties of high strength and ductility were reached at 926 °C of solution treatment and 480 °C of aging. The strength obtained was 152 and 156 ksi in yield and ultimate strengths, 10% reduction in area, and 13% elongation. The new Ti-3Al-2.5V appears to be a cheaper and efficient replacement for the conventional Ti-6Al-4V alloy.

**Evaluation of Long Term Structural Tent Materials for Use in Djibouti’s Climate**

Matt Baum, Taylor Chavez, Andrew Dominguez, Brennan Justice, Dominick Lentine, Michael Lynch, Maximilian Miller, Austin Schrieber

Navy engineers at Port Hueneme, Oxnard, CA, are designing temporary residences called Super CLU-S (containerized living units) for soldiers in Djibouti, Africa. Due to the particularly hot climate in Djibouti, Navy engineers suggest that tents can be canopied over the Super CLU-S in hopes of reducing cooling costs by 50% (currently estimated at $1,200,000 - $1,500,000/mo). This project is focused on the evaluation of long lasting structural fabrics to withstand Djibouti’s harsh desert climate. Six tests were designed to compare the performance of current fabric materials used by the Navy with leading shading fabrics. The tests were performed using the following methodology: (1) abrasion resistance: testing impact resistance from hard sand particles by use of an industrial precision sandblaster to simulate sandstorms, (2) temperature resistance: testing resistance to Djibouti’s high heat environment using several material testing ovens, (3) weather resistance: testing resistance to ultraviolet light and humidity using a QUV Accelerated Weathering Tester, (4) wind resistance: testing resistance to fatigue effects by high wind conditions by using a modified wind tunnel, (5) heat transmisivity: comparing the heat flow into and out of an insulated container, and (6) strength: testing tensile stresses by use of an Instron 5544 Tensile Tester. The hypothesis this project is testing is whether there is a superior material for use in long-term structural tenting in Djibouti, Africa. The conclusion of this project will
result in quantitative data to support previously used Naval fabrics, or to recommend switching to a better suited fabric for this and other applications.

**Examination of Student’s Self-Monitoring in Problem Solving**
Kevin Osorno

For solving problems, especially, ill-structured ones, a solver must employ metacognitive strategies including self-monitoring to be successful. Solvers who frequently examine their own thoughts while problem solving are able to assess their progress, consider alternatives and evaluate the validity of their own work. In an introductory mechanics course, students were asked to record problem solutions in their assignments using a think-aloud protocol. The recordings were made using Livescribe pens that synchronously record pen and audio. To gain a better understanding of the self-monitoring process, the recorded think-alouds were examined after the course. Thus far, three categories of self-monitoring have been identified, and students who frequently utilized self-monitoring were more likely to achieve a correct solution than those who did not.

**Examining the effects of the deletion of flhC and flhC2 genes of B. unamae flhC and flhC2 on motility and exopolysaccharide production**
Thuthiri Lwin

The rhizospheric and endophytic nature of Bulkholderia unamae and its capability to perform nitrogen-fixation allow for its beneficial associations with crops like maize and sugarcane. Our study focuses on the B. unamae genes associated with the ability to interact and form relationships with the roots of these plants. Previous research in the lab identified flhC1 as important for motility and exopolysaccharide production. Other studies have shown that flhC is involved in gene regulation. To confirm our findings and determine whether a second copy of the gene, flhC2, is also important, we generated mutants deleted in flhC1 (ΔflhC1) and flhC2 (ΔflhC2). To do this, vectors that could be used to generate the deletions were constructed through PCR and cloning methods. The constructs were then introduced into B. unamae by conjugation and potential mutants selected and confirmed by PCR. Results show that ΔflhC1 has a similar phenotype as what we had seen in the flhC1 transposon mutant, exhibiting low motility and an increased mucoid phenotype, indicative of altered exopolysaccharide production. However, ΔflhC2 does not display differences in motility from wild type on 0.3% agar media. Currently, we are investigating exopolysaccharide production by B. unamae in comparison to that of its mutants. Also, we are in the process of complementing the deletions to definitively demonstrate that flhC1 and flhC2 are involved in the phenotypic results of the mutants. Through our findings we hope to broaden the knowledge behind the mechanisms of B. unamae to associate with plants.

**Exploration of microclimate influences on the abundance of galls on Salix daphnoides Vill. within two riparian communities**
Emily Hand, Sara Morlege-Hampton, Rachael Sears, Tauras Vigalys

In Southern California, the red willow (*Salix laevigata*) hosts a variety of gall-inducing parasitic insects. Plant galls are abnormal growths stimulated by the parasitic manipulation of plant hormones, but little is known about the ecology of these parasites. In particular, their microclimate preferences have yet to be characterized. This study explores the relationship between microclimate and gall frequencies in *S. laevigata* in the Ballona Wetlands and Temescal Canyon, and expected gall count to correlate with biotic and abiotic factors such as soil pH, soil moisture, and willow density. We found significantly more galls per leaf at Temescal Canyon than Ballona Wetlands. Although the number of galls per leaf correlated negatively with soil pH,
soil moisture content, and canopy openness, only site and gall location were found to significantly predict the number of galls. These results suggest additional or interacting microclimate factors may influence gall frequencies between Temescal Canyon and the Ballona Wetlands.

Exploring Marshal McLuhan's Theoretical Framework in the Context of Contemporary Art & Technology
Natalie Chandler

McLuhan see’s media as more than a tool for mass communication, instead he views media as any technology or tool. Thought and vision have become our most prized and exploited senses. New media feeds mans desire to increase power and speed. However, as Mcluhan explains, with each gain there is a loss. Historical research reveals that “technology gives power through extension but immobilizes and paralyzes what it extends”. This essay uses qualitative methods to explore consequences of contemporary technological developments. The emerging grounded theory of this research reveals that we are moving into an ocularcentric and non-tactile society. Furthermore, as a result, we have disconnected from our most interrelating senses and the potential for a culture industry has developed. This essay will close with an exploration of artists responses to these contemporary issues and an ethical inquiry into this phenomena.

Expressing Attitudes about Involvement in International Affairs
Paige Vaughn

Internet, television, radio, and print media sources have become popular forms of information sharing in the modern world, and such sources have been found to present various cultural and ideological norms that largely influence the attitudes and opinions that individuals have about national and international war-related issues (Aday, Livingston, & Hebert, 2005; Hwang, Schmierbach, Pack, de Zuniga, Shah, 2009; Johansen & Joslyn, 2008; Kull, Ramsay, & Lewis, 2003; Nah, Veenstra, & Shah, 2006). This research project investigates attitudes about war-related issues and the role that media sources play in influencing beliefs about and ultimate understandings of United States involvement in war-related international affairs using a survey of 136 undergraduate students. Respondents completed a survey that addressed the use of media sources as well as attitudes and beliefs regarding the United States invasion of Iraq and a recent chemical weapons attack that occurred on August 21, 2013 in Damascus, Syria. Results suggest that students often use a combination of different media sources and channels to access news, and their understandings of international affairs vary greatly in many respects. The findings from this study have implications for understanding the ways in which college students access news and students’ overall attitudes of involvement in foreign issues.

Female Migrants and Development
Ebehireme Ihoya

This empirical study focuses on both international and internal migration from Bangladesh, Indonesia and Vietnam in order to explore the role gender plays in how remittances contribute to poverty reduction and improved household outcomes. This study will employ data from the Bangladesh Integrated Household Survey (BIHS) 2011-2012, the 2008 Indonesia Household Socio-Economic Baseline Survey (SUSETI), and the Development on the Move (DOTM) project in Vietnam. Each source contains information collected from households about migrants,
remittances sent to and received from migrants, and other household characteristics such as income and expenditure. Since the data sets are not comparable, this will not be a comparative analysis. Rather, this study attempts to provide a more nuanced view of the impact of gender on migration and development in each country of interest, and by extension, in South and Southeast Asia. Using Least Squares regression estimates, I will investigate how the gender of senders and recipients of remittances may lead to different impacts on households. The hypothesis tested is that female migrants’ remittances are more likely to be spent in ways that improve household outcomes.

Finding Optimum Fruit Extracts to Inhibit the Aggregation of Amyloidogenic IAPP
Taylor Arhar, Shauna Ekimura, Evangeline Green, Dennis Juarez, Pei-Yu Kao

Current literature suggests that the aggregation of Islet Amyloid Polypeptide (IAPP, amylin) plays a direct role in the death of pancreatic B-islet cells in type II diabetes, and that the inhibition of aggregation may slow or prevent the progression of type II diabetes. In this study, we screened 13 fruits for inhibiting the aggregation of IAPP. The fruits were selected based on their accessibility to the public and their relative costs; we chose the most inexpensive and easily accessible fruits. We performed an ethyl acetate extraction of each whole fruit sample and tested for inhibition using a Thioflavin T binding assay. Atomic force microscopy was used to visualize the formation of amyloid fibers of each fruit extract and IAPP, and of IAPP alone. In addition, toxic oligomer formation of IAPP samples was monitored by a time-course oligomer-specific Dot Blot assay.

Fitness and life history trade-offs of Toyon (Heteromeles arbutifolia) along an elevational gradient in Southern California
Patrick Bergin, Gabriela Lopez, Anita Simonian

Toyon (Heteromeles arbutifolia) is a perennial shrub native to coastal sage scrub habitats in California that produces fruit from November to January. This experiment evaluated the fitness and life history tradeoffs of Toyon fruit growing along an elevational gradient in the Santa Monica Mountains. We expected that the physiological stress associated with increasing elevation would negatively impact Toyon fitness but that life history constraints, such as the inverse relationship between seed-weight and seed-count, would remain unchanged throughout the elevational gradient. As expected, results indicated that the seed-count, fruit-volume, sugar-concentration of fruit, and seed-weight significantly decreased with increasing elevation. However, in terms of the ratios of fruit-volume to seed-count and the ratios of seed-weight to seed-count, we detected that Toyon life history constraints were largely absent throughout the elevational sampling gradient. Further studies are needed, however, the literature suggests that the evolution of life-history can be constrained by ecological scale, environmental conditions, and may be further masked by multiple-trait tradeoffs.

Forecasting Leadership: An Analysis of Mayors and Economic Change in Los Angeles County
Isabel Casso, Zayd Al-Marayati

This project explores how elected leaders perceive the economic future of Los Angeles County. Los Angeles County is currently experiencing major shifts in its economy as a result of factors such as the elimination of Redevelopment Agencies and the issuing of drivers’ licenses to
undocumented immigrants. Local elected leaders like mayors play a significant role in how their cities respond to these shifts. To better understand how leaders are thinking about the economic and social trajectories of their cities, this project analyzes the Leadership Outlook Survey (LOS), a survey conducted by the Center for the Study of Los Angeles that includes data from 60 of the 88 mayors in LA County. The LOS asked questions about their term-of-office priorities, how their municipalities will fare economically in the short and long term, as well as personal demographic information. The goal of our research is to understand in what ways a mayor’s personal background impacts their governance and relation to the city’s economic condition. We will analyze how the personal demographics of the mayors are related to their efficacy in creating economic change, attitudes, as well as their type of election (e.g. elected or rotational, full-time or part time). We hypothesize that cities governed by a full-time mayor whose demographics more closely match those of the city’s majority population will have a more optimistic economic outlook and stronger efficacy. It is important to better understand how mayors relate to and make decisions about their cities in the face of economic change.

**Forget Forgiving: Reflections on Derrida and Forgiveness**
Anthony Pico

Postmodern philosophy centers on the idea of God as an impossible wholly other entity/idea. This wholly other interpretation of God includes the idea of absolute true forgiveness, which is unattainable by human beings. The colloquial use of forgiveness is a far cry from the definition of absolute true forgiveness. Instead, colloquial forgiveness is an unfruitful idea, which serves no real purpose in society. This paper explores the definition of forgiveness and the downfalls of colloquial use, resulting in the conclusion that forgiveness is meaningless and should be disregarded.

**Fritz Lang’s Dystopian Film Metropolis**
Claire Andrae

After World War I and the collapse of the old Russian and German empires, Germany’s new democracy suffered from fear of a possible Communist revolution. In this context, the German director Fritz Lang created the expressionistic film Metropolis (1927), which describes the structures of a futuristic dystopian society. Lang presents a social order having a two-class system, similar to that of Marx in his Manifesto, in which wealthy industrialists live separately from the exploited workers. To improve the workers’ condition, Marx favors a revolution of the working class and the creation of a single-class society, whereas Lang advocates the use of a mediator to overcome the disparity between the two classes. To show that Metropolis has an anti-revolutionary message, this paper examines the film’s visual and narrative composition and the cultural and historical context of the Weimar Republic, a period in German history spanning the years 1919 to 1933. The devastating consequences of WWI, hyperinflation, and attempted coups by communists, separatist, or ultra-conservative groups created a general atmosphere of uncertainty and hardship, which is reflected in Lang’s film. Metropolis also mirrors the reality of life for the working class, and shows the detrimental consequences that technology has on the workers, which Marx addresses as well. This paper reveals that Marx and Lang propose differing solutions to a dystopian environment, but avoid actually describing that new utopia. However, they perform the important function of creating awareness about the harmful conditions of society and the dystopian destiny of humanity if they are not properly addressed.
Women have frequently been found to be more risk averse than men. When presented with different risky choices expressed as a list of lotteries (different expected returns = expected values, and risk = standard deviation), women generally are willing to sacrifice expected returns to lower the risk. Similar choices have been frequently observed in real-world investment decisions, such as retirement funds, where women tend to invest in portfolios with lower risk, or stock investments, where males invest in riskier stocks. However, there is also evidence that the exact circumstances, among others, the perception of the risky decision making matter significantly for the degree of gender differences (if any.) We examine to what extent perceived and real gender differences in risk attitudes influence choices. Based on a careful review of the relevant economics, finance, and psychology literature, we are developing lottery experiments that investigate the relationship between risk attitudes and gender framing and priming, in order to assess to what extent the perception of a risky decision and therefore also the choices made are subject to the description and context of the risky decision. If such a relationship can be established, then this opens avenues for policy interventions.

Gene database construction and GenMAPP analysis of Sinorhizobium meliloti microarray data comparing salt and sucrose stress
Mitchell Petredis

*Sinorhizobium meliloti* is a gram-negative rhizobacteria that is the symbiont of the legume alfalfa and is able to induce nodule growth within its roots where nitrogen fixation takes place. The DNA microarray experiment performed by Domínguez-Ferreras et al. (2006, Journal of Bacteriology 188:7617-7625) specifically focused on studying the transcriptional responses of *S. meliloti* when placed under high salinity and sucrose stress. This served to identify the gene expression changes that are responsible for hyperosmotic stress, which would interfere with growth and, therefore, nitrogen fixation.

We wanted to analyze the data from the DNA microarray experiment performed by Domínguez-Ferreras et al. using GenMAPP, but it was not possible since no gene database existed for *S. meliloti*. Now, thanks to the free resources provided by XMLPipeDB, we applied the GenMAPP Builder program to create a custom database for *S. meliloti*. We created a fully functional database for *S. meliloti*, validated the data integrity, and released it freely to the public. In our analysis of the Domínguez-Ferreras et al. data, we found that the one gene that was significantly repressed functioned in the nitrogen fixation pathway. We also found that the Gene Ontology terms associated with genes induced by salt stress included the ribosomal subunits, metabolic pathways, and cell wall structure. These findings revealed cellular processes involved in the response to salt stress that were not mentioned in the Domínguez-Ferreras et al. paper.

Genetic Variability and Fitness in the Green Lynx Spider Peucetia viridans (Araneae, Oxyopidae)
Hilda Delgadillo, Hayley Quarticcio, Adriana Sosa

The relationship between fitness and the genetic variability was investigated in the green lynx spider *Peucetia viridans*. In 2010 and 2011, we collected female *P. viridans* and their egg sacs from Kenneth Hahn State Recreation Area, Los Angeles, CA (2010, *n*=60; 2011, *n*=150). In lab, three measures of female body condition and 11 measures of reproductive performance were determined for each spider. With samples from both years, we determined the phosphoglucose isomerase (PGI) genotypes for each female using allozyme electrophoresis. With 2010 spiders, PGI^{CC} females made more egg sac silk relative to egg sac mass and offspring number than PGI^{IC} females, while PGI^{CC} females invested more in clutch and egg sac mass relative to their own mass.
than PGI\textsuperscript{BC} females. In 2011, PGI\textsuperscript{BC} and PGI\textsuperscript{TC} females did not significantly differ for any reproductive indices. The fact that significant differences among PGI genotypes were detected in 2010 but not in 2011 could be due to many factors. One factor which differed greatly between years was rainfall, since in 2010-2011, Los Angeles had nearly 4” more rain than in 2009-2010. Thus, prey items for \textit{P. viridans} may have been easier to find in 2011 than in 2010, resulting in generally heavier females and consequently more minimal differences in reproductive performance among genotypes in 2011.

**Graphic Intervention in Mental Health Treatment**

Justin Lai

Student Psychological Services at LMU is dedicated to caring for the mental health of its student body and general community. Many students however, forego a preliminary therapy session or visit to the campus office due to the negative stigma surrounding mental healthcare. A background in user interfaces and user experience in the healthcare sector led me to ask the question: What if I could reduce or directly address the negative stigma surrounding mental health through design and technology? By designing a highly accessible user interface for a mobile application within the LMU SPS infrastructure, could I encourage students to address their mental health in an inconspicuous manner? I propose designing a welcoming and simple user interface for an LMU SPS mobile application to overcome students’ perceived stigma of being ‘seen’ visiting the SPS office. By mobilizing student mindfulness, my goal is to increase outreach, accessibility and ultimately office visitation. I will work directly with the director of LMU SPS outreach to research and design a prototype that will test the efficacy of a mobile application. The actual implementation, essential features, and an aesthetically inviting user-interface will be tested in a design prototype. This application will be available to download and test at the student gallery exhibit and research symposium. Qualitative feedback will then be compiled and used to iterate a final design proposal for SPS.

**Greening the Farm Bill: a Strategy for US Special Interest Groups**

Julia Woods

The Common Agricultural Policy (CAP) is a notoriously controversial set of farm subsidies in the EU (European Union). Since its inception in the 1960s, the CAP has undergone a rigorous set of environmental reforms. I argue that Europe’s transition to a greener agricultural policy lays the fundamental groundwork of agricultural reform that we need so desperately in the United States (US). Much of the success of achieving a greener CAP is arguably the result of powerful green lobbies in countries like the United Kingdom (UK). To what extent can we apply the same grassroots strategies to implement similar changes in the US?

To examine this question, I focus on one of the most powerful countries of the EU, the UK. The UK offers a similar political context relative to its agricultural politics, and therefore is suitable for a comparative case study with the US. I posit that the UK environmental non-governmental organizations (NGO) were the primary contributor of the green evolution of the EU CAP, and the US environmental interest group base may be able to “green” the Farm Bill upon utilizing similar strategies. Moreover, these civil society actors were able to catalyze the greening of the CAP by taking advantage of the political context within which it was situated. [write about your method here…I use…x and y to support these expectations, during such and such years.] I will support these expectations by using the following framework: Context + Civil Society → Policy-level Efficiency, within a 20-year time frame (1994-2014). My goal is to demonstrate how the
strategies employed by the UK’s NGO base may be utilized by US special interest groups in their path toward sustainable agriculture.

**Grey & Green (Working Title)**
Réchard François
As stated by geographer Ronald Davidson, “public space is really the defining space of a city.” Yet, the development of Los Angeles has largely left this important space unaccounted for. Data from the Trust of Public Land demonstrates L.A. has a lower quantity of public space compared to other high-density metropolitans of the U.S. Only 8.0% of L.A. land area is park acreage, below the median percentage of 10.3% and well-below the percentage of other well-known metropolitan areas, such as New York City (19.5%), Washington D.C. (19%), and San Francisco (18%). Additionally, most of the park space, in L.A., is concentrated in areas that are not readily accessible by the cities entire population. It is largely concentrated in the Santa Monica Mountains National Recreation Area and Griffith Park, leaving South and East LA underserved and marginalized. This documentary film presents the early development of the city to demonstrate how it has affected today’s current condition and profiles current strategies and attempts to fix the problem. This documentary primarily highlights the narrative surrounding the L.A. River, beaches, and smaller more-readily available green spaces. Through interviews with local scholars, professionals, and community organizers, the film sets out to enlighten Angelenos to a lesser known problem that ails our city.

**GRNsight: a Web Application for Visualizing Models of Gene Regulatory Networks**
Nicole Angulano, Southwick
A gene regulatory network (GRN) consists of genes, transcription factors, and the regulatory connections between them, which govern the level of expression of mRNA and protein from those genes. GRNs can be mathematically modeled and simulated by applications such as GRNmap, a MATLAB program that estimates the parameters and performs forward simulations of a differential equations model of a GRN. Computer representations of GRNs, such as the models output by GRNmap, are tabular spreadsheets that are not easily interpretable. Ideally, GRNs should be displayed as diagrams (graphs) detailing the regulatory relationships (edges) between each gene (node) in the network. To address this need, we developed GRNsight. GRNsight is an open source web application for visualizing mathematical models of GRNs. It allows users to upload spreadsheets generated by GRNmap and uses the information in these spreadsheets to automatically create and display a graph of the GRN model. The application colors the edges and adjusts their thickness based on the sign (activation or repression) and the strength (magnitude) of the regulatory relationship, respectively. Finally, GRNsight then allows the user to modify the graph in order to define the best visual layout for the network. Most of GRNsight is written in JavaScript. HTTP requests are handled using Node.js and the Express framework. Graphs are generated through D3.js, a JavaScript data visualization library.

**H**

**Heavy Hand**
John Hogan
“I didn’t do it!” “It wasn’t me!” Growing up in a house with three other brothers, I was always getting blamed for things I did not do. Imagine, however, being put in jail for a crime you did not commit. Wrongfully accusing a person for a crime they did not commit has been a subject of concern for many societies. Advances in science have led to the exoneration of a small number
who have been wrongfully accused. Even with these small steps forward, little has been done to adequately integrate the wrongly convicted back into society. The real problem arises when the exonerated are thrown back into a society that has moved on without them. An innocent person who has had their life ruined by years in prison must be sufficiently compensated for the horrors they are forced to face on behalf of the justice system. My research will show the beginning, middle and end of the entire issue. I plan to start at the beginning to find out why and how these people are falsely convicted. Next, I will investigate the compensation policies of each state and how those policies can be improved to better accommodate their exonerated subjects. Finally, I want to interview some of those who have been exonerated and use their personal accounts to gain knowledge about life after their release from prison. I will create a visual representation of the personal accounts to give a voice to the victims of this horrible reality.

Helping the Help – The Fight for Empowerment for Filipino Domestic Workers in Hong Kong
Philippa Adams

There are an estimated 300,000 domestic workers in Hong Kong (Bradsher, 2013), a large portion which are Filipino, and they face a variety of difficulties. Notably, domestic workers are unable to apply for permanent residency even after working in the city for many years. Although many have campaigned for the right to apply for permanent residency, the government has denied workers that right for fear of overwhelming public resources – others have accused the government’s decision as classist and xenophobic. Permanent residency is thus a hotly debated issue for migrant workers. However, whether that is the number one concern for them is unclear, especially given other obstacles such as discrimination and abuse. Also of note are how non-governmental organisations (NGOs) and charities face and deal with these issues. In the summer of 2013, the researcher travelled to Hong Kong and conducted a series of interviews with Filipino domestic helpers and NGO members. In terms of the Filipino participants, questions focused on their opinions on their inability to apply for permanent residency. NGOs were interviewed on their methods of eliminating social injustice, and what problems they thought needed the most attention. It was found that many workers had little interest in permanent residency. Rather, one of the more pressing issues facing workers was the lack of mental health services available.

Here on Earth, Tell Me What A Black Life is Worth: The Delegitimization of Black Male Victimhood
Erin Mieko Jones

African American males have been stigmatized and marginalized by society for centuries. The negative and over-represented stereotypes addressing their physicality, intelligence, and “inherent” lean toward violence have all been used in favor of validating white hegemonic society’s dominance over African-American males. This essay seeks to understand white hegemonic society’s discourse in legitimizing violence toward black males through an analysis of the Far-Right Conservative’s portrayals of African American male youth, Trayvon Martin, and the role he played leading up to his death. For the purpose of this research, I analyzed Ann Coulter’s “To Avoid Looking Like a Criminal, Don’t Commit a Crime” and Ted Nugent’s “Zimmerman Verdict Vindicates Citizen Patrols, Self-defense” articles as representative of this type of discourse. Employing an ideological critique, this essay addresses the underlying implications of white hegemonic discourse that demonizes black men through representations that emphasize criminal behavior. The findings indicate that it is nearly impossible for black youth to be viewed as deserving of appropriate legitimate victimhood due to any faults discovered in their pasts and their low racial hierarchal ranking. The implications of this message have harmful effects on the black male psyche and the value of their lives if left unchallenged.
Hoping for Change: A Reconsideration of the "Hopeless" Landscapes of Samuel Beckett
Mackenzie Ward

While many literary critics describe Samuel Beckett’s works as depicting a world devoid of hope or meaning, my research suggests that hope and meaning do indeed persist in the desolate landscapes that Beckett’s plays dramatize. To see the plays as hopeful requires, however, an adjustment to the standard idea of hope. Drawing on Beckett’s concepts of being and art – and in particular their complex interaction – my research focuses on the open spaces that Beckett’s works offer us. At the end of Waiting for Godot, to cite one of many examples, the audience does not know whether Godot will leave Vladimir and Estragon waiting forever, whether they will kill themselves while waiting, or whether Godot will show up and save the day. In this way, Beckett provides no closure, but at the same time, this state of suspension leaves open the possibility of change. My paper will focus on these fugitive moments in Beckett’s work when the future is open, those occasions when hope persists—even if it is hope for the remote possibility that a situation might change. It is this possibility, I argue, that gives Beckett’s plays a dimension of hope not acknowledged by most critics.

How Parental Work Schedules Affect Children's Educational Attainment
Elizabeth Hicks

This study will examine how parental work schedules affect their child’s educational attainment. I want to see how much time parents with standard and nonstandard work schedules are able to help their children with not only thriving academically but also in preparing to enter into higher education and even future career goals. There are different family structures and not all parents work typical 9 to 5 jobs, I hypothesize that families in which the primary caregiver, or at least one of the parents has a nonstandard work schedule, the child will not have fared as well academically as other children with parents with more standard working hours and are more likely to not be going to college or to be attending a community college after graduation. I wish to see if there is a correlation between family structure and educational achievement by surveying second semester high school seniors who have completed the majority of their primary education and who will most likely have made college plans.

How to Make People Think you are Smart: Sexual Differences in the Interpretation of Socially- vs. Factually-Phrased Competency Data
Andrew Earle

In this experiment, women were more influenced by socially phrased statements, while men were more influenced by factually phrased statements, even though both statements conveyed the same basic information (the intelligence of another individual). Participants (n=129) were randomly assigned to one of four conditions in which they viewed a photo and read a paragraph describing a fictitious college student, Allen. When Allen’s low level of intelligence was described in social terms (eg. “He is definitely considered to be one of the biggest slackers on campus”), women were significantly more convinced of his stupidity than men, t = 20.357  p = .000. However, when Allen’s low smarts were described in a more empirical way (eg. “He is currently ranked in the bottom 25% of his college class”), the opposite pattern emerged: men were significantly more convinced than women, t = 19.653  p = .000. An ANOVA revealed the gender x social interaction to be significant, F = 4.293 p = .043. The suggested explanations follow from the evolutionary psychological literature: women may have evolved to be more sensitive to social information because of selective pressures faced by our early hunter-gatherer ancestors.

Hummingbird Abundance and Distribution on the LMU Campus
Samantha Flores
Though hummingbirds (order Apodiformes) on the LMU campus appear ubiquitous and omnipresent, their occurrence, distribution and movement patterns are presently undescribed in any detail. A combination of transect analysis, artificial feeder monitoring and surveillance, nest material baiting and surveillance camera methodology is used to sample and describe hummingbird species composition, abundance and distribution at, or near, the LMU campus. Using this information, a map of observed hummingbird breeding territories on campus is developed in an attempt to quantify the number of birds in each campus area.

Humor in Politics
Kyleigh Sobieski

Poverty theories are frequently tested using social statistics, institutional analysis of social programs, discourse analysis or in-depth ethnographic observations. Humoristic productions are seldom used to address poverty, in spite of a large tradition and rich variety of influences in the politics of poverty. This paper inquires on the different roles that humoristic productions play in relation to poverty and poverty theories such as, raising awareness, unveiling oppressive situations, denouncing inequalities or critiquing unfair governmental and corporative policies. Herbert Gans’ “positive functions of poverty” is used as the main theory against which humoristic productions are assessed on their roles and impacts. This theory has been chosen because it is all encompassing and critical, yet simple. From modern picaresque literature to contemporary websites, different forms of humor are analyzed including plays, comic strips, cartoons, TV shows, movies and graffiti. The conclusions suggest that humoristic productions are valid empirical implications to assess and weight the strength of poverty theories and to understand a given state of affairs in issues linked to poverty. Humoristic productions are especially suitable to bring uncomfortable issues into the public agenda, to show political and social contradictions and to say what cannot or should not be said by other politically correct means.

Hyperreality of Marriage Throughout Womanhood: How Perceptions of Marriage Change
Jennifer Boucher

Serialized entertainment, such as The Bachelor and The Bachelorette, and fairy tales, like Disney’s Cinderella, describe true love that lives “happily ever after” and simultaneously communicate faulty perceptions of marriage. This hyperreality of marriage creates overly positive perceptions of marriage that ignore negative aspects, leading to inaccurate expectations of marriage. This study explores this phenomenon by examining how perceptions of marriage change from single young adulthood to married adulthood. Qualitative research was used to study how hyperreality of marriage affects perceptions of marriage throughout women’s lives and influences marital satisfaction. Two focus groups, one with middle-aged married or divorced women and one with single, college-aged women, were asked about perceptions, motives, and realities of marriage and dating to see if there was a relationship between their perceptions of and experiences in marriage and dating. Findings showed that media, fairy tales, and families influence perceptions of marriage and motivate women to get married. Also, overemphasizing positive aspects of marriage and ignoring negative aspects is a disadvantage when women get married. This is because faulty perceptions of marriage create high expectations that disappoint women when their marital fantasies do not become reality. Experiencing both positive and negative realities of marriage demonstrate how the hyperreality of marriage creates faulty perceptions of it. These hyperrealities hinder marital growth and bonding because inaccurate expectations are not met. As a result, marital satisfaction increases if couples enter marriage with accurate and similar perceptions, motives, and expectations.
Ideal Germination Conditions of a Threatened California Native
Kevin Meilak, Helena Olivieri

_Abronia maritima_, commonly known as the red sand verbena, is a threatened halophyte that’s growth is restricted to stable sand dunes along the coasts of southern California and northern Baja California. This research seeks to identify the ideal germination conditions of _A. maritima_ in regard to temperature and photoperiod. The purpose of this research is to identify preferable environmental conditions for seed development so policy makers may make informed decisions about dune restoration and preservation, and to increase the quantity of scientific information about _A. maritima_. Ethylene, a plant hormone, is known to induce germination in _Abronia_ species even when other conditions are non-ideal; it was used to remove other complicating factors such as photoperiod when determining the specie’s optimum germination temperature. Ethylene was not used in other experiments once the ideal germination temperature range was found. This study focused on other environmental cues of germination, such as photoperiod and the effect of alternating temperatures; ethylene, a substitute for these conditions, would have negated any distinctions between treatments. Preliminary results indicate the ideal germination temperature range is 20°C-25°C and that darkness increases germination rates. There is some evidence that alternating temperature increases germination rates; the exact temperatures are not yet known. There is some evidence that germination rates are increased in sand, thought to be due to the sand trapping ethylene, which originates from the seeds. Future research will work to identify the effects of alternating temperature on germination rates and clarify the role of sand in _A. maritima_ germination.

Identification of Bacteria having Resistance to Multiple Antibiotics
Danielle Lee, Anthony Martin

With the introduction of widespread anthropogenic antibiotic use, there has been a marked increase in numbers of antibiotic resistant bacteria in many ecosystems including the Southern California wetlands. In this study, we have built upon prior research that successfully isolated bacterial strains in the Ballona Wetlands showing resistance to five or more antibiotics. These bacterial strains were identified via 16S ribosomal RNA gene sequencing. To do this, genomic DNA was isolated from the strains, and the polymerase chain reaction was used to amplify the 16S rRNA gene. Gel electrophoresis was done to confirm amplification, and then the products were sequenced. Sequence analysis revealed the isolates with the greatest number of insensitivities included Enterobacteria species, Aeromonas species, Klebsiella variicola and Klebsiella pneumoniae. Identification of the strains was confirmed by Vitek™ analysis. We are currently attempting to identify the genes involved in conferring antibiotic resistance to some of these strains. We have isolated the pBluescriptKS vector. More genomic DNA will be isolated from the bacterial strains and a restriction digest done so that DNA fragments can be cloned into the vector. We will then use Escherichia coli as a host to receive these cloned genomic species. By plating the transformed E. coli onto plates containing various antibiotics, we hope to identify the specific genomic sequences involved in antibiotic resistance. This would allow future studies to investigate the development and mechanisms involved in antibiotic resistance.

Identifying binding partners for Erv1 - an inter membrane space mitochondrial protein
Joshua Rabang

Prokaryotes have both aerobic and anaerobic electron acceptors for the oxidative folding of proteins in the periplasm. The mitochondrial intermembrane space (IMS) has an analogous oxidative folding pathway consisting of the oxidoreductase Mia40 and sulfhydrl oxidase Erv1. It
is widely known that oxygen and cytochrome c act as aerobic electron acceptors. Recent studies have identified two new proteins, Osm1 and Yml as participants of this pathway. Our studies demonstrate that Yml localizes to the IMS and assembles with Osm1 and Erv1 in a ternary complex. However as import continues under anaerobic conditions, we hypothesize that Erv1 may bind to additional proteins in the IMS. Here, we have strategized to tag endogenous Erv1 with a multiple histidine tag in a yeast strain that is deleted for the “usual” Erv1 binding partner proteins—namely Osm1, cytochrome c, and Yml. This will allow us to “fish” for additional Erv1 substrate proteins and proteins that may function as electron acceptors under anaerobic conditions. Such an activity is important as it will help clarify the mechanistic role of Erv1 within the IMS of the mitochondrion.

**Identifying the Factors of Problem Complexity**  
Dante Sblendorio

The challenge of quantifying the complexity of problems encountered within STEM disciplines has been approached in a variety of ways. Typically, problems are characterized as either well-structured or ill-structured; determined by the ambiguity of the language used to convey the necessary information (knowns) needed to find a solution. Well-structured problems have clearly stated goals and parameters while ill-stated problems do not. While this single dimensional, if not binary, portrayal of problem difficulty is common, it does not completely capture all of the variations in problem complexity. We developed a reliable objective coding scheme that defines a three-component value that captures the amount of stated conditions within the problem, the number of necessary assumptions and physics concepts and the mathematical complexity. For example, problems with explicitly stated assumption (e.g. assume constant gravity) within the problem have a lower complexity rating than problems that do not give assumptions, and thereby force the solver to decide what to assume. We will present this coding scheme itself, results from when it is applied to popular physics texts and ideas for future studies such as comparing these results to student perceptions of difficulty, which often focus on superficial features, in order to assess the viability of the scheme.

**Ideological Analysis of Black Masculinity in R. Kelly's Trapped in the Closet**  
Monica Rosales

One fascinating piece of hip-hop history is the introduction of the “hip hopera,” a soap opera type story line written in prose as a rap song, by American R&B singer, R. Kelly. I focus my analysis on all thirty-three chapters of “Trapped in the Closet” by R. Kelly, which came out from 2005-2012. Utilizing Sonja Foss’ idea of ideological analysis, I looked at the embedded ideologies of black masculinity and heteronormativity in black communities, especially those centered on the black church. I analyzed at the overall effectiveness of these chapters of a hip hopera, and potentiality to call to action for a change in these communities. The stereotypical and overdramatic portrayals of the characters and situations may contribute to political efficacy in producing a hegemonic viewpoint on homosexual black males, but also the prominence of black masculinity to the African-American population in the United States. I argue that as a hip hopera, it may depict moments of too much drama, but it can also help African-American men realize the absurdity of the emphasis of their masculinity and heterosexuality, and may soon lead to the positive acknowledgement of black gay men in these communities.

**Imagine Nation: Exploring the Evolution and Importance of Innate Creativity**  
Marisa Bradley
As children grow up their education process dilutes imagination in favor of reality. Expression and thought derived solely from creative thinking is forced to conform to an adult’s understanding of realism and logic. Why is it society considers creative thinking “childish”, whereas history has taught us otherwise? The best inventions all stemmed from those who followed a unique train of thought. For example, had the Wright brothers not pursued their dream to fly with the birds we would not have the advancement of air transportation. To further understand the complex evolution of a person’s imagination and it’s continual presence, I will conduct a two-part research study. First, I will interview children ranging in age from 5 to 17 and ask them to illustrate the prompt “If I could be anything I would be…” This will help provide concrete information regarding the downtrend of creative thought as children age. Second, I will interview adults with the prompt “If money were no issue and anything was possible, what would you dream of being?” I will then interpret the answers to help measure the continual presence of idealistic thinking. The results of my studies will aim to provide concrete evidence describing both the constriction and perseverance of the imagination. Finally, I will use my skill as a visual storyteller and character designer to compile my research into an illustrated poster that is both intellectually and emotionally engaging.

Impact of Climate Change on Potential Agriculture in West Africa
Bryce Currey

Africa is especially susceptible to climate variation because of a heavy reliance on precipitation for agriculture and lack of food imports. Using output from high-resolution regional climate simulations of the present day (1981-2000) and future (2081-2100), crop suitability (operative and optimal) for the basic five Foods and Agriculture Organization (FAO) crop groups in West Africa are assessed. The FAO potential crop suitability method divides crops into five groups based on their photosynthetic pathway and range of temperature for optimal and operative growth. Findings suggest that increasing temperatures due to anthropogenic climate change has the potential to substantially alter current cropping patterns in West Africa with some regions no longer viable for cropping. Crops suitable at lower temperatures such as wheat and oats will no longer be viable in most regions except at high altitudes where temperatures are lower. Crops suitable at higher temperatures such as millet and cowpea, not viable in the current climate, are likely to become viable crops. Shifting cropping seasons to times of year with cooler temperature combined with the introduction of affordable, large-scale irrigation can provide a means for adaptation. Further analysis will investigate modifications in water requirements to sustain the adapted West African agricultural system.

In the Footsteps of Marco Polo: European Interactions in China
Marc Magallanes

Using a literature investigation of Europeans visiting China, the presentation seeks to discuss the reasons behind the increasingly negative Western viewpoint of China from the 16th-18th centuries. Starting with Marco Polo as the uniting work that these Europeans initially draw upon before contact, the project will cover how these Europeans reacted to the China they saw against the China they expected. The Westerners in 16th century China found it a place of wonder, opportunity, and grandeur compared to the circumstances they left in Europe. As Europe progressed technologically and economically, Europeans only saw China as a stalwart of the old ways especially the British in the late 18th century. The project looks at Gaspar da Cruz’s and Martin de Rada’s Narratives of South China, Matteo Ricci’s China in the 16th Century, Gabriel Magalhaes’ Nouvelle Relation De La Chine, and Sir George Staunton’s and Lord Macartney’s account of the English embassy to China as examples of the changing views. As conditions in Europe improved, the views of China declined.
Influence of Novel Food Sources and Conspecifics on American Crow Territoriality and Food Caching
Tauras Vigalys

In urban environments, anthropogenic food resources such as trash often influence the behavioral ecology of resident vertebrates. As part of a larger project on urban mesopredator ecology, we investigated how novel food sources influence territorial behavior and aggression among multiple social groups of American Crows (*Corvus brachyrhynchos*). Crows are a highly social species often with a breeding pair and helpers that maintain territories for most of the year. Territory boundaries were determined by monitoring flight patterns and individual interactions. Afterwards, peanuts were regularly introduced as an anthropogenic food source near territory boundaries. Feeding at the bait site was video recorded and the field scan option on two game cameras were used to monitor the area and record the rate of visitation by crows. Current data is available for five and a half hours of video footage for eight baiting periods. Additionally, field scan photographs are available for 20 days. From the field scan photographs and direction birds fly to the bait site, it appears one groups’ territory has expanded to include the nearby area which was previously on a territory boundary. However, only some individuals actively defend this territory and prevent pilfering. This may indicate individual differences in the level of territory defense, possibly relating to intra- or intergroup social status.

Influences of Power on Group Monitoring, Punishment, and Moral Decision Making
Tauras Vigalys

Positions of leadership and power have been shown to have a variety of effects on an individual’s decision making and psyche. In prior studies, feelings of power have increased proactivity and persuasiveness while reducing psychological inhibition (Galinsky & Kilduff 2013, Lammers et al. 2013, Whitson et al. 2013). As a result, powerful individuals are more likely to achieve status within a group or earn promotions. Additionally, dominant primates reconcile group disputes (Flack et al. 2005) and powerful individuals have increased levels of moral hypocrisy (Lammers et al. 2010). However, it is currently unclear how power and in-group dominance influence group monitoring and the dimensions of moral decision making in humans. In this study, we compare the performance of power-primed individuals (n=40) with a control group (n=40) on Wason selections tasks (a commonly used reasoning question) to distinguish whether they show the same attention to third party agreements as their own social contracts. Additionally, we examine the effect of a leadership prime on the severity of punishment and the dimensions of moral decision making using Haigt’s Foundations of Morality Questionnaire which rates how important factors are to an individual’s decision making processes.

Insect visitation of peduncular and petiolar extrafloral nectar glands on Castor Bean (*Ricinus communis L.*) in Southern California
David Chirikian, Taylor Waters

The Castor bean (*Ricinus communis L.*) plant bears imperfect male and female flowers that do not produce floral nectar to elicit pollinator visitation. However, Castor bean plants employ extrafloral nectar (EFN) glands that serve to attract predatory insects, such as ants, which in return defend plant tissues against herbivorous insects. The objective of this study was to evaluate both the morphospecies and relative abundance of insect visitors to EFN glands located at peduncular and petiolar positions in Castor bean plants. Results indicate that insect visitors to female peduncular and petiolar EFN glands were markedly different than insect visitors to the male peduncular EFN glands. Female peduncular EFN glands displayed the highest richness,
diversity, evenness, and taxonomic order representation by insect visitors. This study suggests that peduncular EFN gland function may differ with respect to the sex of the flower.

**Internalization of relationship threat: The role of the self in shaping responses**
Isabella Dahigren, Kristen Trudo, Vanessa Urbina, Jordan Webb

Differences in self-worth tend to affect individuals perceptions of relationship events. Prior research has demonstrated that those who doubt their self-worth tend to respond to negative relationship events in less healthy ways. In our lab, we are currently investigating how an individual’s self-worth might affect whether (s)he internalizes a negative relationship event. To do so we conceptualize self-worth in terms of two components: one’s self-esteem (measure of general self-worth) and one’s attachment-related anxiety (measure of one’s perceptions of how others regard him/her). Specifically, we are investigating whether individuals with negative self-models (low levels of self-esteem and high levels of attachment anxiety) respond to relationship threats by internalizing the threat (e.g., blaming themselves), and whether individuals with positive self-models look for more external causes. We are also researching whether there are negative outcomes for the individual and their relationship as a result of internalization. In our presentation we will discuss 2 studies from our lab. In the first study participants were exposed to a relationship threat and internalizing responses were measured. Findings from this study provided support for the idea that those with negative self-models internalize negative relationship events. The second project is an ongoing extension of the first, where we have added several more measures of internalization. We expect to find a similar pattern of results in this data.

**Intrinscic and Interspecific Interactions in the American Coot (Fulica Americana) at Ballona Wetlands in Los Angeles, CA**
Kiara Cerda, Mariele Courtois

Understanding interspecific and intraspecific aggression is important for wildlife management, sustainability of populations, and anticipating effects of global climate change. The objective of this study was to evaluate whether there is a difference in number of occurrences of inter- and intraspecific aggression among American coots (Fulica Americana) in the Ballona wetland habitat of Southern California. We hypothesized that we would observe more instances of intraspecific aggression according to trends in literature that describe coots as highly aggressive animals. We found a significant difference between the number of occurrences of interspecific and intraspecific aggression based on four behaviors specific for American coots: charging, paired display, splattering, and churning. Thus, data indicates the interacting species at Ballona are not competing for resources and their respective niches may not overlap. The characterization of the interactions between co-existing species is important as efforts for restoration of the Ballona wetland environment are underway.

**Intrinsic Motivation, Incentives, & Development**
Juan Jose Galvez

“Give a man a fish, and you feed him for a day; show him how to catch fish, and you feed him for a lifetime.” Traditional economics has long focused on the use of extrinsic instruments, such as incentives, to shape desired behaviors. There is extensive empirical evidence showing that incentives are indeed an effective way of curbing people’s behavioral patterns. Nevertheless, some economists as well as psychologists have advocated for a different take on incentives. They argue that while incentives may serve to fulfill goals in the short run, they can also “crowd out” intrinsic motivation in the long run. This claim proves to be problematic when compared to
traditional economic notions of incentives. The research presented here provides an overview of academic works concerning the relationship between intrinsic and extrinsic motivation. Its significance lies in its contribution to the field of behavioral economics by adding an organized framework of existing literature that allows us to better understand the relationship between intrinsic and extrinsic motivation. The consequences of apprehending how these two types of motivation influence people’s behavior span across a multitude of fields, from employee compensation design to models of civic virtue and tax morale. More generally, by better understanding how different people in different situations are motivated, we can become better equipped to enable people to thrive in the long run.

Investigating the Regulation of Nod Factor Production in Burkholderia tuberum
Hassan Abdulla

As part of a symbiotic relationship with plants, various rhizobia trigger changes within a plant’s roots, creating nodules, in a process known as nodulation. Until recently, it was thought that only alpha-proteobacteria nodulate plants. Now, members of beta-proteobacteria have been observed engaging in nodulation. Although the nodulation itself of beta-proteobacteria appears functionally similar to that of alpha-proteobacteria, little is known about the mechanism by which the beta-proteobacteria regulates nodulation. We are interested specifically in the methods by which Burkholderia tuberum, a beta-proteobacteria, regulates the nodulation process. We hypothesize that B. tuberum regulates nodulation similarly to alpha-proteobacteria. In alpha-rhizobia, the nod genes are expressed in response to flavonoids, a group of plant compounds released from the roots. The gene expression causes the production of signaling molecules called Nod factors, which begin the process of nodulation. To investigate Nod factor regulation, we are making nod gene promoter fusions to the lacZ reporter gene, which allow us to monitor promoter activity. We amplified the nodA and nodC promoters via the polymerase chain reaction. Restriction enzymes were used to digest the PCR products so that they could be cloned into the PVIK112 vector that contains the lacZ gene. We have almost completed construction of the vectors. The promoter fusions will be introduced into B. tuberum by means of conjugation, and lacZ activity measured to monitor promoter activity in response to potential inducers such as plant exudates and flavonoids. Our results will shed light on how conserved the nodulation pathways are between alpha and beta-rhizobia.

Investigating the Role of Exopolysaccharide in Burkholderia tuberum
Salma Soltani

Nitrogen is one of the most critical macronutrients for plant growth and its fixation is important for converting di-nitrogen into ammonia, a form that is usable by plants. Rhizobia engage in a nodulating, symbiotic nitrogen-fixing association with leguminous plants. Nodules are special root structures that allow for bacterial fixation of atmospheric nitrogen. It was long thought that only rhizobia of the alpha-proteobacteria nodulate plants. However, recently members of the beta-proteobacteria were found to engage in a nodulating symbiosis. We are interested in determining whether exopolysaccharide, which is critical for the alpha-rhizobia symbiosis, is necessary for the beta-rhizobia association. We are doing this by investigating the symbiotic relationship between Burkholderia tuberum (a beta-rhizobium) and Phaseolus vulgaris (black bean). We want to see if the exoY gene, associated with exopolysaccharide production and required in the alpha-rhizobia symbiosis, is important in the beta-rhizobia symbiosis. A deletion construct to make a B. tuberum exoY mutant was created. Primers were designed to amplify by PCR the region upstream and downstream of the exoY gene. These regions were fused and put into a cloning vector. The region was then subcloned into the pK18mobsacB vector to generate the deletion construct to be used
for mutagenesis. We have successfully generated an exoY deletion mutant with the deletion construct. A nodulation assay will be conducted to determine the role of exoY in the symbiosis.

Investigation into the Photosensitized Oxidation of Indole Derivatives
Corallie Ellers, Alex Prevallet, James Sekab, Ryan Zambrano

Photooxidation of amino acids via singlet oxygen causes changes in protein structure and function, and the reactive peroxides and trioxindines produced do further biological damage. We aim to find the exact mechanisms by which these oxygen species are formed from tryptophan and histidine as well as other amino acid derivatives. Thermodynamic and kinetic energetics and local bonding of these molecules and their intermediates are investigated using density functional theory calculations including the integral equation formalism polarizable continuum model for reactions in relevant solvents. Experimentally, we sought to synthesize an amino acid hydroperoxide derivative to study the formation and decomposition of a model oxidized amino acid. A tryptophan derivative, N-acetyl-2-tert-butyl-tryptamine, was synthesized in a 5-step sequence. Photooxidation of N-acetyl-2-tert-butyl-tryptamine from singlet oxygen produced the desired hydroperoxide derivative in excellent yields. This compound was characterized by NMR and the observed experimental spectra matched the calculated NMR spectrum indicating formation of a six-member ring via hydrogen bonding and critical for subsequent reactivity. Degradation studies of the hydroperoxide were performed to investigate the feasibility and possible mechanism of hydrogen peroxide formation. These compound degradation studies are paired with computed energetics for competing reaction pathways to determine the feasibility of these amino acid degradation mechanisms as well as possible catalyzed mechanisms for water oxidation.

Is Fracking in Los Angeles Following Typical Patterns of Environmental Racism?
Katherine Altobello-Czescik

Los Angeles’ well stimulation practices provide a unique opportunity to use mapping to test theories of environmental justice in an urban environment. An important environmental justice theory, known as environmental racism stands true: minorities and the poor bear a disproportionate burden of environmental problems (Wenz 2012). Environmental justice fights to redress this inequality. Environmental injustices are occurring within Los Angeles County as proven by many studies. However, there is little to no existing research connecting the growing well stimulation industry to environmental justice. In Los Angeles County there are dozens of oil wells currently using well stimulation to extract oil from the Monterey Shale. This research project asks: Is fracking and well stimulation in Los Angeles County following typical patterns of environmental racism? As the controversy over fracking and well stimulation heats up in LA this research will add to the dialogue by connecting race and income to the issue. I hypothesize that the areas surrounding these well sites will be made up of minority and low income populations. By using Geographic Information Systems (GIS) to map the locations of fracking, acidizing, and gravel packing, an environmental justice analysis will be made by examining US Census Bureau data for the surrounding population demographics. Also a qualitative set of interviews with elected officials and advocates will be conducted and analyzed. This research will provide the public and decision makers with information on who is the most affected by well stimulation processes in LA County and whether injustices are occurring.
Isolation and Characterization of Cellulase Producing and Siderophore Producing Rhizobacteria
Karina Alvare, Angela Rabe

Bacteria associated with the roots of plants with growth promoting characteristics are referred to as plant growth promoting rhizobacteria (PGPR). This project studies the symbiotic effects of rhizobacteria extracted from the wild radish, *Raphanus sativus*, on the legume, black bean. We are interested in identifying novel rhizobacteria that may have potential as biofertilizers. Bacteria were isolated from the roots of *Raphanus sativus* and tested for properties characteristic of PGPRs. Isolates were screened for auxin production, phosphate solubilization, cellulase activity, siderophore production, and ACC deaminase activity. Two strains have been shown to demonstrate ACC deaminase activity, cellulase production, and siderophore production for further analysis. The aforementioned legumes were individually inoculated with the two isolated strains. Currently, we are working on determining the sequence of the 16S rDNA gene to ultimately identify the isolates. Through characterization of the isolates morphology and biochemical properties, we seek to isolate plant growth promoting rhizobacteria with potential for agricultural applications.

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Lifeguard: SD
Juliana Collins

Lifeguard: SD investigates the basic principles of what it means to be a lifeguard, through a range of interviews with professional lifeguards who have served over the past 40 years. Despite their heroic deeds, these men and women are shrouded by the public's misconceptions, and misunderstandings of their profession. The film aims to break this disjuncture between the lifeguards and their image by exploring what got people into lifeguarding, what they had to go through to become one, and how they deal with the intensity of the job. The audience will come to recognize the bravery of these individuals, who even in the wake of traumatic life and death situations remain dedicated to the protection of the public. Furthermore, in exploring these ideas Lifeguard: SD helps viewers better understand the significance of lifeguards in San Diego, while also revealing the qualities which make these masters of the ocean unique members of the safety services.

LMU Bluff Ecotone Ecology
Jacquelyn Fischer

The steep bluff (ca160 feet) located at the northwest periphery of the LMU campus produces a unique abiotic microclimate and resulting organism habitat. Track transect analysis, mapping and remote monitoring data recovery is used to determine ecological composition, distribution and abundance in this unique ecosystem. Remote sampling methodology including motion and time-lapse triggered digital still and video imaging was also recovered and is analyzed.

Long Term Effects of Fire on Insect Populations
Sophie Crinion

The effects of fires, hurricanes, tornados and other large infrequent disturbances on an ecosystem are of great interest to ecologists seeking to better understand the dynamics of an ecosystem’s development and recovery. Fire is a disturbance that is particularly relevant to southern California and other areas that are prone to wild fires. In May 2011, the Two Harbors fire on Santa Catalina
Island burned approximately 20 acres. The fire occurred such that half a hillside was burned and the other half was left untouched by the fire, providing the perfect set-up for a comparison of disturbed and undisturbed habitat. From June 2011 to June 2013 we sampled aerial insect populations using non-toxic sticky paper attached to four-sided posts oriented towards the four cardinal directions. Samples were collected over 24 hour periods once every four months. The insect abundance in the burned and unburned sites is very similar and follows expected seasonal patterns. Preliminary analysis shows that there are significant differences between the two sites in terms of species richness. Initially the species richness in the burn area is lower than that in the unburned area, but after several months the species richness in the burned area begins to increase substantially above that of the unburned area, following patterns reported for mainland insect populations and suggesting an important ecological role for fire.

**Lorde and Media's Not Too Proper Ladies**
Kennedy Roberts

Over the last 40 years, media theorists have traditionally explored the ways in which the sexualization of young women in media has negatively impacted adolescent cognitive development and sexual choices. Yet, traditionally these studies neglect to specifically examine how young female audience members read and subsequently respond to media representations. In 2013, sixteen year-old pop star, Lorde, released the hit song ‘Royals’. This song presented Lorde as the antithesis to the typically over-sexualized young female pop star. Her nuanced lyrics build a narrative that specifically criticized other artists such as Selena Gomez, Miley Cyrus, and Ke$ha for their conformity to stereotypical mediated representations of female sexuality. Within this argument Lorde presents an anthem for young women who view their sexualities as tools to be utilized for the facilitation of personal exploration and to demonstration of feminist power. By examining audience responses to ‘Royals’ in audience response videos, YouTube comments, Tumblr content and Twitter feeds, this study builds on feminist theory and active audience research from the communication discipline by positioning the audience as textual producers. The examination of these audience-produced media texts also informed the study’s understanding of the significance of Lorde in contemporary debates about female sexual socialization and self-exploration. Through this qualitative analysis of audience-produced media, it is apparent that young women have adopted ‘Royals’ as an argument for redefining their sexuality as a personal tool for the self-reflective exploration of their own sexuality as well as a performative demonstration of how autonomous sexual choice can lead to empowerment.

**Macroseepage of light alkanes at the La Brea Tar Pits in Los Angeles**
Charnise Taylor, Derek Weber

Macroseepage of gases in the La Brea Tar Pits in Los Angeles was measured to determine if light hydrocarbons from the tar seeps affect the air quality in the greater LA area and to ascertain the importance of geological seepage as an emission source. Macroseepage refers to natural gas seeps in which there is a visible bubbling of gases. It has been theorized that macroseepage is an underreported global source of methane and light alkanes. In North America, very few studies have been carried out to quantify the amounts of these compounds that are released via macroseepage. Samples were collected in 2 L stainless steel canisters connected to 0.125 m³ aluminum flux chambers which were sealed airtight over the visible seeps. The chamber was placed over and immediately a reference sample was taken followed ten minutes later by a chamber sample. These air samples were analyzed using gas chromatography ovens equipped with flame ionization detectors (GC-FID). Flux was calculated by as the difference between the
chamber and reference samples. By taking more than seventy samples in this manner, the average flux of methane from the tar pits was found to be 8000 ppm (parts per million by volume) \( \text{m}^{-2} \text{h}^{-1} \), the average flux of ethane was 130 ppm \( \text{m}^{-2} \text{h}^{-1} \) and the average flux of propane was found to be 80 ppm \( \text{m}^{-2} \text{h}^{-1} \). Uniquely high ratios of i-butane to n-butane have also been observed and are discussed.

**Madam's Drown Words; Mad A.M.**

Michael Robinson

This particular work, Madam's Drown Words; Mad A.M., is a novella-in-progress that was begun in response to the study of nothing in Dr. Paul Harris' course on Nothing. Specifically, it derives from the study of French author Georges Perec's novel (translated into English by Gilbert Adair), *A Void*, a lipogram—a work that refrains from using a letter, in this case, the letter "e". Madam's Drown Words likewise avoids the letter "e" and, additionally, adds a "literary-mathematical" constrain of having a palindrome of a mathematically determined length, placed in a mathematically determined location in the manuscript. Thus, the title, a five-word palindrome, starts off the work. Perec, as a member of the French Oulipo (which translates as "workshop of potential literature") was interested in constraints as a device to spark inspiration and creation. His "story-making machine" resulted in his novel, *Life: A User's Manual*. In a sense, *Life* was a constructed work—a piece dependent on the writer focusing his creative effort on machine-generated outputs and no other reality. It, literally, sprung out of nothing. In my piece, there is no "story-making machine," but the use of constraints inspires a fresh take on the nuts-and-bolts of fashioning a sentence, a paragraph, a dialogue. Constraints, then, though yielding, at times, awkward grammatical phrases, channels the writer to produce works that surprise him or her as much as the reader. It becomes a tool to open fiction writing in new ways for the author.

**Market Corruption: Sacrificing justice for profit**

Jonathan Beach

Despite claiming to be the "land of the free," the United States incarcerates more citizens per capita than any other country in the world at 762 for every 100,000 citizens. In order to offset the enormous expense of mass incarceration, politicians are relying on for-profit companies to take on the monetary burden of imprisonment. As a result, the top two corporations now make $3.3 billion a year. Yet, using market values to justify for-profit prisons is inappropriate within the sphere of punishment because it is a non-market entity. Although there is wide disagreement on the purpose of punishment, it is generally regarded to be some mechanism of criminal justice, rehabilitation, deterrence, or retribution: not profit. With this in mind, monetizing incarceration may help with financial issues, but it does so at the cost of introducing incentives which corrupt the purpose of punishment altogether. In other words, through the marketization of the prison system, the goal of punishment shifts from justice to profit. Using Michael Walzer's "Spheres of Justice", Mark Warren’s ideas of duplicitous exclusion, Michel Foucault’s "Discipline and Punish", and literature on for-profit prisons, this piece argues that said marketization is a form of corruption that cannot be accounted for in any theory of punishment and, therefore, cannot be justified as a practice.

**Masculinity and Crisis: An Ideological Critique of AMC’s Mad Men**

Hillary Littleton

This paper sheds lights on masculinity in crisis through a rhetorical critique of AMC’s historical drama, *Mad Men*. The protagonist of the show, Donald Draper has a troubled, mysterious past that has caused him to have nearly no sincere emotional connection to women in his life. This has
resulted in constant infidelity in both of his marriages and his need to adhere to the values of “hegemonic masculinity” that are present in American society. Examining hegemonic masculinity expressed as through male infidelity is important because it reveals both societal expectations of males and acceptable male behavior as well as the contradictions between maintaining public and private identities. Scholars and psychotherapists have attempted to crack the code of hegemonic masculinity in crisis for years and Mad Men is just another example of how it is displayed in pop culture. Don’s infidelity is linked to common myths of infidelity presented by Dr. Frank Pittman III and could be why Mad Men producers constructed such a beautiful, yet morally flawed main character. This essay finds that this type of character represents the ideology of men and masculinity in 1960’s society but more importantly reveals male confusion about identity as evidenced by their crisis with infidelity and how hegemonic masculinity allows them to rationalize their extramarital affairs despite ongoing emotional destruction.

**Mie Scattering from Single Bubble Sonoluminescence**
Reid Byron

Sonoluminescence is a phenomena in which light is emitted from a bubble suspended in an intense acoustic field. Ultrasonic standing waves set up within a liquid filled vessel rupture the fluid medium resulting in the energetic collapse of this void when acoustic pressures are driven to their maximum. Collapse of the void concentrates energy into a tiny region within the vessel resulting in the emission of photons in quantities capable of being seen by the unaided human eye. Although the mechanism by which the emission occurs is not fully understood, much knowledge is gained through the study of this phenomena. An RLC circuit topology was selected in order to achieve resonance and deliver maximum voltage across the transducers. This allows for sufficient sound pressure levels to rupture the fluid medium and capture a sonoluminescing bubble. Cavity radius is ascertained by the Mie solution to Maxwell’s equations. As scattered intensity is proportional to cross sectional area, light scattered by a laser beam focused on the cavity can be detected via photodiode to expose a trace of bubble radius as a function of time. Results from this effort are used to probe the nature of the growth and collapse of this tiny disturbance. Mie scattering is used to measure the rate and pattern by which cavity radius changes with time. Refinement of experimental set up and achievement of Mie Scattering trace sets the framework for further study and experimentation.

**Migratory restlessness in the facultative migrant Spinus pinus**
Carmela Asinas, Jasmine Chopra

Compared to obligate migration, which occurs regularly and predictably, there have been few studies of facultative migration, which occurs less predictably and likely in direct response to resource variation. In captivity, obligate migrants exhibit migratory restlessness (MR), characteristic nighttime activity that is indicative of migration. In this study, we describe patterns of MR in a facultative migrant, the pine siskin (Spinus pinus). Wild-caught pine siskins were held on a naturally changing photoperiod and their behavior was recorded using infrared activity monitors and video recordings. Like obligate migrants, pine siskins showed varying levels of nighttime locomotor activity across the year (F=2.93, df=9, p=0.008). Nighttime locomotor activity was highest during the spring and early summer. Birds exhibiting MR were active for 34.4% of the night, compared to those not showing MR that spent only 1.1% of night hours active. As is the case for obligate migrants, pine siskins showed distinct differences in behavior between daytime and nighttime activity. Specifically, during nighttime activity birds showed significantly higher levels of rapid wing flapping (p=0.02) as well as lower levels of feeding (p=0.06). Additionally, birds that displayed MR exhibited a period of quiescence, which is a
period of inactivity that has been described for obligate migrants, 20 minutes after darkness. Results of this study indicate that captive pine siskins exhibit behavioral changes associated with migration that are similar to those seen in obligate migrants. Therefore, captive pine siskins are expected to be a useful model for studies on the migratory behavior of facultative species.

**Misunderstanding Africa**
Christopher Wonder

Misunderstanding Africa explores the way that Africa is portrayed in Western media. Through interviews with various scholars and a collection of popular media sources it is shown how stereotypical the images of Africa that we see everyday are. In an attempt to open the minds of the public to this problem the film goes through the history of Africa in the media. Through interviews with everyday American people it is evident that little about Africa is truly known except for the stereotypes about war, starvation, and animals. The film also discusses the history of Africa since it first became victim to European colonization and stereotypes. There is correlation between the various historical events in African and each of the scholars helps to give a historical background and analysis to the way that these stereotypes about Africa have developed and been sustained. By the end of the film it is clear that change needs to be made and that this depiction of Africa has had adverse effects for the continent as a whole.

**Modeling, Predicting, and Mapping the risk of pre-harvest aflatoxin contamination in U.S. corn and peanuts due to climate change**
Sergio Gonzalez

Every year, millions of dollars are lost due to aflatoxin contamination of U.S. corn and peanut crops. Aflatoxin is a potent human carcinogen produced by the fungi Aspergillus flavus and Aspergillus parasiticus under drought and high temperatures. With climate change, agricultural areas under pre-harvest contamination risk are likely to change considerably. Predicting the areas that would incur the greatest contamination risk would serve valuable information for growers to minimize their contamination loads. In this study, a previously established aflatoxin risk index (ARI) is applied to both corn and peanut under the Intergovernmental Panel on Climate Change (IPCC) A1B climate change scenario for the present day and future (1960-2039), using output from a high resolution climate model coupled with a hydrologic model. A pre-harvest aflatoxin risk index is mapped for Midwest corn and Southeast peanuts from 2010 to 2039, charting values from 0 to 100 to quantify the regions’ predicted contamination risks. Compared to the present day, results show a uniform 10-point increase in ARI for corn and 20-point increase for peanut. Maximums for corn reach 50 in Kansas and Missouri, while maximums for peanut extend beyond 60, signifying likely increased contamination risk. A sensitivity analysis depicts changes in temperature as the primary variable responsible for ARI increase, as opposed to changes in soil moisture. To adapt to these changes, U.S. corn and peanut farmers will likely need to increase irrigation, modify plant and harvest dates, and move to cooler regions.

**Modular Sensory Board for Children with Sensory Impairments**
Steven Burke, Jennifer Ching, Keenan Sullivan

Individuals with sensory impairments have difficulties completing seemingly simple tasks. Since sensory impairments can affect many aspects of one’s life, it is crucial to enhance their sensory aptitude at a young age. This project is particularly designed for WISH Charter Elementary School, which promotes an integrated learning environment by including students with various strengths, needs, and backgrounds in one classroom. This sensory board is comprised of a base unit that houses several materials that prompt different sensory responses. Each material insert
targets three main senses: touch, auditory, and visual. A modular sensory board is a resource that could be used to enhance these necessary skills in a way that is both enjoyable and rewarding for children. This sensory board is intended to provide a safe outlet for students who respond positively to haptic feedback.

**Monitoring the Temperature, Orientation, and Gape of Intertidal Mussels**

Henry Jordan, Andrew Petersen, Leonard Turcios

The objective of this project is to design and build an electrical system that will collect continuous data on live intertidal mussels for about a month. The system should measure the mussel's internal temperature, its orientation relative to the sun, and its gape, or the open distance between the two halves of the shell. By the end of the semester, a prototype will be built and tested on live mussels in a laboratory on campus. Ultimately, the system will be miniaturized and deployed at the Stanford Marine Lab in Monterey during either this or the next summer. The device will be used to gather more data on mussel behavior, particularly in relation to their thermal physiology.

**Mussel Makeover: Manipulating Body Temperatures of Mytilus galloprovincialis by Painting Their Shells**

Chandler Weisbart

Mytilus galloprovincialis is an invasive species of mussel found along rocky intertidal zones of southern California, where it has displaced the native species, Mytilus trossulus. M. galloprovincialis grows quickly and can survive in extreme temperatures, making it a successful invader. This study first examined the influence of shell color on body temperature of M. galloprovincialis. Under controlled laboratory conditions, painted and unpainted mussels were exposed to a solar simulator. The effect of painting on body temperature varies with the orientation of the mussel. When lying flat, the average difference in temperature between a shell painted white and a shell painted black was 9.7 ± 1.8 °C. The average difference between a white and black shell at a more oblique angle was 5.7 ± 0.8 °C. Results of this study suggest that discrepancies in shell color and wear among M. galloprovincialis individuals contribute to differences in body temperature. Methods to manipulate body temperatures of mussels in the field have been established. Ongoing studies include deployment of painted M. galloprovincialis in Marina del Rey, California, to analyze the effects of temperature on growth rates and biochemical measures of thermal stress.

**National Identity and Foreign Policy Attitudes among Armenian Students**

Talin Bagdassarian

Few studies examine the influence of patriotism, nationalism and ethnocentrism on the process of foreign policy formation. However, attitudinal studies suggest that these concepts inform public opinion about foreign policy. Therefore, the study of national identities and their correlation to foreign policy attitudes is fundamental in understanding how individuals come to form their opinions regarding foreign policy. Using original survey data, I examine how levels of patriotism, nationalism and ethnocentrism amongst Armenian college students influence their foreign policy attitudes. First, I examine the determinants of patriotism, nationalism and ethnocentrism amongst Armenian students and subsequently analyze their relationship to foreign policy attitudes. To facilitate these analyses, I conducted a survey of approximately 1300 students at Yerevan State University and the American University of Armenia, the leading public and private universities in Armenia respectively.
Natural Selection in the Sow Bug Killer Spider Dysdera crocata (Araneae, Dysderidae)
Amy de Harde, Kayla Saunders

In 2009-2010, we determined the phosphoglucomutase (PGM) genotypes for a large sample (n = 333) of D. crocata from Kenneth Hahn State Recreation Area, Los Angeles, CA. We found that there was a significant reduction or absence of heterozygotes at this locus at 9 of 12 sites in the park which were sampled. This may be due to selection against heterozygotes. To determine if this is the case, we then documented the representation of heterozygotes and homozygotes among life stages in a new sample of D. crocata (n = 339) collected in summer 2010. This analysis has shown that while PGM genotype frequencies did not violate Hardy-Weinberg expectations for either adult females or the oldest juveniles, there were significant violations in the form of a reduction or absence of heterozygotes for adult males and younger juveniles. Thus, for juveniles, there is an excess of homozygotes that diminishes as they age, resulting in genotype ratios that match Hardy Weinberg expectations. As for adult spiders, while females are also in conformance with such expectations, adult males are exclusively homozygotes. While this outcome suggests that natural selection is operating at the PGM locus in D. crocata, it is unclear what mechanisms would simultaneously act to disfavor or favor heterozygotes, depending on the life stage and/or gender.

Novel Development and Implementation of American Crow Corvus brachyrhynchos Aversion Techniques at a Least Tern Sternula antillarum Nesting Site
Sergio Gonzalez

The American crow (Corvus brachyrhynchos) is currently exerting catastrophic predation on federally endangered least terns (Sternula antillarum) nesting at a managed site at Venice Beach, CA. Crows at this site have been observed consistently consuming least tern’s eggs, a non-essential part of their diet. Conventional predator control techniques employed at the study site over the last several decades have been ineffective. The result has been 0% nesting tern reproductive output over the last five years.

This study describes the development, testing, and initial implementation of novel crow predation aversion management techniques at the Venice site. Non-lethal electric shock, visual/audio harassment, and temporary physical encumber methodologies are described and tested. Used as a conditioning tool to dissuade the crows, these new aversion techniques and technologies are intended to increase least tern reproductive output.

NS3 Syringe Tribology
Andres Lopez, Adal Malik

Plastic medical syringes for injectable drugs typically require a lubricious layer in between the barrel and the plunger. Two main frictional forces are involved while the plunger is pressed through the barrel. The first is the initial force that is required to start the plunger sliding in the barrel. The second is the maintenance force that is needed to keep the plunger moving along the barrel. Low initial and maintenance forces are both critical for injectable drugs. PDMS (polydimethylsiloxane) liquid films are the current accepted technology for reducing the initial and maintenance friction forces in medical syringes. However, issues with the PDMS films exist including interactions of the film with the stored drugs and variable initial and maintenance forces with time. A new silicon-based solid lubricant thin film has been developed by Nano Scale Surface Systems, Inc. as a potential replacement for PDMS in medical syringes. In particular, an octamethylcyclotetrasiloxane (L-OMCTS) thin film has been developed that provides acceptable
initial and maintenance frictional forces without interacting with the injectable drugs. Ultimately, Nano Scale Surface Systems, Inc. would like to understand how the initial and maintenance frictional forces respond to various system parameters, including the applied load, sliding speed, film thickness, plunger and film roughness, plunger material composition, and overall aging. Once an understanding of how these parameters affect the sliding friction of the plunger and syringe interface is obtained, these parameters can be optimized and controlled in order to provide a desired frictional response.

**Nuclear Fusor**
William Eberts, Maximiliano Isi, Quin Thames

A great majority of the problems humanity faces in the 21st century are related to the efficient generation and storage of energy. In this regard, nuclear fusion is one of the most promising technologies, since it has the potential to become an endless source of clean energy. We demonstrate this principle through the construction of a Farnsworth-Hirsch fusor. This device works by causing deuterium atoms to collide with enough energy to combine; such process generates a byproduct of radiative energy. In order to do this, we confine plasma into an extremely small volume by means of a very high voltage inside a vacuum chamber. With this device, we demonstrate fusion in a contained environment and study possible improvements to the standard design, potentially gaining insights useful in the construction of large-scale fusion reactors.

**Object Targeting using the Singular Modes of a Scalar Wave System**
Terry Kong

Array antenna systems are used in a variety of applications due to their increased throughput and channel capacity. A useful property of array systems is that an originally interweaved system can be transformed into a parallel system through singular value decomposition of the channel matrix. In a parallel system, the singular modes delineate the directions of the radiation beams, which maximize reception for the receiver: revealing the potential location of the scatters. This research explores intuitive and simple methods of locating objects using the singular modes of a scalar wave system, in which two arrays are in communication. Once the directions of the radiation beams from each singular mode have been identified, the objects can be located through a cross-locating algorithm. The cross-locating algorithm consists of two major steps: the grouping step and the locating step. The results show that objects can be reliably located with low spurious detection rate given that the objects are sparse, which demonstrates the utility of the singular modes and lays the groundwork for implementations of a more comprehensive object locating algorithm.

**Omega 3 and 6 Fatty Acid Consumption and Markers of Health in Cancer**
Aisling Cassidy

Omega-6 (ω-6) and omega-3 fatty acids (ω-3) are both essential, meaning they must be obtained through the diet. The ratio of ω-6 to ω-3 fatty acids in the diet of early humans is estimated to be 1:1, while in typical Western diets the ratio is now closer to 15:1. Omega-3 fatty acids reduce inflammation whereas most omega-6 fatty acids are proinflammatory. Recent research has shown the importance of the balance of the ω-6/ω-3 intake in the pathogenesis of many diseases. Eight female cancer survivors (58±11.5 years) volunteered for a 13-week exercise program. Participants completed a 3-day diet record, which was analyzed using the Food Processor®
software to determine average daily intake of ω-3 and ω-6. Inflammatory markers (CRP, IL-10, IL-6, TNFα) were assessed in fasting serum of participants. Dual-energy x-ray absorptiometer (DXA, Hologic DiscoveryA) was used to measure bone mineral density (BMD) at the hip, spine, and whole body. The DXA was also used to evaluate percent body fat. Data analysis revealed a negative correlation between ω-6/3 ratio and whole body android (abdominal) percent body fat ($r=-0.76$, $p<0.05$). Omega-3 intake was negatively correlated to BMD at the hip and spine ($r$-values -0.77 to -0.98, $p<0.05$). Data on blood inflammation markers will be available March 1st. While correlation does not indicate causation, participants with a higher ω-6/ω-3 intake exhibited greater percent fat in the android region. Android obesity is linked to cardiovascular disease, diabetes, and other inflammatory conditions. Further research with a greater sample size is warranted.

On Eidetic Intuition
Raciel Cuevas

Edmund Husserl’s phenomenological method seeks to uncover genuine insights into the relation between consciousness and its objects. This unearthing involves a process of reduction and epoché: a move into the realm of phenomena by neutralizing our belief in the objective world, and a subsequent examination of our own sphere of self-givenness to understand how the world and its constituents are given to us. Too often the insights of this method are restricted to the boundaries of personal experience. The beginning phenomenologist takes herself as her initial example and may be involuntarily bound to finding herself as an ego embedded in a world with familiar culture and stratified order. To move beyond individual experience, phenomenology relies on eidetic intuition.

Eidetic intuition is insight into essences, the a priori structures that make a thing an instance of the kind of thing it is. This intuition concerns itself not with the experiences of a particular consciousness, but with the eidetically necessary structures that make those experiences possible, as they would hold for any consciousness whatever. The methodology in this paper will be twofold. Section one will provide an expository account of Husserl's eidetic reduction, and section two will carry out an original application of that reduction through an intentional analysis of the eidos, record. While most phenomenology in the last one hundred years has used the former methodology, Husserl repeatedly emphasized the importance of carrying out analyses of various regions of being and so using the second methodology. This paper will do both.

On Names
Caroline Liviakis

Within this paper I explore the differences between the classification of types of names, particularly the distinction between proper and non-proper names. I mention the complexity that arises when considering indexicals and demonstratives as part of the naming category; I therefore argue that they are a form of referring but are not names, as they, by definition, do not have a universal-denotation appeal. I investigate the debate between description and reference theory for names and propose a mediated solution to the dispute based not on the consequences naming has on metaphysics and logic, but on the motivation for humans using language and names. The idea of sense is also explored. Though the exact meaning of Frege’s conception of sense is still unclear, I present a definition that avoids several pitfalls other definitions fall into. The definition of sense, though in nature quite general, fans into a classification system of particular instances that mirrors and aligns with the classification of denotations.

One Brother
Natalie Perez
One Brother is a short documentary by Natalie Perez about a 19-year-old US Army Soldier stationed in Wiesbaden, Germany, and his struggle to find a home while abroad. This documentary was made to explore the pressures of young people who go abroad, as well as the different methods and activities to find a home away from home. Some people find comfort with people they meet, while others find a safe place in a religion or special belief. It's important to explore these options and broaden our views so that we may understand and empathize with people who are abroad in our own country.

Packet Loss Prediction for a Motion-Capture (mocap) System
Owen Dominguez

Reliable wireless communication is important for performing daily life activities because of the increasing amount of electronics that use this technology. Our goal is to develop an affordable and portable mocap system that uses three types of non-optical sensors: an accelerometer, gyroscope, and magnetometer. Such systems have myriad applications, including to health and sports professions, where individuals such as physical therapists, athletes and prosthetic professionals require a convenient and reliable record of human movement. While testing our mocap system, we found that the sensors were not able to transmit information without interruption, causing erroneous joint angle calculations due to packet loss. Our current investigation is to predict packet loss, which will improve the accuracy of our measurements. Using a token passing protocol, sensors attached to the limbs of a person transmit information to a receiver PC, which reconstructs the limbs’ motion in real time. This allows the sensors to take turns for transmission, making it easier to detect when a sensor was not able to transmit successfully. The inclusion of a packet loss counter and RSSI (received signal strength indicator) in each transmission provides a method of measuring communication performance, enabling us to use algorithmic and mathematical analysis to identify patterns that assist in the prediction of packet loss. Through mocap system testing, we can determine the ability of our algorithms to predict or flag the packet loss. Moreover, to test accuracy, we compare our measurements with those obtained by optical sensors, which are used as a proxy for the true values.

Parodic Rhetoric in Bridal Media: Supporting and Challenging Bridal Ideologies
Jennifer Boucher

From romantic comedies like When Harry Met Sally or 27 Dresses to TV shows like The Bachelor and The Bachelorette, media depictions of courtship and weddings tend to romanticize finding a soul mate. Even bridal dress shopping shows, like Say Yes to the Dress, focus on finding “the one” in terms of the wedding dress. As public fascination with romance persists, bridal media have grown in prevalence and popularity. By analyzing the 2011 hit comedy Bridesmaids, I examine the role that humor- specifically parody- plays in depictions of weddings and women in bridal media. I argue that, through parody, Bridesmaids questions dominant values in bridal media, specifically the importance of weddings in the U.S. and gender norms that compel women to compete with other women for men’s attention. Bridesmaids’ humorous portrayal of one woman’s wedding planning process exaggerates the extravagance of weddings and displays competition between women as destructive to female friendships. However, Bridesmaids simultaneously conforms to characteristics of bridal media by suggesting that happiness is only achieved when in a romantic relationship. Because Bridesmaids ultimately depicts weddings as extravagant, I examine the limitations of using parody to critique dominant values in bridal media. By analyzing Bridesmaids and its film reviews, I demonstrate that
Bridesmaids urges us to share values that focus less on the quality of weddings and more on the quality of relationships.

Pathway Analysis of Leishmania major Promastigote and Amastigote Stages with GenMAPP and MAPPFinder
Kevin McGee

Pathway Analysis of Leishmania major Promastigote and Amastigote Stages with GenMAPP and MAPPFinder / Kevin McGee, Lena Hunt, Viktoria Kuehn, Gabriel Leis / Leishmania major is a tropical species of protozoa that causes a range of human diseases known as leishmaniases, affecting 2 million people in 88 countries annually. Leishmania major has two life cycle stages: promastigote and amastigote. The promastigote form is extracellular, flagellated and usually found in the alimentary tract of sand flies. The amastigote form is intracellular, aflagellated and found in mammalian macrophages when transferred from the bite of a sand fly. Rochette et al. (2008, BMC Genomics 9:255) performed a DNA microarray experiment to determine differences in gene expression between the promastigote and amastigote stages. / Initially, we wanted to perform pathway analysis on their data using GenMAPP and MAPPFinder, but could not, due to the fact that there was no GenMAPP-compatible gene database for Leishmania major. We then used XMLPipeDB, an open source program for building relational databases from an XML schema to generate a new database using data from Uniprot and Gene Ontology (GO). Tally Engine, XMLPipeDB Match, and SQL queries were all used to test the validity of our database by matching the number and IDs of genes found in the source data with the final database. / The newly created database allowed us to analyze the data from Rochette et al. using MAPPFinder. The top three Gene Ontology terms found over-represented in the promastigote vs. the amastigote stage were "Organic Cyclic Compound Catabolic Processes", "Oxidoreductase Activity", and "Intrinsic to Membrane". These terms are much more specific than the GO terms reported in Rochette et al.

Patterns of Reproductive Success: A Historical Perspective
Katherine Boyd

This study investigated patterns of reproductive success in the house finch (Haemorhous mexicanus), a California native species. House finches breed each year from March to July, and can produce one or more clutches over a breeding season. To examine patterns of reproductive success, we used historical nest records from CA available for the past 100+ years, which we augmented with contemporary data collected during the summer of 2013 around the LMU campus. The process required going around the campus and identifying nests and then taking down the information that could be extrapolated. Analyzing over a thousand records from the late 1800’s to 2013, we found that on average house finches laid 4.5 eggs per clutch with 85.8% of eggs successfully hatching and 11.0% successfully fledging. Over the study period, clutch size declined significantly, by 0.4 eggs over the past century. When the data sets were compared across habitats varying in their level of human disturbance, there were no significant differences in clutch size, fledging or hatching success. Overall this study suggests a potential decline in reproductive success in house finches over time. However, we found no effect of human disturbance on our measures of reproductive success, suggesting that this species may be quite resilient in the face of such anthropogenic forces.
Photosynthetic Characterization of Invasive Plant Species in Los Angeles County, CA
Erich Eberts, Lauren Panghurn

Invasive species are non-native organisms that spread unchecked in space and have negative interactions with diverse elements of native habitats. The success of these invasives may or may not be related to specific traits, such as their photosynthetic pathway. We hypothesize that the pattern of occurrence of a given photosynthetic pathway may correspond with historical increases in atmospheric CO2 concentrations, therein favoring invasive plant species with a C3 photosynthetic strategy. We acquired the specimen information for invasive species registered in the Consortium for California Herbaria of the University of California Berkeley to track historical patterns of arrival and to evaluate the community dynamics of 1,000 invasive species in Los Angeles County (total specimen count=14,000). We show that both diversity and richness of invasive plant species has increased over a period of 180 years. We utilized the primary literature to identify the photosynthetic pathway for all of the invasive plant species in our database, and are currently evaluating the relative changes in the richness of C3, C4, and CAM plants over 15 decades.

Prevention, Prosecution, and Protection: Why States Fail to Equally Address Domestic Minor Sex Trafficking
Nicole Zapata

It is estimated that between 100,000 to 300,000 children are trafficked into the U.S. sex industry every year. Domestic minor sex trafficking is defined as “the recruitment, harboring, transportation, provision, or obtaining of a person for the purpose of a commercial sex act.” Shared Hope International conducts the Protected Innocence Challenge, which grades trafficking legislation of all fifty US states. Discrepancies in grades demonstrate that states vary greatly in their ability to address the issue. These differences raise the question: What factors explain the discrepancies in state efforts to combat domestic minor sex trafficking? I hypothesize that states with high urbanization levels, high income levels, high educational attainment, high percentages of professional women in state legislatures, high percentages of racial minorities, and high crime rates will have effective legislation in place, and thus a higher overall grade. I also hypothesize that liberal states are more likely to have higher scores for their protection measures for child victims than conservative states, while conservative states are more likely to have higher scores for punishment of the crime. Lastly, I hypothesize that states with attorney generals who have expressed strong concern for combatting child sex trafficking will implement strong anti-trafficking legislation. My data shows that high crime rates, large minority populations, number of female legislators, conservative voting patterns, number of calls to hotlines and newspaper coverage account for the differences in scores across states. In order to test my hypotheses, I use a statistical analysis of a series of variables across the 50 states. I also conduct in-depth case studies on three states – those receiving the highest grade, an average grade, and lowest grade, to explore qualitative explanations of these discrepancies. My analysis will shed light on best practices to combat child sex trafficking.

Project-SET: Testing Teaching Materials for High Schools Statistics Teachers
Anna Keathley, Lauren Magee

Project-SET is an NSF funded project aimed at developing teacher level materials to better facilitate student learning in statistics at primarily the high school level. The project is focused on two statistics topics; sampling variability and linear regression. After an extensive literature review, four instructional videos were created; two videos per topic of interest. To test the teaching capabilities of these videos, a survey was administered to two college level statistics
courses at Loyola Marymount University. This survey was composed of demographic questions, pre-video sampling variability and regression questions, links to the four videos previously mentioned, and post-video questions concerning the same topics. Throughout the survey, participants were asked to define each topic three times, and to rate their confidence in answering questions regarding each topic. The survey results indicate that students have unexpected misconceptions about sampling variability and linear regression.

Protocol Development for the Detection of Wolbachia in Spiders
Lena Hunt

Wolbachia is an endosymbiotic bacteria that lives in the reproductive tissue of many arthropods. It affects the reproduction of its host in a variety of ways to maximize transmission. Wolbachia develops optimally in female eggs and embryos, and for this reason, the effects of a Wolbachia infection include embryonic male-killing, feminization of male offspring, female parthenogenesis, and the inability of infected males to fertilized uninfected females. The infection is passed down from the female parent through the cytoplasm of egg cells. Wolbachia uses heritable lateral gene transfer to insert some of their own genes into the genome of their host, making its presence detectable using molecular techniques. This research has focused on the establishment of a working protocol to detect Wolbachia infections in spiders. This included adapting methods from previously published papers to determine the proper preparation of spider specimens, using the polymerase chain reaction (PCR) to amplify select DNA segments, and analyzing banding patterns in gel electrophoresis to determine the presence or absence of a Wolbachia infection in an individual spider. This protocol is currently in use as a means of comparing the incidence of Wolbachia in mainland vs. island populations of select spider species in southern California. This presentation will document the robustness of the method, which has been developed, and will contrast it with other methods derived from the literature.

Quantification of phenolic compounds in Brassica Juncea using the Folin-Ciocalteau method
Gabriel Leis

A laboratory curriculum is naturally oriented toward “hands on,” problem-based learning. A chemical ecology laboratory course has the additional advantage of interdisciplinary education by combining elements of two science domains, chemistry and biology. Interdisciplinary education has been identified as having a number of advantages over a traditional curriculum, including the expansion of student knowledge and performance across disciplines while enhancing communication skills. An initial lab experiment in the development of the chemical ecology curriculum is the extraction and analysis of phenolic compounds from the mustard plant, Brassica Juncea. The plant grows abundantly in southern California and has been shown to contain phenolic compounds, these chemicals likely aid in its defense against predators or protection against the invasion of other plant species. A model study used analytical methods to quantify phenolic compounds in mustard plant samples, based on the Folin-Ciocalteau procedure described by Cosmulescu et al. (2012), but modified to work with the mustard plant. This method combines a leaf or soil sample extract, sodium carbonate, and dilute Folin-Ciocalteau reagent. Because the solution turns blue if phenols are present in the sample, the total phenolic concentration is quantified spectroscopically at 765nm. Results will show how the method was modified for use in the chemical ecology curriculum. The results will elucidate how the quantification of phenolic content could shed light on the effects of plant-to-plant communication on local ecological communities.
QUANTITATION OF ANTHOCYANINS IN AN EXOTIC MYRMECOPHYTE VIA UV/VIS SPECTROSCOPY
Jeremy Camillo

Anthocyanins are vacuolar pigments that play important physiological and defense roles in plant biology. Anthocyanins absorb UV radiation, which serves to protect plant tissues from lignin degradation and highlight stress (termed photoinhibition). Anthocyanin synthesis in plants is also accompanied by unpalatable phenolic compound synthesis, which serves to protect plant tissues from herbivores. The Castor bean plant (Ricinus communis L.) is a pioneer species that grows in high light environments and has anthocyanins in its leaves and stems that give it a distinct and variable red coloration. However, Castor bean plants also attract ants to defend its plant tissues, via specialized extra-floral nectar glands located along leaves and stems. In accordance with the principle of allocation, ant-loving plants (termed myrmecophytes) must compromise between chemical defense (anthocyanins) and biotic defense (ant-attraction) investment. The objective of this study is to evaluate investment tradeoffs in chemical and biotic plant-defense strategies in Castor bean growing in non-native habitats in southern California. The goal of this project is to troubleshoot and develop a methodology to detect and measure anthocyanin concentrations in Castor bean leaves and stems by means of UV-VIS spectroscopy. This analytical technique will ultimately be linked to an evaluation of the variation of myrmecophyte defense optimization strategies across different ecological communities.

Reduction of Surface Turbulence through Columns in a Flow Measurement Flume
Robert Cifuentes, Kathrin Covarrubias

Cylindrical columns with diameters ranging from 21 to 79 mm were inserted in a circular open channel upstream of a 20 cm Palmer-Bowlus flume to reduce water surface turbulence and improve flow measurements using ultrasonic sensors. Invert slopes and flow rates ranged from 0.9% to 1.7% and from 4 L/s to 17 L/s, respectively. Significantly lower turbulence was detected as the column diameters increased and the flow rates and slopes decreased. Additional tests were conducted using a set of two columns with a diameter of 48 mm installed 0.8 m to 1.1 m upstream of the flume. The use of two columns provided additional reductions in turbulence. The structures in all the tests forced hydraulic jumps to move upstream in the open channel and away from the flume’s ultrasonic flow sensor. The reductions in turbulence and oscillating wave velocity in the flume were accompanied with higher accuracy in ultrasonic flow sensor readings, when compared to baseline conditions. The highest benefit from using these structures occurred at the steepest slope and maximum flow rate tested. The results also showed that the location of the hydraulic jump and its energy loss affected turbulence in the flume. The findings from this work demonstrate that these simple structures provide a practical solution to improve flow meter performance in turbulent conditions.

Rembrandt’s Bathsheba Through the Female Gaze: Expectations of Behavior & the Realities of Female Agency in Seventeenth-Century Amsterdam
Jenna Homen

Rembrandt van Rijn's etchings and paintings of female nudes occur predominantly during two periods of his life: the 1630s and the 1650s. These works correlate with Rembrandt’s relationships with women and his direct observation of conflicts between the realities of female agency and the roles that dominant cultural forces imposed upon them. His iconographic
alterations to traditional nude subjects reflect a frustration with these expectations for female behavior. In the mid-seventeenth century, Dutch women were expected to act in accordance with draconian standards of feminine virtue, reinforced by biblical and mythological female characters that embodied these ideals. It is only through peripheral sources—like traveler's accounts and court documents—that one gains a deeper insight into the actual behaviors of women in Amsterdam society. An investigation of the disparity between expectations and realities of this cohort of women parallels Rembrandt's innovative approach in his 1654 painting Bathsheba. His non-traditional portrayal of the biblical account emotionally humanizes Bathsheba, thereby working in opposition to the overtly sexualized female and ultimately calling attention to a female gaze. Instead of deeming Bathsheba a temptress in accordance with traditional depictions, Rembrandt's activation of the female gaze encourages the viewer to step outside the confines of male objectification and conjure an alternative reading of the painting. Regardless of whether one can credit Rembrandt with this progressive attitude toward gender, recognition of an emerging empathy to the female gaze in his painted nudes begins to shape a feminist perspective on early modern Dutch culture.

**REPRODUCTIVE CONSEQUENCES OF LEG LOSS IN THE GREEN LYNX SPIDER**

*Peucetia viridans* (ARANEAE, OXYOPIDAE)

Jasmin Takemoto

Autotomy is the loss of an appendage by reflex, which may be followed by limb regeneration. Autotomy allows an individual to escape from predators, to flee from a conspecific, or to release itself during a faulty molt. The loss of a leg can result in a decrease in mobility and reduced functionality in specific behaviors. The consequences of leg loss have largely been in male spiders but not in females. Thus, the purpose of this study was to assess the impact of leg loss on reproductive output in female green lynx spiders *Peucetia viridans*, by comparing output indices for spiders with different numbers of missing legs. From 2004-2007 and 2010-2011, 834 field-collected adult female *P. viridans* and their egg sacs were collected. In lab, I recorded the number and position of missing legs for each female; egg sac mass (mg); egg number; and mean sac mass per egg (mg). Analysis of variance was conducted to compare reproductive output for females with different levels of leg loss. Females missing one or two legs significantly underperformed females with no leg loss and females missing three or more legs in terms of egg sac weight ($p = 0.0006$) and egg number ($p = 0.0008$). Thus, leg loss in spiders has negative consequences for females in terms of reduced reproductive performance. The odd upward spike in egg sac weight and egg number for females missing three or more legs may be due to peculiarities in the data for these 13 spiders.

**Role of Host Country Nationals in Optimizing Expatriate Assignment Success**

Katherine McCall, Sadie Misle

As organizations increase their activities beyond the borders of their headquarters, they also are sending more of their home country managers and other professionals abroad as expatriates assigned to work in their foreign operations to achieve organization performance objectives (e.g., build new business abroad). In the past there has been much research examining the factors that support expatriate assignment success in achieving performance objectives and minimizing costly expatriate low productivity or even failure. Increasingly, however, scholars are turning their attention to the local employees working with expatriates—host country nationals—as potential contributors to expatriate success. According to a recent theoretical model (Vance, et al. 2014), host country national (HCN) colleagues can serve as a liaison between expatriate and local work environment in five major ways to support the expatriate in her or his work performance, which ultimately can benefit the organization. According to this research, a HCN liaison can
productively serve as a cultural interpreter, communication manager, information resource broker, talent manager, and internal change agent.

We recently conducted a pilot test for a new survey that was developed to validate the above theoretical model. Our pilot test using personal interviews and an online survey with current expatriates working in Southern California found support for the five components of the HCN liaison role, along with many specific associated behavioral functions for each role component. We also identified specific improvements of the survey that we used. These pilot study results of recommended survey improvements will be useful in guiding further field validation, and in ultimately improving the present theoretical HCN liaison model using survey input of a much larger sample of current expatriates assigned to work in international organization operations in many countries.

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Sign Me a Story: Creating a Children’s Book for Deaf Readers
Michelle Iafe

Early and extensive exposure to highly interactive language experiences fosters the development of language skills. Shared book reading provides such rich opportunities for children. Children experience language directly and independently with books, through text and pictures that model language, and potentially with others, through the interaction and conversations the book inspires for language practice. As language systems differ depending on exchange modality, I propose that books should differ as well. My thesis project explores the creation of a children’s book that signs its story to Deaf children to promote language development. The availability of such books is limited both in the US and around the world. I hope to provide Deaf students greater access to this educational resource, as it benefits language acquisition and cultural understanding. The story is “written” in American Sign Language according to its language and cultural conventions. The book is bound in its effort to help readers develop visual, spatial, and temporal thinking skills. With English text running throughout its pages, the book becomes a bilingual experience. Its words, images, and design speak directly to readers. This book nurtures a stimulating atmosphere for children both inside the classroom as material for Deaf education and shared between parent and child. My project is inspired by my research in sign languages and Deaf education, supported through LMU Honors Summer Fellowship funding, both nationally at Gallaudet University in Washington DC and internationally at the Siena School for Liberal Arts in Italy. The book is dedicated to its future readers.

Skin Deep: Questioning the New Archetype of Beauty in a Globalized Society
Ann Park

The philosophy that “beauty is skin deep” lacks relevance in today’s society. A majority of the population is enamored by the staged perfection of models and celebrities that we see plastered on magazine covers. This idealization of the human form makes it difficult for the average person to accept their own uniqueness and damages a person’s psyche when he or she subsequently desires to achieve “ideal beauty.” South Korea, a society that once considered it unthinkable to surgically transform one’s body, is now leading in the field of plastic surgery. Both women and men actively seek to erase their Asian features in favor of a Western-influenced look. They strive to attain beauty standards in opposition to their own, such as large eyes, narrow jaw, symmetric face, and a pointy nose. As an Asian-American witnessing this obsession with physical beauty from both sides, I feel that there is a danger of losing one’s ethnic identity by conforming to a uniform one. There is a growing obsession within my generation to mimic this popularized idea
of beauty. From my research, I intend to create a theory of the “beauty ideal” based on perspectives from Eastern culture. My goal is to give people the opportunity to rethink the notion of the “ideal” and standardized notion of beauty. Through art and design, I want to create a reflective piece where people should realize that we should not adhere to a single idea of what is considered beautiful when we are living in this modern world with a diversity of cultures.

**Skinny Ads, Fat Impact**  
**Alyssa Smith**

This project addresses the benefits the marketing industry can reap if more middle-sized models are integrated into advertisements; it also reports on the negative effects that ads promoting unhealthy images of thinness have on viewers. The media’s distortion of body image adds to the increase in low self-esteem, self-hatred, eating disorders, and in extreme cases, death. Although men and women of all ages are often affected, adolescent females ages 12 to 21 are my target group because of the outstanding number of girls who warrant attention as suggested by statistics on eating disorders and image consciousness. Studies have shown, when women and girls view advertisements that reflect the industry’s idea of a perfect body size, they cannot identify with the model and do not envision themselves wearing or using the product; this often results in consumers leading unhealthy lifestyles in pursuit of the body sizes portrayed, and a loss of customers for the business. Many companies believe they will lose money by using larger models; however, research shows that if marketers portray healthier middle-sized girls in ads, consumers will still buy the product despite the argument that “thinness sells” (Australia School of Psychology). Marketing industries and consumers benefit when more middle-sized models are integrated into advertisements. Despite assumptions of dominant trends, increasing the variability of model sizes can benefit profit margins. In the worse case scenario, profits are not negatively affected and healthier consumer trends will still be supported. This marketing proposal urges marketers to incorporate middle-sized women into advertisements by revealing how it can positively affect their consumers and increase company profits. It also serves to urge the general public to advocate for a portrayal of healthier sized models, in order for any substantial change to be initiated.

**Social-awareness and Religiosity in First and Fourth Year University Students**  
**Pamela Gonzalez, Carlee Kreisel, Alyana Roxas**

What role does higher institution play in the formation of a young adult’s identity and social development? What possible influence might religious belief have on values and behaviors of college students? The purpose of this study was to examine the development of students’ values, ethical behaviors and attitudes from first to fourth year of college. Additionally, we were interested in examining the way in which students’ ethical development may be related to religiosity. Undergraduate first and fourth year students filled out a survey that assessed their values, aspirations, experiences and cultural backgrounds. The results showed a statistically significant decrease in religiosity in fourth year students as compared to first year undergraduates. At the same time, fourth year students showed a significant increase in socially aware attitudes and behaviors as compared to freshmen. First year students also tended to exhibit more individualistic and self-gratifying attitudes and behaviors while fourth year students tended to endorse more humanistic and community-centered attitudes in comparison. The strengths and limitations of the cross-sectional design of the survey are discussed. The findings are interpreted as supporting the potentially important role that higher education may play in the formation of young adults into “whole” and responsible citizens of society.
Solar Panels: Financing and Effectiveness
Michael Erike, Jaric Eripe, Jacob Mehari, Taylor Perham, Veronica Pintor

Solar panel systems are most effective when the sun’s rays are orthogonal, or perpendicular, to the surface of the solar panels. The goal of our project was to determine whether or not it would be efficient and cost effective to install the solar panels on a movable platform capable of sensing the position of the sun and changing position to ensure that the surface of the panels is always perpendicular to the sun’s rays.

The efficiency of stationary (the control) and solar tracking panels were analyzed through tests and the total costs were compared in order to see which panel system would be more practical for providing power. Two different set-ups were tested, one stationary solar panel setup and one moveable panel setup. The moveable solar panel had a solar tracking device, which measured light to track the movement of the sun from sunrise to sunset. Meanwhile, the stationary panel would be positioned to absorb the most sunlight during the middle of the day. In order to measure the maximum power output the resistance of a variable resistor in series with each panel would be lowered until the output voltage dropped. The voltage was measured and power calculated. This was repeated every 15 minutes during a period of an hour. Below is an example of the power produced by a solar panel. This chart displays the results of a solar test done June 4, 2013 from 12:40 pm till 1:35 pm. The rise and fall of watts are shown on the y-axis, while the time is on the x-axis.

Solving a Big, Fat Crisis Through Design
Bethany Gaines-Gomez

Child obesity continues to be a rising problem in the United States, as kids are eating unhealthy, sugary foods and becoming less active. I posed the question to myself: Why are children initially drawn to eating junk food? While researching popular junk foods, I found a consistency in the way their packaging was designed. The packaging of successful brands such as, Kellogg’s, General Mills and Hostess, are designed to appeal to children through the use of bright colors, attention-grabbing typography and cool mascots. So, what if there was a healthier snack that was designed with the same attributes as the junk food packaging? Would children be more inclined to eat the healthier food by the way the packaging is designed? I will test my theory by rebranding Kashi - a brand primarily branded toward adults - by designing their packaging to be more visually appealing to kids. My rebranding plan is based upon the success of Yoplait yogurt when they branded their product for children through go-gurt. To insure success, I will be testing the designs on children, 1st - 8th grade, and allowing their feedback to influence my design iteration. Since children are my main target audience, it is important for me to go straight to the source, to research and survey kids on what appeals best to them already. My goal for this project is to help solve the ongoing crisis of child obesity and prove how graphic design can manipulate consumers into making healthier choices.

Sprechen Sie Englisch?
Ryan Alkire

I have always been intrigued by people and their stories. While abroad in Germany, I decided to set up a camera in the middle of Cologne and stop strangers on the street to find out if a complete stranger will open up to another complete stranger. The film follows me as I go through the process of filming and meeting various types of people. In the end, I talked to over 50 different
people and was able to form connections with many of them. I asked my subjects multiple questions such as "What in life makes you happy?", "What’s is your biggest life regret?" and "What's the best piece of advice you could give a stranger?" to name a few. All of my subjects were truthful and honest with their answers, telling me somewhat cliche answers but also getting into deeper, more personal ideas. I interviewed people one on one, but also some daughter/mother duos, friends, children, grandparents and basically anyone who was willing to talk. The people I had the pleasure of meeting told me about their own lives, and in turn taught me about mine. They give a new perspective on happiness, sadness, relationships and self worth. Everyone has their own story and their own lifelong philosophy, but the audience will be surprised by how similar we all are at the core of our beings.

Stress, Body Composition, and Risk of Diabetes Among Cancer Survivors: Findings from the Loyola Marymount University IMPAACT Pilot Study
Isabela Kuroyama

High levels of stress and obesity (central adiposity) may contribute to an increase in risk of diabetes among cancer survivors. The IMPAACT (Improving Physical Activity After Cancer Treatment) study assessed the effect of aerobic and resistance training on body composition and biomarkers of chronic stress (cortisol) and metabolism (insulin, fasting blood glucose) among cancer survivors. Eleven cancer survivors consented to 13-weeks of supervised aerobic and resistance training (1 hour, 3 times/week). The cohort was 91% female and 54.5% were African-American or Hispanic. The average age of participants was 57.8 years (SD 10.5) with five participants classified as overweight (BMI>25 kg/m2) and three classified as obese (BMI>30 kg/m2). Nine participants completed the study. The post-assessment showed an average decrease in waist circumference of 1.41 cm (SD 3.97). However, 3 of 9 participants experienced a >3cm decrease in waist circumference. The participants with the largest decrease in waist circumference were also the participants that attended >80% of the training sessions. There was a positive correlation between time since last treatment and insulin ($r^2 = 0.762$, $p = 0.028$) and between time since last treatment and fasting blood glucose ($r^2 = 0.757$, $p = 0.30$). Relationships between insulin and waist circumference ($p = 0.083$) and between insulin and participation ($p = 0.054$) were suggested. These findings show that with exercise, cancer survivors can decrease their risk of diabetes by decreasing central adiposity. An analysis of cortisol and body composition will be presented to further examine the effect of physical activity on chronic stress.

Structural determination of $\alpha$-cp$\beta$ with stabilizing mutations using X-ray crystallography
Danica Anukam

Hemoglobin, the oxygen carrying protein found in red blood cells, is composed of two alpha and two beta subunits. The ultimate goal of our research is to produce a single-chain hemoglobin derivative which displays similar function and thermodynamic stability compared to wild-type human hemoglobin. When tetrameric wild-type hemoglobin is present in human blood plasma (e.g., as a result of red cell lysis), it dissociates into two dimers which are small enough to be filtered into the kidneys. This causes renal toxicity. Other adverse effects include constriction of smooth muscle tissues and blood pressure elevation. Our lab is working toward developing larger polymers of hemoglobin as a strategy to prevent these adverse effects. Our goals include determining the structure of a hemoglobin variant we call “$\alpha$-cp$\beta$” by purification through the use of an immobilized-metal affinity column, an ion exchange column, and a size exclusion column. From there, X-ray crystallography will be used. Results show that some crystals formed but are not good enough to analyze. However, in prior work, the structure of $\alpha$-cp$\beta$ with all of the
mutations demonstrates that, in the crystals, the subunits join to form a heterotetramer similar to wild type Hb. Information from this study will aid the design of a single chain hemoglobin (scHb). The scHb design includes a single glycine linker between two sc-α-CPβ 4SM fragments. Once scHb has been expressed and purified, structural characterization compared to wild type Hb will be evaluated.

**Study of the biological interactions between Lupinus chamissonis and microbial communities within heavy metal environments**  
Stephen Louie

Zinc and cadmium are heavy metals used in the industrial process and are considered to be toxic and dangerous environmental pollutants. Phytoremediation is a treatment that involves the use of plants to extract or break down environmental contaminants. This research focuses on Dune Lupine (Lupinus chamissonis), a woody legume found in the Ballona wetlands and the El Segundo sand dunes, and determining its potential use for phytoremediation. In particular, we are interested in zinc and cadmium due to their prevalence in the Ballona Wetlands. The first objective of the study was to determine the heavy metal tolerance of Dune Lupine. Dune Lupine was grown hydroponically in four different treatments: a control with only the Hoagland nutrient solution; 100 μM metal; 250 μM metal; and 500 μM metal. After five weeks of growth, the plants were collected from the treatments. The plant’s tolerance was based on shoot dry weight, root dry weight, shoot length and root length. The averages were analyzed with an ANOVA test and a post-hoc Tukey test to determine their significance. There was no statistical difference in plant growth at concentrations of zinc up to 250 μM. The initial experiment with cadmium showed that any concentration larger than 100 μM resulted in plant death. A test using lower concentrations of 25 μM, 50 μM, and 100 μM cadmium showed a tolerance of cadmium up to 50 μM. The current objective is determining if Dune Lupine’s performance can be enhanced by inoculating its roots with Plant-Growth Promoting Rhizobacteria. Data gained from these tests will help further assess whether Dune Lupine is a suitable phytoremediator.

**Symbiotic Relationship of Chamaecrista fasciculata and Nodulating Bacteria**  
Gabriela Lopez

Chamaecrista fasciculata is a prairie plant found throughout the United States. Studying Chamaecrista could be useful in obtaining a more complete picture of legume evolution, including understanding and elucidating the origins of nodulation in the family. Since, there is limited research on C. fasciculata nodulation, understanding the process may provide insights about nodule (a swelling on a leguminous root that contains symbiotic bacteria) evolution. This study is designed to determine the method in which Rhizobium enters and nodulates Chamaecrista. Chamaecrista was inoculated with a commercial inoculum (microorganisms used in an inoculation) and bacteria were isolated from surface sterilized nodules. Pure cultures were obtained of a fast-growing isolate, CF1, and a slow-growing isolate, CF3. To confirm these isolates nodulate Chamaecrista, seeds were surface sterilized, germinated aseptically, and seedlings inoculated with each bacterium. Nodules formed on plants inoculated with either CF1 or CF3. Surface sterilization of these nodules and isolation of the bacteria inside, confirmed that CF1 and CF3 each nodulate Chamaecrista. 16S rRNA gene analysis on each bacterium indicate that CF1 is most similar to Bradyrhizobium sp. and that CF3 is most similar to Agrobacterium sp. The antibiotic sensitivity profiles were determined for each strain so that a green fluorescent protein (GFP) reporter construct can be introduced into the two isolates, which will allow visualization by microscopy of the bacteria during the infection and nodulation process. The use of the green fluorescent protein (GFP) is advantageous to visualize bacteria in real time;
providing the study of the invasion events of rhizobia during nodule development on the legume host plant.

**Synthesis of G-quadruplex macromolecules**
Michelle Blemker, Makenna Elliot

DNA G-quadruplexes (or G-quartets) represent a new, promising target of anticancer therapies. G-Quadruplexes have been shown to stop unrestricted cell growth in cancerous cells by inhibiting the enzyme telomerase from extending DNA length. The goal of our research is to synthesize Guanine-quadruplex macromolecules and investigate their folding properties and potential for stabilization by drug candidates. N9-(3,5-bis(pent-4-enyloxy)benzyl)-guanine, N9-(3,5-bis(hex-5-enyloxy)benzyl)-guanine, N9-(3,5-bis(hept-6-enyloxy)benzyl)-guanine, and N9-(3,5-bis(oct-7-enyloxy)benzyl)-guanine were synthesized in good yields from the coupling reaction of 2-N-acetylguanine and 3,5-di-substituted benzylbromide derivatives followed by amide deprotection. These compounds were confirmed to form G-quartets by nuclear magnetic resonance (NMR) analysis. Template-assisted olefin metathesis was used on several derivatives to form the macromolecule structures. Complete characterization of the macromolecule structures by liquid chromatography mass-spectrometry (LCMS) and NMR are currently under investigation.

**Taking Back Natural**
Angela Hirsh

I intend to design a branding campaign that reclaims the integrity of the term ‘natural’ in consumer products. This campaign will include redesign of existing packaging as well as printed designs expressing the semantics of the term natural. According to the Oxford dictionary, the word natural means, “existing in or caused by nature; not made or caused by mankind.” This label was once given to certain foods to express the fruits, vegetables, sugars, grains, and other unmodified elements that together formed their composition. This is no longer the case. Many foods falsely claim to be natural or healthy. A shocking majority of these foods contain artificial sweeteners and other harmful components, components that were definitely not “caused by nature”. Individuals eat “diet”, “sugar-free”, and “light” foods intending to lose weight or lead healthy live styles. In reality, these supposedly healthy foods are damaging the health of consumers. Graphic design is a key contributor to the falsity of food labeling. Designs distract the eye of the viewer, attracting them to products while diverting their attention from ingredient lists. For this project, I intend to use graphic design to bring attention back to the problem. I will research the artificial, scientifically altered ingredients that exist in common foods. Using this research, I will develop a branding campaign that exposes the falsity behind the label ‘natural’ as well as the harmful side effects of artificial sweeteners in sugar-free foods and beverages. With my designs, I will encourage viewers to gain nutritional awareness, see through false labeling, and take back natural.

**Teaching Artificial Intelligence as a Lab Science: Basic and Informed Search**
Michael Fraser, Miguel Vazquez

The Teaching Artificial Intelligence as a Laboratory Science (TAILS) project is developing a new paradigm for teaching introductory artificial intelligence (AI) concepts by implementing an experimental approach modeled after the lab sciences. In the Basic and Informed Search module of TAILS students learn about various search algorithms by first observing how each algorithm searches a map, watching the construction of the corresponding search tree as the path planning
proceeds. Once the students understand the differences between the algorithms, they proceed to exercises. Students are provided a version of the program with the search algorithm replaced by a comment, which guides the students through the process of implementing each algorithm and testing it with the existing application. This enables the students to focus on the AI aspect of the coding without requiring them to also develop the user interface. The algorithms and concepts from this module will be used in an Agent Architecture module of the TAILS project. The plan is to have the agents capable of using search algorithms to find the most efficient paths of navigating an environment. This poster describes the search module and assessments and presents preliminary results as well as a preview toward the agent module. "This material is based upon work supported by the National Science Foundation under Course, Curriculum, and Laboratory Improvement (CCLI) Grant No. 0942454. Any opinions, findings and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation."

**Team HR Consulting Project: Clippers**
Michael Guerra, Quan Ngo

In the wide world of sports, the right player personnel with great chemistry can win a championship under the tutelage of an inspiring and experienced coach. While the owner develops the vision for the franchise and the organizational culture that the general manager uses to lure talent to join the team, there are several functions of business that may go unnoticed by the common sports fan. Of course, sales drives every sports team, but human resources, for example, enables the managers to select the best applicable employees, establish and maintain company policies, and conduct training programs across departments. The “Team HR Consulting Project: Clippers” examines the Los Angeles Clippers organization in its entirety and how human resources plays a vital role to the team’s success off the court. As students interested in the sports industry, Michael Guerra and Quan Ngo act as strategic positioners by applying their management consulting skills to fully understand the Clippers organization. As research will continue over the course of the spring semester, interviews will be conducted with the director of human resources, assistants, and representatives from other departments and similar industries. The intention of the project stems from the notion of providing students with insight on how differently sports franchises impact the role of human resources compared to typical businesses.

**Temporal state sequences for immutable objects: a new mechanism for object oriented programming**
Jasmine Dahilig

In a series of talks on the applications of atomic time in parallel computing, programming language designer Rich Hickey proposes that computing performance will remain at a plateau until programmers are able to use multithreaded programming to fully take advantage of multi-core processors. He further claims that this will be impossible to achieve with object-oriented programming, due to the presence of mutable state, which presumes an idyllic single thread. However, object-oriented programming is the most widely used programming paradigm today. This research examines the difficulties in reconciling pure functional programming with the object-oriented programming paradigm by examining approaches taken in existing languages. The analysis aims to identify the areas in which these languages fail and in which they succeed, according to Hickey's specifications, and use this analysis to propose a mechanism for implementing immutable data in an object-oriented language. These results are illustrated in a small programming language.
The Ability of Vegetable Extracts to Inhibit the Aggregation of IAPP
Nicole Pepe, Alexander Santiago, In Rachel Wang

The aggregation of Islet Amyloid Polypeptide (IAPP, amylin), a 37-amino acid polypeptide, has been thought to correlate with the loss of pancreatic B-islet cells that are necessary for the secretion of insulin. These effects are thought to contribute to Type II Diabetes, and for this reason, the inhibition of the aggregate proteins can be vital for the discovery of potential therapeutic drugs. With the use of Thioflavin T binding assays, extracts of 14 common vegetables were tested and analyzed for their abilities to prevent the aggregation of amyloidogenic IAPP. Atomic force microscopy was used for vegetable extract samples to visualize amyloid fiber formation and these results were compared to the amyloid fiber formation of IAPP alone. Out of the 14 vegetables analyzed, there is strong evidence to show that 3 of them, arugula, bok choy, and jalapeño, are likely to be useful compounds for inhibiting IAPP aggregation.

The Alton Miller Story
Hannah Stone

The effects of the 1918 Influenza Epidemic have been studied extensively before; however my paper and research primarily identified gendered expectations that preceded the effects of influenza, and then the opportunities that arose from the problems associated with the war and disease. Through my research with “The Soldier’s Scrapbook,” (provided by UCLA), I found the intriguing story of Alton Miller, pieced together in his letters home from his military camp. The writings are samples of Miller projecting his masculinity to comfort his family, and himself in doing his duty by being a “good” soldier. I spent a few days in the archives of Hannon exploring and emerged with evidence of Alton’s experience and attitude about war and the flu’s impact on life. History is most interesting to me when I can find a link to the why of the way things are today. My research indicates not only a deeply felt personal narrative, but also provides evidence for changing gender opportunities. For example, had Alton not experienced a pressure to go to war out of duty, like many other men, then women would never had the opportunity to fill previously masculine-dominated careers. I walked away with a better understanding of the higher purposes men and women feel called to fulfill based on their societies needs at the time, but also of how they could embrace their expected roles in a way that would create new opportunities and a new perspective.

The Awntyrs Off Arthure: Barren Does and a Motherly Ghost as Authorial Agents of “Arthuriad” Parable and Reform
Michael Robinson

Taking its cue from the diptych—a story told visually in related panels—this paper illustrates the manner in which the unknown author(s) of the Middle English Arthurian romance, The Awntyrs off Arthure at the Terne Wathelyne, uses its seemingly disparate parts to suggest a unified platform of reforms along the issues of, first, the political consequences of personal “moral failings”—the emphasis of the first part of the poem prominently featuring two women, Arthur’s Guinevere and her ghostly mother (as well as a morally-troubled Sir Gawain)—and, second, the personal ramifications of an allegation that Arthur, cast as “imperialistic British king,” dishonorably seized lands from a Scottish knight, Galeron, come to battle Sir Gawain for the disputed lands.

Viewing the poem, analogously, as a literary diptych, with half the poem, Awntyrs A, the “Ghost Story,” being one “panel” and the other half, Awntyrs B, the “Scottish Knight Story,” one discerns more clearly a designed connection; revealing a thematic interplay between the parts previously obscured. The diptych analogy, therefore, serves as a methodology to allow one to glean the
intrinsic wholeness between the Ghost Story and the Scottish Knight’s Tale. Comparing and contrasting elements between Awntyrs A and B, side-by-side in a sense, strongly underlines this literary integrity. As such, these tales, iconic to the author(s) and the audience of their day, work as parables and point to contemporary political, economic and, possibly, ecclesiastical reforms that the author(s) wished to see in their circa 15th century society.

The Believable Image
Amanda Goad

The ultimate goal in animation and visual effects films is the seamless integration of all the elements that create the final image. These assets can include computer graphics, live-action footage, and photographic material among others. The purpose of this research project was to develop an image-based lighting and deep compositing pipeline unique for my mentor’s film production by researching industry-best practices for the 3D animation and visual effects software packages Maya, Houdini, and Nuke to create the final images for her creative project. This research builds on last summer’s SURP project “Generating Fur in 3D Animation” by extending the fur pipeline for my mentor’s short film down to the compositing stage. Over the course of the research I learned how to capture high dynamic range images (HDRI) of miniatures from live photography sets, how to implement these HDRIs for image-based lighting in Houdini, as well as how to choose the proper file formats for exchanging assets between the software packages. As an animation student interested in pursuing visual effects, experiencing these types of workflows prior to entering the industry was invaluable. Ultimately, the conclusion of this project was a successful pipeline for constructing images from multiple assets as if they were shot with the same camera to create the unified believable image.

The Bumblebee Effect
Shanhuan Manton, Kelsey Taylor

The Bumblebee Effect is an investigation of the importance of bees to human civilization and the causes, effects, and nature of their interconnectivity. Sponsored by faculty member Susan Scheibler and the Honors Summer Undergraduate Research Opportunities Grant, Shanhuan Manton and Kelsey Taylor went to Italy, a country famed for its beekeeping and organic agricultural practices, and volunteered on a WWOOF Organic Apiary in order to research the issue of Colony Collapse Disorder, a worldwide problem that has decimated bee populations in the past decade. Through the collected audio, video, photographs, and interviews with beekeeper Ranuccio, Shanhuan and Kelsey discovered that the narratives of bees and humans are more closely linked than one might expect at first glance. Colony Collapse Disorder is merely a symptom of a grander problem in human society, one that permeates aspects of human lives from our flawed monocultural and commercial agricultural systems to the ways we interact with our neighbors. By examining the communities of bees and Ranuccio’s interactions with them, and weaving the narrative through our video, audio, and textual presentations, we have created a transmedia experience that aims to heighten awareness of the ways in which not only bumblebees affect so many aspects of our lives, but also the ways in which they serve as a mirror for humanity to understand itself.

The Death of a Scapegoat
Claire Andreae

During Greece’s productive classical period in the 5th and 4th century B.C.E., the Greek philosopher Socrates became famous through his new “Socratic Method.” This method, however, also resulted in a charge against him of corrupting the youth of Athens. Other factors also led to
his trial in the year 399 B.C.E., such as political differences, personal animosities, charges of
crime concerning religion (specifically, introducing new divinities), and his general unpopularity
stemming from his philosophy. Given the large variety of possible reasons for his trial, this paper
argues that Socrates’ persecution took place mainly because of the fractured society that existed
in Greece at the time. Therefore, in light of the historical background involving the Peloponnesian
War and its consequences on Athenian society, this paper argues that Socrates was most likely
used as a scapegoat. To address this argument and to show what the main drivers were behind
Socrates’ prosecution, the writings of two of Socrates’ students, namely Plato’s Apology of
Socrates, and Xenophon’s Defense Before the Jury, will be analyzed and compared. Plato and
Xenophon’s writings differ in respect to Socrates’ personality and points of emphasis, but both
present reasons that render the religious charge, and others, as unsubstantiated. Therefore, even
though the true reasons for his trial cannot be unquestionably identified, the plethora of official
and unofficial charges that brought Socrates to trial, which all were of questionable validity, show
that these reasons were constructed and unsubstantiated.

The Demographic Realities of Medical Marijuana Dispensaries
Daniel Hollis, Christopher Mosser

Los Angeles is grappling with what to do about medical marijuana. The ballot measures
propositions D, E, and F concerning medical marijuana that were proposed on the ballot for the
Los Angeles 2013 Mayoral Election failed to address the core issues of public concern. As we
look toward Washington and Colorado as new models of state-regulated recreational marijuana
use, Los Angeles must look at its regulatory structure. If the goal is to safely regulate the use of
medical marijuana and to develop a tax structure that provides revenues, then the current and
proposed practices must be reconsidered; arbitrary bans and numeric limitations are not
sufficient. Los Angeles’s biggest challenge is overcoming stereotypes of marijuana users that
block the passage of more effective regulatory structures. Marijuana users are often perceived as
poor, uneducated or people of color; this stereotype is not the narrative for Los Angeles. To
accomplish this goal we will create a geographic map showing all medical marijuana dispensaries
in the City of Los Angeles and compile that with census tract data from the 2007-2011 American
Community Survey. We will look at demographic variables such as age, race, income, education,
citizenship, and population density. We hypothesize that the highest concentration of
dispensaries will be in areas of higher income and education and will also be in areas with a
higher population density. Because these medical marijuana dispensaries will open in areas
where they can make money, the areas in which they open do not support the stereotypes of
marijuana users. The aim of this research is to reveal the demographic realities of marijuana
dispensaries and inform residents and voters about the impact of their recent ballot measures.

The Digital Charlotte Smith
Allison Croley

What is “Digital Humanities”? Is it a new way of doing research within the humanities or does it
comprise a new academic discipline? How might “digital humanities” impact literary scholarship
in the long eighteenth century (1688-1815)? Will it allow scholars of the long eighteenth century
to discover new aspects of the literature they have been studying for years? Can new digital tools
work in tandem with qualitative analysis and close reading? Using a variety of digital tools
(which will include the textual analysis program Voyant and the online database ECCO), my
presentation will explore the ways in which these tools can enrich a discussion of pastoralism in
Charlotte Smith’s poem Beachy Head, a topic I originally researched without using any digital
support. Beginning with a discussion of my original research methods and interpretive approach
to analyzing pastoralism in Smith’s poem, I will discuss how digital tools might deepen and
expand this analysis. While my presentation will show some of the gains—scholarly, interpretive,
and pedagogical—of using these digital tools, I will discuss some theoretical and practical
questions raised by this new approach to researching, analyzing, and teaching literature using
these technologies. My goal is to highlight the ways that digital humanities might foster
collaboration between the humanities and the sciences.

The Discovery and Synthesis of Novel Telomeric G-Quadruplex Stabilizing Compounds
Rachel Fry, Blake Titterington

The telomeric G-quadruplex structure is comprised of four guanosine nucleobases that form
around a metal cation strengthened through hydrogen bonds. This structure is present in telomeres
and inhibits the enzyme telomerase. When telomeric G-quadruplexes are destabilized, the enzyme
telomerase becomes unrestricted and contributes to uncontrolled cell growth by augmenting
telomeres before cell division. It is well known that uninhibited cell growth engenders significant
health risks, especially the proliferation of metastatic cancer cells. Research involving the
telomeric G-quadruplex structure is an exciting new area for potential anti-cancer therapies as
stabilization has been achieved through the discovery and synthesis of new compounds that stack
inside or outside the quadruplex structure. Through the derivatization of inexpensive starting
materials, intelligently designed compounds were synthesized and tested for stabilizing abilities.
These drug candidates were analyzed by recording temperature variations in melting point curves
measured by circular dichroism. In this poster, we present several new drug core structures that
may possess the ability to stabilize the G-quadruplex structure.

The Effect of Hydrogen Charging on Fracture Toughness of 4340-Steel
Reid Byron, Brandon Carr, Molly Dearborn, Jonathan Guerra, Patrick Hodgkiss, Chris Mitts,
Xiadong Sun, Lucious Wilson

A study is conducted on the effect of hydrogen charging on fracture toughness on cadmium
coated 4340 steel samples. The samples are cadmium coated to give them an excellent resistance
to corrosion, in most conditions marine and alkaline environments. The electroplating of
cadmium to steel diffuses hydrogen into the steel microstructure causing embrittlement.
Hydrogen charging is currently detected in steels by very slow and complex methods. Our group
of researchers at LMU emphasized that a fast high strain rate method (Charpy Impact) can detect
hydrogen charging in steel. The objective is to generate data of hydrogen charged steels by using
fracture toughness testing. A mathematical model will be created which will relate fracture
toughness testing with Charpy Impact values from current experiments. If a strong correlation is
observed, then the simple method of Charpy Impact testing will be also used in predicting
fracture toughness of steels. This will be very significant for the materials engineering
community. Steel plates were be Electro Discharge Machined (EDM) into compact tension
fracture toughness bars at LMU. The samples were be divided into four groups, and some were
tempered at 354°C, 468°C, and 621°C. Cadmium coating will be performed by ALCOA Co. in
Torrance, CA. Each of these samples will then be fracture toughness tested on the MTS fracture
mechanics system. Selected fractured surfaces of the samples will be studied by a Scanning
Electron Microscopy (SEM) to analyze their failure mode.
The Effect of Kinesio Tex Tape on Strength and Power in the Quadriceps Muscle in Division 1 Soccer Players
Shannon Meggs

Kinesio Tape (KT), developed by Dr. Kenzo Kase in the 1970s, has revolutionized athletics throughout the world. Its unique ability to stretch up to 60% of its original length and not restrict movement has resulted in the use of this tape in a multitude of sports ranging from swimming to running. It has been theorized that it helps to stabilize loose joints and relieve strain on damaged soft tissue while also promoting better blood and lymphatic flow (Kase et. al 2013). We investigated the potential for Kinesio Tex Tape to increase quadriceps strength and power measurements in the subjects’ dominant leg over a period of two weeks. The test subjects’ muscular strength was tested using three different methods: (i) single hop test, (ii) triple hop test, and (iii) vertical jump test. These three tests were performed pre-intervention and post-intervention. Research participants were randomly divided into three groups: tape group, sham group and control group. The sham group used KT tape applied transverse to the quadriceps muscle group. The transverse application of KT to the quadriceps muscle is not shown to have any effect on blood flow. The control group received no tape application. For a period of two weeks, subjects were taped prior to attending soccer practice depending on their assigned treatment group. After the two weeks were completed, the subjects’ muscular strength was re-evaluated using the three methods mentioned previously. The tape group was taped using methods described by Dr. Kenzo Kase for the quadriceps muscle to see if KT can increase measurements in strength and power. This research did not reveal an increase in quadriceps strength and power for the experimental group in comparison to the control and sham groups.

The Effect of Public Housing Policy on Neighborhood Crime Trends in Seattle
Lauren Caputo

This undergraduate thesis tests the correlation between recent public housing policy and neighborhood crime rates in Seattle, Washington. Studies of public housing in the 1970s exposed the inherent failures of traditional public housing models and influenced efforts to reform the institution. By the 1990s, a new vision of public housing emerged that favored the dispersal of low-income populations away from the concentrated poverty of housing projects and called for the radical physical reconstruction of dilapidated housing developments. The United States Department of Housing and Urban Development began the HOPE VI program in 1993 to revitalize that nation’s most severely distressed housing developments and replace them with mixed-income communities. As these new policies are being enacted, the question still remains: what effect do recent changes in public housing policy have on crime patterns in surrounding neighborhoods? This study uses both broad data analysis of 133 Seattle census tracts as well as an in-depth analysis of ten public housing neighborhoods to explore the relationship between various public housing policies and crime in Seattle from 1990-2010. Supplemented by regression analysis as well as GIS technology to map crime and demographic trends in Seattle, the study presents a new approach to understanding the effectiveness of recent public housing policy in creating safer communities. This study is among the first to review the federal HOPE VI housing reconstruction program. Research findings offer new and valuable insights to city planners and housing officials seeks to inform future public housing policy.
The Effect of Sodium Bicarbonate on Competitive Judo Athletes
Megan Ishibashi

Sodium bicarbonate has been shown to improve performance in anaerobic exercises due to an increase in buffering capacity. This substance is considered an ergogenic aid, which is defined as a technique or substance used to enhance performance. The aim of this study is to examine the effect of different doses of sodium bicarbonate on judo performance. A double-blind design using 4 different doses of sodium bicarbonate per unit of weight (kg): 0.1 g/kg, 0.2 g/kg, 0.3 g/kg, or 0.4 g/kg of sodium bicarbonate mixed with 400 mL of dilute black currant juice or a placebo of sodium chloride dissolved in the juice was given to each participant. The Special Judo Fitness Test, which tests the amount of throws performed during different time intervals, was used to assess participants two hours after drinking the solution. Time intervals were classified as either Series A, B, or C representing 15 seconds, 30 seconds, and 30 seconds, respectively. Each athlete participated in 5 trials in a span of no more than one month. The data was analyzed using mixed design repeated-measures ANOVA. Mauchly’s test revealed that the assumption of sphericity had been met, \( p=0.227, \chi^2=12.01 \), however, no significant differences were observed between the placebo and the four dosages. There was a trend towards significance in Series B and C for 0.3 g/kg of sodium bicarbonate. This study demonstrates that ingesting sodium bicarbonate does not prove its efficacy towards furthering judo performance.

The Effect of Thirteen Weeks Aerobic Resistance Training on Heart Rate Variability in Post-Treatment Cancer Patients
Lacey Smith

Aerobic resistance training has been shown to improve heart rate variability and parasympathetic control of the heart. One of the side-effects of cancer treatment is fatigue which can lead to lower cardiovascular fitness and can negatively influence HRV. This study aimed to analyze the effects of extended aerobic resistance training on heart rate variability (HRV) measurements in an adult population. Post-treatment cancer patients \( n=9 \) attended tri-weekly aerobic resistance training sessions consisting of eight exercises performed consecutively. A 20-minute cardio portion preceded the 20-25 minute resistance-training portion of the sessions followed by balance and flexibility exercises. Pre-assessment and post-assessment heart rate variability measurements were taken using the POLAR RS800CX. Paired t-test results indicate no significant differences between baseline and post-intervention measurements in the following variables: high frequency (HF) \( p=0.735 \), low frequency (LF) \( p=0.863 \), very low frequency (VLF) \( p=0.416 \), total power (TP) \( p=0.504 \) and Low Frequency/High Frequency ratio (LF/HF ratio) \( p=0.193 \). Thirteen weeks of aerobic resistance training did not affect HRV in post-treatment cancer patients. A longer exercise intervention may be required to observe significant results.

The Effect of Various Spices and Herbs on Islet Amyloid Polypeptide Aggregation
Ana Luisa Fuentes, Kathleen Hennessy, Jacob Pascual

Islet Amyloid Polypeptide (IAPP) is a 37-amino acid peptide secreted by the pancreas in conjunction with insulin. Though normally not aggregated, IAPP in its aggregated form appears to play a direct role in the onset of type 2 diabetes. By preventing this aggregation it may be possible to restrict the occurrence of this disease. Many spices and herbs have been known to have a positive influence on the overall health of the body. We hypothesize that some spices and herbs, including: Cayenne Pepper, Mint, Cumin, Curry Powder, Cilantro, Parsley, Sage, Thyme, Chives, Dill, Rosemary, Garlic, Huatacay, and Black Peppermint, could also be effective inhibitors of the aggregation of IAPP. Using Thioflavin T (THT) assays, we were able to measure the amount of IAPP aggregation in solutions containing the spices and herbs in question by
measuring the fluorescence of IAPP bound with THT. We then collected data that displayed the efficiency of spices and herbs at inhibiting aggregation. By utilizing spices and herbs to inhibit IAPP aggregation, it may be possible to delay and eventually terminate the effects of type 2 diabetes. Of the aforementioned spices and herbs, we have promising data that show several of them have high efficacy in inhibiting IAPP aggregation.

**The Effectiveness of H-Wave Technology and Interferential Current Electrical Stimulation on Hamstring Flexibility**

Brett Ballesteros, Dana Cavedon, Michael Mitri

The purpose of this study was to identify the efficacy of H-wave and interferential current electrical stimulation (IFC) in increasing flexibility of the hamstring muscle complex. H-wave and IFC are electro-therapeutic treatments that aid in functional restoration and pain control. 52 participants were selected from Loyola Marymount University's undergraduate student population. All participants were considered to be of good health, and aged from 18-25 years old. Participants were randomly assigned to into one of three groups: H-wave (n = 17), IFC (n = 16), or control (n = 16). Hamstring flexibility was assessed on the dominant leg by the Sit-and-Reach test. The mean score of three trials of the Sit-and-Reach test was taken both before and after the administration of the modality. The participants underwent a one hour-long treatment of the H-wave, IFC, or control on their dominant leg. The control group did not receive any modality, but lay supine for the hour-long treatment duration. A one-way ANOVA was used to analyze the data. The percent change in Sit-and-Reach score from before to after treatment was also determined. There were no significant differences in mean Sit-and-Reach score as well as no significant differences in percent change in Sit-and-Reach score between any of the treatment groups. In conclusion, H-wave and IFC electrical stimulation do not acutely increase hamstring flexibility.

**The Effects of Hydrogen Charging on Charpy Impact of 4340 Steel**

Marc Papakyriakou

Current methods of testing for hydrogen charging are slow and time consuming. The objective was to determine if hydrogen charging can be detected quantitatively through the use of Charpy Impact (CI) testing. CI is a much faster and simpler process than current methods for detecting hydrogen charging. Steel plates were Electro Discharge Machined (EDM) into ninety-six 4340 steel CI samples and forty-eight tensile bars. All the samples were heat treated at 900C to austenite and then rapidly quenched in water to form martensite. The samples were tempered at eight different target strengths/target temperatures (145, 160, 170, 180, 190, 205, 220, to 250KSI, thousands of pounds per square inch)/(1100,1013,956,898,840,754,667,494 degrees Celsius). After a tedious process of grinding and machining v-notches to the Charpy samples, they were divided into four groups. One group was kept as an as received baseline for comparison while the other three groups were sent to Alcoa (Fasteners) Inc. in Torrance to be cadmium coated. The three groups were coated with three thicknesses (2, 3 and 5mils). That means that the samples were charged with ascending hydrogen levels. The samples were CI and tensile tested, and the data was tabulated and compared to the baseline group of uncharged samples of the same material. The results of this study were successful and indicated that CI testing was able to quantitatively detect hydrogen charging, see figure. The energy absorbed prior to fracture in uncharged samples were between 30-85 ft lbs. Those of the charged samples were between 7-25 ft lbs.
The effects of supervised, combined aerobic and resistance training on the muscular strength, flexibility and handgrip in cancer survivors from the Improving Physical Activity After Cancer Treatment (IMPAACT) study
Nia Archer, Brandon McKinney, Veronica Pintor

The Improving Physical Activity After Cancer Treatment (IMPAACT) is a Department of Health and Human Sciences collaborative study examining the effects of dietary and physical activity changes on cancer survivors and their risk factors for cancer recurrence and chronic disease. This purpose of this portion of the larger study was to examine the ability to positively influence low muscle strength and flexibility, which are factors associated with higher cancer recurrence following treatment. The functional capacity of females (9.1±8.9 years since last treatment) was evaluated using the effects of combined aerobic and resistance training (CART). Strength and flexibility were assessed from baseline (n=9; 57.2±11.1 years; 1.66±0.07 m; 75.4±12.2 kg) and after 13 weeks of CART. Grip strength was assessed with a handgrip dynamometer (A5401, Takei), flexibility with the standardized sit and reach, and maximal voluntary torque and power of knee extensors were tested at 0, 60, 240, and 450 deg/s (n=8) on an isokinetic dynamometer measured in Nm/kg (HUMAC NORM). Significantly greater peak torque results were seen isometrically (+6.9%, 1.89±0.37 vs. 2.06±0.45), at 60 (+21.1%, 1.24±0.23 vs. 1.40±0.27), and at 240 at deg/s (+28.6%, 0.65±0.12 vs. 0.76±0.12). Significant differences were seen at peak power 60 (+21.3%; 1.29±0.24 vs. 1.46±0.28) and 240 deg/s (+30.4%; 2.6±0.49 vs. 3.0±0.49), and flexibility scores (30.78±7.59 vs. 35.33±7.95 cm). No significant grip strength data shown. Preliminary findings show CART can increase muscular strength in participants, reduce the probability of cancer recurrence and improve their functional capacity.

The Effects of Thirteen Weeks of Exercise Intervention on Physical Fitness and Cardiovascular Function in Post-Treatment Cancer Patients
Claire Cronenweth

Aerobic resistance training can have positive effects on resting heart rate (HR), blood pressure (BP), and aerobic endurance. The purpose of this study was to examine the effects of aerobic resistance training on resting HR, BP, and aerobic endurance in post-treatment cancer patients. Post-treatment cancer patients (n = 9) participated in 13 weeks of exercise intervention, three sessions per week, for a one-hour duration each session. The exercise sessions consisted of 15-20 minutes of aerobic exercise, 20-25 minutes of strength training, 5 minutes of balance exercises, and 10 minutes of stretching. Pre-assessment and post-assessment data was recorded using electrode transmitters by POLAR (model RS800CX). Aerobic endurance was assessed using the McArdle step test or the senior step test. The results showed no significant improvement in resting HR or BP after 13 weeks of exercise intervention. There was a trend toward significance in aerobic endurance with the senior step test (p=0.172; T= 1.787). Thirteen weeks of aerobic resistance training did not significantly improve resting HR or BP in post-treatment cancer patients. The results within the scope of this study do not support that aerobic resistance training causes positive effects on HR and BP. The trend towards significance seen with the senior step test suggests increasing aerobic endurance in some participants, indicating that a longer exercise intervention could result in greater improvements in fitness.
The Effects of Varying Food Treatments on Catalase Enzyme Activity in Mytilus californianus
Selina Roa

Sea mussels (Mytilus californianus) are marine organisms found in the rocky intertidal zones of the coast of California and Mexico, where algal productivity is high. It is known that higher levels of chlorophyll a in the marine water habitat indicate higher amounts of algae available for food consumption. Previous field research has observed that the amount of food available for consumption produces oxidative stress in the species. There was a correlation found between the amounts of chlorophyll a present in the species’ habitats and the amount of catalase enzyme activity that was present in the gill tissue of mussels. This study further examines the causes of this increase in antioxidant enzyme activity. Specifically, is catalase elevated in response to an increase in food alone or to a change in hydrogen peroxide production caused by a change in food quality? The metabolism of dimethylsulfoniopropionate (DMSP), which is an osmolyte found in different algal species, can produce hydrogen peroxide during food processing. This hydrogen peroxide is converted to water by catalase. The overall goal of this study is to determine whether more hydroxyl radicals are being produced by varying levels of food or by varying DMSP concentrations in algal species. In the first part of the experiment, gill tissues from mussels fed high, medium, and low food treatments were tested for catalase enzyme activity. It was observed that higher amounts of food produced higher amounts of enzyme activity in the tissues, however the trend was insignificant. Ongoing studies are now observing the effects that varying amounts of DMSP concentrations have on catalase activity. Mussels are being fed two different species of algae to determine if DMSP levels affect the production of hydrogen peroxide and the need for catalase activity.

The effects of varying hypoxia levels on lipid peroxidation and antioxidant potential of paddlefish (Polyodon spathula)
Shaina Alves

Paddlefish (Polyodon spathula) are freshwater fish native to rivers in the central United States. This species is raised in high quantities via aquaculture, and its eggs are harvested and highly valued for caviar. As a result of being grown at such high densities, the fish may experience low oxygen conditions (known as hypoxia) and the corresponding physiological and biochemical effects. Field studies also show that this species may be susceptible to hypoxia in the wild. This project, performed in collaboration with scientists at Mississippi State University, aims to examine oxidative stress associated with hypoxia in this species. Specifically, we are quantifying the lipid peroxidation and antioxidant potential (against peroxyl and hydroxyl radicals) of paddlefish tissues (gill, brain, and heart) after fish were exposed to severe hypoxia, moderate hypoxia, or normoxia for several weeks. We are blindly processing the samples, as we do not know which fish were exposed to what treatment. We have developed two microplate-based assays to analyze these attributes. Our results thus far do not show a significant difference in lipid peroxidation between treatments for the paddlefish gill tissue. Our overall dataset will help to improve the conservation and aquaculture of the species.

The Focus on Union with Christ in Late Medieval Women’s Piety
Catherine Perl

In this paper, I offer an analysis of aspects characteristic of late medieval women’s spirituality. I argue that the piety of medieval women was characterized by intense physicality that did not, however, undermine their claimed mystical experiences but complemented them. I focus on Jacques de Vitry’s *Life of Marie d’Oignies*, and I use the scholarship of Caroline Walker Bynum
and Amy Hollywood to situate the life of Marie d’Oignies in the larger context of the medieval women’s movement. This was a religious movement that historian Herbert Grundmann, writing almost a hundred years ago, identified with the thirteenth-century beguines (quasi-religious women who lived in community without taking vows) and as led by women and for women. I argue that late medieval women’s spirituality was fundamentally shaped by a desire to achieve unity with Christ; women enacted this desire by understanding themselves to be brides of Christ, by engaging in ascetic practices, and through Eucharistic devotion. I begin by discussing Marie’s piety. I then consider Marie’s spirituality in the context of larger patterns of medieval female religiosity. I argue that what underpins this religiosity is women’s preoccupation with the physical humanity of Christ and their own physical union with him. I conclude that this perception was not a rejection of spiritual union; rather, women had simultaneously intensely physical and intensely mystical experiences.

The Generation and Characterization of a B. tuberum nodC mutant
Ashley Arnell

There are two types of bacteria currently known to fix atmospheric nitrogen for leguminous plants, which belong in different subgroups of the proteobacteria: alpha and beta-rhizobia. Alpha-rhizobia have been well studied in plant symbiosis; they were originally thought to be the only type of bacteria that have the ability to form nodules. However, recent studies reveal that certain beta-rhizobia fix nitrogen in symbiosis with plants as well as, if not better than, their alpha-rhizobia counterparts. In alpha-rhizobia, the nodC gene is required for the production of a chemical called Nod factor (NF), which stimulates the development of nodules. Without the nodC gene, and therefore Nod factor, nodules do not form and the legume-bacterial symbiosis does not occur. Since beta-rhizobia appear to work in much the same way as alpha-rhizobia, the nodC gene is expected to be required for Nod factor biosynthesis and nodulation. In order to determine the requirement of Nod factor in the beta-rhizobia symbiosis, a Burkholderia tuberum nodC deletion mutant is being generated. Genomic DNA was isolated from the B. tuberum. Primers were designed and then used in the polymerase chain reaction to amplify the regions upstream and downstream of the nodC gene. Gel electrophoresis confirmed the size of the construct. The PCR products were then cloned into a plasmid. The construct was then confirmed by DNA sequencing. The next step will be to use this deletion vector to make the B. tuberum nodC mutant.

The Impact of Nomenclature and a Competitive Environment in a Volunteer's Dilemma
Sasha Vancura

In experimental economics, a phenomenon that has been receiving significant attention recently, yet remains unexplored fully, is that of the Volunteer’s Dilemma (“VOD.”) The VOD spans a number of different fields, with prominent application in the political, biological, and technological spheres specifically. It describes a situation in which all parties, or players, have the opportunity to contribute to a public good, and if at least one party contributes, then all benefit. However, a volunteer incurs a cost to contribute, so a rational person would be inclined to abstain from volunteering if they believe another will invest. The rate of contributing fluctuates and is dependent upon a multitude of factors, including group size, the number of times this situation occurs, etc. In this experiment, we will test for the impact of nomenclature and a competitive environment in a VOD. Countless studies prove that people inevitably attach connotations to words; therefore, terminology used has the ability to greatly influence subjects’ perspectives and actions. Furthermore, analyzing the impact of the inclusion of a competitive environment will prove whether subjects value winning a team competition or increasing their own personal
monetary gain more. At the end of our experiment, we hope to conclude that both the way in which subjects are asked to volunteer as well as the introduction of a competitive environment influence subjects’ behavior. Our findings will provide insight into successful methods that encourage volunteerism.

**The Effects of Thirteen Weeks of Exercise Intervention on Physical Fitness and Cardiovascular Function in Post-Treatment Cancer Patients**

Claire Cronenweth

Aerobic resistance training can have positive effects on resting heart rate (HR), blood pressure (BP), and aerobic endurance. The purpose of this study was to examine the effects of aerobic resistance training on resting HR, BP, and aerobic endurance in post-treatment cancer patients. Post-treatment cancer patients (n = 9) participated in 13 weeks of exercise intervention, three sessions per week, for a one-hour duration each session. The exercise sessions consisted of 15-20 minutes of aerobic exercise, 20-25 minutes of strength training, 5 minutes of balance exercises, and 10 minutes of stretching. Pre-assessment and post-assessment data was recorded using electrode transmitters by POLAR (model RS800CX). Aerobic endurance was assessed using the McArdle step test or the senior step test. The results showed no significant improvement in resting HR or BP after 13 weeks of exercise intervention. There was a trend toward significance in aerobic endurance with the senior step test (p=0.172; T= 1.787). Thirteen weeks of aerobic resistance training did not significantly improve resting HR or BP in post-treatment cancer patients. The results within the scope of this study do not support that aerobic resistance training causes positive effects on HR and BP. The trend towards significance seen with the senior step test suggests increasing aerobic endurance in some participants, indicating that a longer exercise intervention could result in greater improvements in fitness.

**The Impacts of the Theology and Spirituality of the Society of Jesus on Italian Baroque Art**

Helena Olivieri

The art of seventeenth-century Europe belongs largely to the Baroque style. This dramatic and theatrical art made elaborate use of chiaroscuro in an effort to foster an emotional, spiritual, and participatory experience in the viewer. Despite the efforts of the Council of Trent (1545-63), the Reformation resulted in a schism within the Church that fractured the influence of Catholicism. The expressive and ornate religious art of the Baroque was deliberately experiential, catechetical, and apologetic, with the underlying aim of emphasizing the primacy of the Catholic world-view. Founded in 1540, the Society of Jesus played a significant role in the efforts of the Catholic Counter-Reformation to restore unity to Christianity. The painting of the Baroque owed a profound debt to the Jesuits, given the spiritually sensory imagery of Ignatius’s Spiritual Exercises as well as other aspects of Ignatian spirituality. The first generations of Jesuits championed devotional art that emphasized the imaginative and the affective realms, while also including didactic elements. Under Jesuit influence, Baroque frescos, altarpieces, architecture, and other art forms enlivened churches throughout the sixteenth and seventeenth-century Catholic world. The mother Church of the Society of Jesus, the Church of the Gesù, was completed in 1584. Through painting and architecture, the Gesù exemplifies the affective, didactic, and theatrical nature of the Jesuit Baroque. This study’s main purpose is to delve into the relationships between Jesuit spirituality and the Baroque art of Rome. As a case study, research primarily focused on the theological and artistic significance of the Church of the Gesù.
The Integration of Sports in the U.S.
Patrick M. Collier, Jeffrey Morrow

The three students will discuss the leading factors in the integration of MLB and team sports in the post-WWII U.S. Most historical sources have argued that the U.S.' opposition to Nazi Germany during the WWII produced a liberalism in attitudes about race in the U.S. after the war. That liberalism was reflected in the integration and acceptance of Jackie Robinson and other black athletes into white-controlled teams in the late 1940s. More recently, it has been argued that a "win-at-all-cost" cycle that developed in sports during the WWII contributed to integration. In the era of increased leisure and television revenue, winning was required to attract fans, and winning teams were expensive to field, and therefore required money. Teams hoping to make significant profits could no longer afford to exclude athletes of color. The three-student panel will discuss the significance of both these factors in the integration of sports in the period.

The Last of Their Race: Oral Histories in Wordsworth's 'The Brothers' and 'Michael'
Mary Jacobie

This paper will examine the complex interaction of oral history and poetry in two of William Wordsworth’s long poems, “Michael” and “The Brothers.” Both poems recount the loss of a small farming property as a result of a deteriorating economic climate. In these stories of local farmers driven from their ancestral land, Wordsworth challenges the pervasive pastoral ideology that life in rural England is essentially stable. These poems suggest that an entire way of life and the oral histories that sustain it are on the verge of extinction. My presentation will focus on the function of oral histories in this world and the proposed role of the poet at this moment of potential cultural extinction. “The Brothers” recounts the failed attempt of Leonard, a former shepherd, to return to his family’s holdings. Leonard returns to the sea when he realizes that he can no longer “read” the landscape or understand the histories that attach to the landmarks around him. In “Michael,” Wordsworth anoints the poet as the chronicler of this rapidly disappearing world and establishes a new patrimony of “youthful poets, who…/Will be my second self when I am gone” (39-40). This presentation will conclude by exploring how this new role for the poet encourages an unknown Wordsworth to address a politician as prominent as Charles James Fox and suggest that his two poems can “cooperate…with [Fox’s] illustrious efforts” to stem the erosion of rural life.

The Legitimization of African American Male Incarceration: White Hegemony and the Ideological Critique of The House I Live In
Kendyl Roundtree

Despite the achievements of the Civil Rights era, racism still exists in the USA because of the domination of white hegemony. During the age of Jim Crow, racism was an openly accepted practice—African Americans were explicitly targeted in laws and policies to permit racial control. White hegemony has now adapted and accounted for anti-discrimination laws, yet African American males are disproportionately represented in the penal system due to the legal statutes that the War on Drugs set in place. Such inequalities are the product of legislation and drug-war political rhetoric that convinces society that African American drug crime is a national threat. This paper analyzes the documentary The House I Live In through an ideological lens to identify how white hegemony produces certain positions and knowledge that lead to and justify mass incarceration. This paper’s findings indicate that the combination of rhetorical
strategies, such as the use of race-neutral rhetoric, fear-producing rhetoric, and the presentation of ideologies as moral manufactures consensus for white hegemony and legitimizes discriminatory drug policies and the mass incarceration of African American males.

The Lofty Revolution: An Examination of Women and Egalitarian Politics in Cuban Cinema
Iselee Hill

My project, examined four Cuban films (Retrato de Teresa, Una Novia Para David, Barrio Cuba, and Nada Más) in attempts to observe what manifestations of social egalitarianism post-revolutionary Cuban cinema contained and identify distinct portrayals of how government interacts with the governed, particularly in a society where the government was established with a focus on providing each of its constituents with the same opportunities—gender notwithstanding. I wanted to investigate what limitations existed to promoting gender equity and how those were expressed in cinematic depictions of Cuban life.

I hypothesized that: the political equality afforded to women and the seeming social equality offered in the form of open job markets and educational opportunities have not yet erased longer social traditions of machismo and marianism, and my observations supported this initial expectation. However, as I married my observations with theoretical studies of Cuban communism and feminism as well as statistical data of the evolved Cuban workforce and economy, I began to understand a fuller picture of gender equity in Cuba. Where I initially expected the growth of the female workforce and the number of women scholars to have little effect on social standing, I realized that the economic and occupational arenas of Cuban life had a reciprocal relationship with their social counterpart, such that changes, or stagnations, on either side had affected the other.

The Microstructure of Deformed Aluminum
Reid Byron, Brandon Carr, Molly Dearborn, Jonathan Guerra, Patrick Hodgkiss, Ben Horten, Christ Mitts, Xiadong Sun, Lucious Wilson

This study is a microstructural analysis of the Aluminum alloy parts used in testing a new generation of dissipating systems based upon the mechanical assembly: the Absorption-Compression-Plastic Torsion (ACPT). Reliable and safe designs of components and systems (vehicles, nuclear plants, different structures…) need to have large energy dissipation properties to minimize the damage and improve the components’ crash worthiness. The energy dissipation depends on the load, strain, strain rate, deformation, displacement pattern, and material properties. To evaluate the energy absorption property of the material, multi-axial plastic buckling loads are studied under severe stress conditions. The effects of loading on the absorbed energy are investigated using square cross sections tubes made from an aluminum alloy, which has a close composition to the 6061-aluminum alloy. There were five inclination angles (30°, 37°, 45°, 53° and 60°) to the deformations, please see attached figures. The samples obtained from “Laboratoire d’Ingénierie des Systèmes Mécaniques et des Matériaux (LISMA),” from Université Paris 8, France, were ground on silicon carbide grits (240,…until 1200), and then polished by diamond paste of different concentrations. The samples were chemically etched. The microstructure of the un-deformed moderately deformed, and heavily deformed conditions will be compared as a function of the deformation shape and mechanical properties of the component.
Keywords: biaxial plastic buckling, energy absorbed, square aluminum section, 6061 aluminum
The morpho-physiology of salinity tolerance in the pickle weed, Salicornia pacifica  
Orlando Chirikian, Viktoria Kuehn, James Wu

Salicornia Pacifica is a halophytic succulent occurring in the coastal wetlands of California and other parts of the west coast. Salicornia pacifica has adapted to the water and salt stress in its environment through salt loading of the fused vascular “leaf” tissue that surrounds its stem. To better understand the morpho-physiology of this succulent’s salt tolerance, growth responses and ion contents in the plants as a whole and in each “leaf” or node are being determined. Biomass data suggest maximum growth between 5 and 27.5 ‰, with a significant decline at 35 ‰. This forms a broad optimum that is also associated with increased lateral branching. The comparison of the concentrations of the different salt ions within the plant gives insight into the compartmentalization and dilution of the salt and the manner in which it is eliminated from the plant. The lower nodes of S. pacifica die as the plant grows: it is hypothesized that during senescence K+ is remobilized to the growing shoot leaving excess Na+ which is washed out by tides when the dried out nodes become permeable. Thus the nodes drying out will remove excess Na+ and provide the living nodes with additional K+. This is consistent with the increase in Na:K ratio observed with increasing node age. Further study of these relationships will be made to help understand the morpho-physiology of S. pacifica with regards to its tolerance of a range of water and salinity conditions.

The Move-In Experience of First-Generation College Students  
Jessica Lopez, La’Tonya Raese-Miles

Although they may know they are the first in the family to go to college, when do students realize that they are first-generation? In addition, how does being first generation impact their first-year transition and experience with campus resources? Drawing upon data collected from personal narratives and interviews, the presenters will offer and discuss findings from a recent study. Special emphasis will be placed on the implications for faculty, staff, and administrators who directly serve first-generation students.

The Plight of the Civically Engaged Women: Implications of Female Political Participation  
Kayla Kaufman

Women are now legally equal to men on all grounds of civic engagement. Since the election of 1980, the proportion of women voters has actually exceeded the proportion of male voters in every subsequent election. However, women still have not entered many realms of civic engagement. Currently, only 17% of Congress is comprised of women and out of the 44 United States presidents, there has not been one female president. Although women are becoming more civically engaged, there are still obvious obstacles in their way. My research employed textual analysis to analyze sixteen articles to reveal arguments for why women are still lacking in their civic participation. These reasons include the detrimental force of gender-specific social roles and stereotypes, the limited amounts of free time in American female life, assumptions about the balance between family and profession, the conspicuous lack of female role models in politics, and the commonly negative criticisms of women in politics. Still, civically engaged women can feel more empowered, positively influence their children, and bring important and diverse perspectives to the civic sphere. In conclusion, this paper’s findings indicate that because of their gender, civically engaged women face both consequences and benefits at the personal, familial, and societal levels that hinder their accessibility to a civically engaged life. Because of the obstacles, women find civic engagement disproportionately challenging compared to the benefits their engagement might bring. Therefore, society needs to develop support for women who wish to enter into the civically engaged world.
The Problem with Immigration Discourse
Alvaro Gonzalez

Within the United States, we have created an image of the criminal “immigrant” where anyone entering this country undocumented is seen as a felon. Unfortunately, the idea of illegal migrants comes from sources we wouldn’t normally expect, such as the Dream Act and the way it is presented in the media by Democrats. Democrats have historically been thought to be allies of undocumented workers, but they are inadvertently creating oppressive ideologies. This is done through subtle media representations that shift our analysis from US imperialism and global capitalism and turn our thoughts into sites for underlying racism. This new hegemonic thinking seeks to pin the undocumented parent against the undocumented child. This paper dispels the idea that migration is a choice through understanding the various effects different policy and economic decisions had on migrants. It examines Mexico’s debt crises of the 1980’s, Mexico’s liberalization of its economy, the North American Free Trade Agreement, and recent policy decisions that militarize borders. It concludes with the observation that far too many causes effect migration. Instead of looking for someone to blame we need to realize that as our policies open themselves up to free trade, our borders should as well. If we focus on solving the real cause of the problem, which I suspect to be globalization, instead of focusing on one of symptoms of globalization, which is migration, then we can reach comprehensive migration reform that takes into account the many factors that lead to migration.

The Recreation of the Human Face Using A Low-Cost Reverse Engineering System
Cassandra Jacobsen

The primary goal for this research is to evaluate the effectiveness of a low-cost reverse engineering system to recreate the complexities of a human face. In order to achieve the goal of this research, three key objectives must be fulfilled. The first objective is to recreate the physical model of the human face using a NextEngine scanner. The second objective is to investigate the accuracy at which models can be produced by the system. The third and final objective of this research project is to determine the comparative surface roughness of the original model to the one produced. Two different approaches to scanning the human face will be conducted in order to determine the orientation that will produce a more accurate result. A chosen test subject will have his or her face scanned several times for each orientation using the NextEngine three-dimensional scanner owned by the mechanical engineering department at Loyola Marymount University. From these scans, a model of the face will be generated and built by rapid prototyping machines. The surface roughness will be measured in order to determine how smooth the reverse engineered face is compared to the original one. Both the accuracy and the surface roughness will be used in my research to evaluate the effectiveness of the low-cost reverse engineering system to duplicate complex objects, in this case the human face. Preliminary results have shown that a laying down orientation using the NextEngine scanner yields the best image when capturing the face of a human. The scanned face has been successfully enhanced using computer software and converted into both a STL and point cloud file compatible for 3D printing (see figure 1). The computer model of the human face showed minor flaws when compared to the original as well as uneven transitions where the different scans were stitched together using the computer software. While the reverse engineering system has some limitations, it is expected that the complex human face will be regenerated. The success of this research could be extended to other science and engineering applications.
The Rhetorical Significance of the Belfast Wall Murals and Representations of Female Irish Nationalism During the “Troubles”
Erin Danylchuk

The conflict between Nationalists and Loyalists in Ireland is deeply rooted in a history that can be traced back for centuries. In more recent times, the two communities have taken it upon themselves to use murals as a means for expressing communal emotion regarding particular people, specific events, or values and beliefs that aid in the construction of their Irish identities. This essay employs a narrative lens to articulate the significance of the murals in Belfast and how they encourage the development of a female Nationalist identity by focusing on portraits of women who have died during the Catholic struggle while also incorporating general representations of the woman’s place during the “Troubles.” Analyzing these murals helps to understand how Irish women define themselves within the context of the Catholic-Protestant conflict as the murals construct narratives that reveal their identities within the larger narrative of Irish Nationalist women. This essay’s findings demonstrate how women were represented in this conflict, the implications for ignoring female representations of Irish identity during this time period, and how these murals reconstruct narratives of Irish history that are less violent and may create opportunities for peaceful reconciliation.

The role of the self in predicting partner distancing following romantic relationship threat
Lauren Chen, Sara Ledbetter, Shanee Regev

Across two studies we are investigating how an individual’s self-model (e.g., his/her sense of self-worth) impacts his/her responses to a threat to his/her romantic relationship. Individuals with negative self-models (NSMs) doubt their self-worth and anticipate rejection. In the face of threats to their relationship, they tend to engage in self-protecting behaviors that reduce their chances of being rejected but are also harmful to their relationship (e.g., viewing the partner as less desirable). In contrast, individuals with positive self-models (PSMs) have high self-worth and expect acceptance from others. They possess the confidence to weather a relationship threat without engaging in self-protective (yet relationship-sabotaging) behaviors. In the current studies we investigated differences between those with PSMs and those with NSMs in their tendency to push their partner away following a relationship threat. We sought to reveal specific patterns of behavior engaged in by those with PSMs and those with NSMs in the face of relationship threat. In both studies, the participants were undergraduate students who were in a romantic relationship for at least 3 months. In study 1, participants were randomly assigned to a threat or no threat condition—participants received either feedback that threatened their current relationship or neutral feedback. The threat condition involved receiving false negative feedback on a bogus relationship scale that ostensibly measured their romantic partner’s level of involvement in the relationship. Participants then completed a questionnaire measuring cognitive and emotional responses (e.g., positive predictions for the future of the relationship). Analyses revealed that individuals with PSMs responded to relationship threats by moving closer to their partners, whereas individuals with NSMs experienced psychological distancing from their partners. Our findings provide further evidence for the idea that those with PSMs respond to relationship threat in ways that increase personal and relationship wellbeing, whereas NSMs respond in unhealthy ways. We are currently conducting a conceptual replication, and extension of this study using a vignette methodology and additional measures of partner distancing. Participants will be asked to imagine various threatening and non-threatening scenarios in their own relationship and will indicate how they would respond to these situations. We expect to find more evidence for partner distancing on the part of those with negative self-models in response to relationship threat.
The Set of Rent in LMU's Strub Theater
Patrick Buchanan

The set design has been a collaborative process with the director, Diane Benedict, and design team that began in November. Since then, the process has involved adapting the basic structure of the set to adapt to the needs of the performance as it has evolved through rehearsals. Currently, we are moving into the details of the design, bringing the world of New York and the tent city into the set and the audience. Current discussions have revolved as well of involving well-known AIDS advocacy programs such as the ACT UP organization from New York as well as the AIDS Quilt and the names project. Next week will mark the beginning of the painting, incorporating graffiti tags, lists of AIDS victims, and building exteriors.

The Skin I'm In: Race Relations Through the Eyes of a Child
Kristen Holt

Around the 1940’s, a series of tests known as the Kenneth and Mamie Clark Experiment was conducted that gave insight on how children perceive their peers and consequently, themselves. Throughout this study, we learned that environment shapes children’s ideas of race. It was noted that by age six, children already display prejudiced attitudes towards children of other ethnic and racial groups. Being an older sister and having your six-year old brother question you repeatedly about why his hair is not textured the way white children are or why he is not able to lighten his skin to resemble white children, really begins to put a lot into perspective. If we have progressed racially as a society, is it possible that these ideas are still embedded in our youth as they were years ago? Are parents, peers, and the media still to blame? Through research, conducting interviews with children and the parents of African American and Caucasian descent, and the use of redesigned versions of studies conducted several decades ago, I intend to find the answers to these weighty questions. I plan to illustrate my findings into a visual data poster accompanied by a provocative art display that will show the racial lens through which children perceive each other is corrupt. This data will show that racism is still very much relevant in today’s society. I would like to bring attention to the sources of racism and ultimately, put an end to it amongst our youth. Through these carefully conducted interviews and analysis of my findings, I will be able to shed light on how these factors still play a role in children’s attitude towards race relations and further educate people on this subject matter.

The Story of Blackfish: Examining The Role of Documentaries in Raising Socio-Political Awareness
Amanda Kilroy

Blackfish has emerged as a highly relevant and powerful documentary about marine animal captivity and is proving to have substantial media sustainability. This essay explores why this documentary has been able to propel itself past the constraints of narrative fidelity and present a successful and believable story that stimulates public discussion and political change. The purpose of this analysis is to demonstrate how documentaries are becoming increasingly more effective social-political tools for persuading individuals to adapt different viewpoints and become involved in socio-political issues. This analysis questions how documentaries are successful in achieving their goals when they situate themselves as stories that focus both on factual evidence and the extremity of the issue. This paper answers this question through a narrative critique of Blackfish and reveals how it can be attributed to the development of the narrative elements such as character, causal relationship, and narrative type that contrast
corporate entities, such as Sea World’s interpretation of the events, in a way that produces an emotional and physical reaction from audiences.

The War on Influenza
Jacqueline Nolasco

The principal objective of this paper is to demonstrate how American ‘exceptionalism’ kept the United States Military from admitting the severity of influenza. Due to this ‘exceptionalist’ attitude, the American military focused more on their objective to win the war and defeat the Central Powers of Germany and Austria-Hungary rather than fighting against the influenza pandemic. This study utilized firsthand accounts of the flu, created by members of the military, from soldiers to nurses. This research is based on primary sources in the UCLA influenza collection borrowed by Hannon Library from the Louise M. Darling Biomedical Library History and Special Collections for the Sciences. These accounts revealed the attitudes and beliefs about influenza in the eyes of the American military, demonstrating how the military focused more on fighting the war to prove they were exceptional instead of admitting how influenza was detrimental to the military. This refocus created more deaths by influenza because of the lack of knowledge of the disease in comparison with war caused deaths. This research highlights the lasting impact of American “exceptionalism” that is channeled from the military to civilian life. The idea of American “exceptionalism” impacted public health decisions in the early 20th century and it can still have impact on the United States as we are now threatened by new infectious diseases, and have new concerns about the flu today.

The Microstructure/Toughness of Pre-alloyed HDH and BE Ti-6Al-4V Materials Processed to Consistent Form
Taylor Chavez, Andrew Dominguez

Ti-6Al-4V is the most frequently used Titanium alloy in the aerospace industry because of its high specific strength, high temperature stability, and excellent corrosion resistance. However, due to the high cost associated with producing, processing, and machining this titanium, it is often difficult to justify its use. Recently, efforts have been taken by Boeing St. Louis, MO to reduce the cost of titanium parts by the use of techniques such a powder metallurgy (P/M). The data Boeing gathered showed that as they rolled the titanium further, the strength did not increase. The hypothesis is that the elongating of grains due to rolling nullified any increase in strength caused by the creation of more fine grains. The hypothesis was made because elongated grains typically have decreased strength in different orientations. The methodology to test this hypothesis started by receiving hot isostatic pressed (HIP) bars from powder product with diameters of 1, 1.5, and 2 inches. Three samples were machined out of each bar along the end, middle and transverse orientations. These samples were then ground, polished, and etched at Boeing Huntington Beach. The microstructure of the samples was evaluated at 100X and 200X magnifications. Also, charpy impact testing and scanning electron microscopy were performed on each of the P/M bars to corroborate data. From the research conducted, it appears that material produced from P/M techniques have an optimum percent rolling at 86% due to grain elongation. Pole figures on the crystallographic texture are being conducted to insure P/M’s effectiveness.

Theoretical Framework for Operating a Betatron
Martin Tangari, Rhys Taus

Based on the conservation of energy and Einstein’s mass-energy equivalence principle, antimatter is one of the most interesting predictions of Quantum Field Theory. This project sets the theoretical framework for achieving electron positron pair production. Positron creation requires
electrons with an energy of at least twice its rest mass (E>1MeV). Many particle accelerators have been built throughout the 20th century to achieve this goal. Our project focuses on the betatron. The betatron operates on simple Physics principles; such as relativistic kinematics and Faraday’s law. A pair of Helmholtz coils creates a homogeneous magnetic field. An electron gun fires high-energy electrons (KeV range) into a toroidal vacuum chamber. The magnetic field varies over time, inducing an electric field that accelerates the electrons to relativistic velocities (1-10MeV). Meanwhile, the magnetic field guides the electrons in a circular orbit inside the toroidal vacuum chamber. The theoretical framework developed includes the derivation of the betatron condition and the creation of MatLab simulations that model the path of the electron through numerical analysis. These models will set the foundations of our research as we proceed to the design and experimental stages.

Two Dogmas of Positivism, Why All Signs Point Towards Pragmatism, and Why Linguistic Theory Disputes Analyticity
Dillon Williams

Logical Positivism has been conditioned in large part by two dogmas. One is the ongoing battle to determine what constitutes “meaning”, the other is the belief that analytic statements can hypothetically equate to logical truths and that reductionism in sense-datum language adequately presents a logical way of verifying empirical claims. My research will show that both dogmas are founded on incomplete notions of metaphysical formulae and that both are severely lacking in terms of substance when it comes to applying their tenets in practice, in effect adding to the problem that the movement seeks to eliminate. My research will demonstrate – by outlining the development of the definition of meaning, as well as by presenting an inconsistency with analyticity based on linguistic theory – that these positions on “meaning” in modern logic systems do not work, and that the large scale attempts made by the positivist movement to define meaning can be broken down into basic pragmatism. Finally, I will explain why pragmatism is currently the most valuable asset in accomplishing what positivism set out to resolve and discuss its role in the current problems of modern scientific enquiry.

U.S. Intervention or Non-Intervention: Civil War in the Middle East
Sarah Indrawes

The cry for peace and freedom has most certainly been heard in Syria. The beginning of the Arab Spring fostered confidence for the oppressed to make their voices heard. While many speculate that the United States will intervene in civil conflicts when it is in their interest, others argue that in times of severe violence it is necessary for the U.S. to serve as a peace-enforcer. Yet others believe that even with the best intentions, it is intrusive and may be harmful. In this research, I examine how U.S. military intervention influences political stability, economic development, and human rights in conflict and post-conflict countries. I analyze four case studies of civil war in the Middle East and North Africa region to examine the positive and negative effects of United States military intervention on the civil war state. In addition, I compare cases in which the U.S. implemented a democracy building initiative to cases where they did not. Ultimately, I seek to ascertain whether U.S. intervention in civil war leads to more favorable or less favorable political and economic outcomes and whether countries that experienced no intervention were better off. These results have clear implications for understanding whether military assistance and democracy building from the United States is beneficial or damaging toward MENA states such as Syria.
Uncovering Society Through Punishment
Kiara Bramasco

In 1994, Pell Grant eligibility for inmates was eliminated, significantly reducing inmates’ access to higher education. In a country that values equal access to higher education, it is worth questioning why 2.2 million incarcerated Americans are denied this access. Countless studies have shown that providing prisoners with higher education is a cost effective method for reducing rates of recidivism. Yet the funding for higher education programs in prisons is virtually non-existent. The following research question thus emerges: What does the lack of higher education programs in prisons reveal about American society? My hypothesis is that severely punishing offenders has become of greater importance than our stated value of equal access to higher education. This research question will be answered from a critical theory perspective with textual interpretations of theories from Michel Foucault, Jean Hampton and Emile Durkheim. In addition, an analysis of the methods and benefits of the Bedford Hills Correctional Facility program and the Bard Prison Initiative, two institutions that currently operate higher education programs in New York prisons will be provided as examples of the rare occasion where punishment and education intersect and provide a glimpse of what their combination can produce and consequently highlight what punishment alone means for society. Viewing the shifting meaning and execution of punishment and education through a theoretical lens will help uncover what the lack of higher education programs in prisons today reveals about American society’s hidden value on the importance of punitive punishment over higher education accessibility.

Understanding Full, Conscious, and Active Participation: Analysis of "Sacrosanctum Concilium" and Case Study of a U.S. Parish
Michael Bachmeier,

The Second Vatican Council decreed in its Constitution of the Sacred Liturgy, Sacrosanctum Concilium, “Mother Church earnestly desires that all the faithful should be led to that fully conscious, and active participation in liturgical celebrations which is demanded by the very nature of the liturgy.” As we celebrate the 50th anniversary of the Council and specifically the promulgation of this document, it is important to understand what this phrase calls for and to reflect on how the local church, the dioceses of the United States, allows it to permeate all aspects of Christian life. This paper analyzes this important Church document regarding liturgy, with due emphasis on active participation. As a result of my research, I propose that: both within the liturgy and in their daily lives as members of the body of Christ, it is vital for the benefit of the Catholic Church and its people and the integrity of liturgy that the faithful are fully conscious and active participants in the Paschal Mystery during the Eucharist, striving to reach a perfect union with God through Christ and aided by the power of the Holy Spirit. I visited a local Santa Monica parish, using it as a case study for the application of Sacrosanctum Concilium and practice of active participation in the United States. Participation among the faithful often falls short of what is potential, but it is their privilege and mission to endlessly strive to be a sign of the Trinity here on this earth, most effectively through transformation in the liturgy, “until there is one sheepfold and one shepherd.”

Unmasking Masada: Locating the Masada Myth in the Landscape of Jewish Nationalism
Naomi Cahn

The fortress Masada, located in the Judean Desert of Southern Israel, is the site of the Zealots’ supposed last stand - a heroic tale of a fanatically religious sect of Jews’ desperation and sacrifice for nationalistic aspirations. Masada’s status as an Israeli national symbol results from many years of its purported intimate connection with Jewish nationalist - or Zionist - ideals. However,
in examining primary and secondary documents, and archaeological reports from the excavation of the fortress, this heroic tale is not the grand monument to Jewish nationalism it is portrayed to be. In comparing the only source for the Zealots’ actions at Masada, Flavius Josephus (37-100 C.E.), with the archaeological evidence, there are clear discrepancies that suggest that the Zealots’ last stand and subsequent mass suicide are fictitious narratives. With the myth of Masada as a framework, I will examine the fortress’s presence in twentieth century Zionist movements to understand its influence on the motivations and actions of such movements. My research will show Masada’s influence - despite its notoriety from the mid-twentieth century to the present - to be minimal in consideration of a full survey of the various Zionist movements. Therefore, Masada should not continue to be evaluated upon the false account of the Zealots’ final act of resistance in the First Jewish-Roman War (66-73 C.E.) nor its implications for Zionist movements, but upon the fortress’s qualitative archaeological and architectural merits.

**Using video to measure classroom teaching in K12 science**
Melanie Seyarto, Jennifer Thompson

Our research project used observational techniques to measure teaching practices in elementary school science classrooms. Teachers play a critical role in students’ learning and future success (Darling-Hammond, 1998). Therefore, it is important to have tools to measure how teachers teach. In her previous research, Dr. Vandana Thadani developed measures of teaching practices in science classrooms (Thadani et al., 2009). These measures, or coding schemes, were used to identify “teacher tasks and questions” (TTQs). TTQs were defined as suggestions, tasks, instructions or questions that teachers posed to students, requiring students to think or do something related to learning. In an ongoing project in Dr. Thadani’s lab, we have been applying these coding schemes to our sample of videotaped science lessons in K12 classrooms obtained from another study. We first identify all TTQs in each lesson and then categorize the cognitive and learning behaviors that the TTQs elicit from students. Because coding is not yet completed, in the proposed talk we will identify two lessons—one that qualitatively appears in line with reform-based practices, and one that appears more didactic and traditional. We have coded these lessons and will compare the types of TTQs used, their frequencies, and the contexts in which the two teachers used them. This analysis will illustrate how the coding schemes can help systematically quantify qualitative observations of teaching practices. We will also discuss the benefits of coupling qualitative and quantitative analyses of observational data as well as future directions for this project, which ultimately examines whether teachers’ use of TTQs predicts student learning outcomes.

**Visual Empathy**
Madison Wurster

Using Graphic Design as a way to look beneath what we see on the surface and uncover individual human identity. Empathy is the capacity to recognize emotions that are being experienced by others. It is a simple idea, and seems innate to human nature: we must coexist together in order to achieve a successful life. Despite this, we are very adept at destroying empathy by using outward appearances as a way to categorize people as different from ourselves. In other words, we dehumanize others through stereotyping, profiling, and casting judgments, deeming them unworthy of our empathy. What if I could find a way to make people step out of their own skins and create an ultimate moment of empathy? By researching empathy, stereotyping and prejudice in human psychology, as well as through conducting individual interviews, I propose creating an interactive portrait series where the viewer is immersed in a total stranger’s life for a moment. I intend to display my design concepts in the student art gallery to test the efficacy of my graphic solutions. From first impressions and preconceived notions, to
outside appearances, to what lies beneath, I intend to take the viewer through surface issues that cause emotional and empathetic disconnect, to a much deeper place where we all connect as humans.

**Visualizing Pain-Related Molecular Changes in the Mammalian Central Nervous System**
Kevin Joerger

Noxious or pain-inducing stimuli are transmitted from pain receptors through the nervous system to the brain by a complex system which involves intercellular signaling molecules. In this study, pain related chemical changes in the brain and spinal cord of rats were visualized through mass spectrometry imaging. Mass spectrometry imaging (MSI) was used to determine lipid distribution in the brains and spinal cords, and tandem MSI was used to identify lipids and differentiate structural isomers. It was found that various phosphatidylinositols and phosphatidycholines change in concentration in rats exposed to pain. This study gives us a better understanding of the molecular response of the nervous system to pain, which will aid in the development of analgesic drugs and contribute to our overall understanding of the mechanisms of the nervous system.

**VOCs and IVOCs in the Los Angeles Basin: Quantification and Correlation to Regional Demographics**
Erica Carrasco

Volatile organic compounds (VOCs) and intermediate volatility VOCs (IVOCs) are hydrocarbons that participate in chemical reactions affecting air quality and climate. VOCs and IVOCs, classified separately due to differences in effective saturation constants, both contribute to ozone and aerosol formation. IVOCs are not typically measured in ambient VOC studies because they are easily lost to sampling surfaces. Additionally, many VOCs and IVOCs, particularly aromatic hydrocarbons, are of concern because they have high respiratory uptake and accumulate in adipose tissue. The purpose of this study is to quantify VOCs and IVOCs in residential neighborhoods around the Los Angeles basin using a portable and inexpensive analytical method and overlay these data with regional demographics. Hayesep-Q adsorbent cartridges were used to sample ambient air, followed by solvent extraction and analysis by Gas Chromatography and Mass Spectrometry (GC-MS). Data will be presented from a pilot study consisting of measurements made at 7 sites over 3 weeks in summer 2013. Results suggest a correlation between higher mixing ratios of anthropogenic compounds and low-income status. For example, 92% of the variation in 1,2,3-trimethylbenzene concentration can be explained by the linear relationship between these mixing ratios and the percentage of household income less than $20,000 in each neighborhood ($R^2 = 0.917$). Communities most at risk from the emission of these compounds will likely be located near sources (i.e. roadways, freeways, flight paths) and thus are typically low-income and not a part of the California Air Resources Board monitoring system.

**Voice for the Disenfranchised: Mary Shelley’s Political Advocacy for Revolution in Frankenstein**
Morika Fields

The thesis of my paper is that Mary Shelley used her novel Frankenstein to argue that the poor, lower-class, and outcasts in Victorian society are at the mercy of ethical law, natural law, and the legal system in a way that makes revolution the only option for those without a voice. To conduct the research for my essay, I used the MLA database to find journal articles with thorough and innovative analyses of Shelley’s novel. From my research, I found that there were many historical references in the novel regarding the revolutions around the time that she wrote it, specifically the
Genevan revolutions from 1768 to 1815. Shelly finished Frankenstein in 1818, just three years after the Genevan government had reestablished a structure. Frankenstein and the revolutions share common themes, such as the need for lower classes to be represented fairly in a codified legal system. Shelley’s marginalized characters of the Creature and Justine both serve as representative examples of the perils of ambiguous legal systems. Geneva was the perfect model of this system of government that melded itself to the patrician class, and it is my position that Shelley carefully chose Geneva as a relevant setting for the novel. The allusions to the Genevan revolutions are a subtle way to direct readers’ attention to recent events there. In doing so, she wants persuade readers to conclude that revolution made way for a government that represented the lower classes.

By providing a dynamic revolutionary character that cannot be easily condemned or dismissed, Shelley complicates the political debate of her time regarding legal systems and those who fight to have a voice in them. Shelley used the novel to join the political discourse of her time in support of revolutionaries who sought to reform an unjust legal system that was hostile toward the disenfranchised.

**Voices of Justice: Service, Action and Engaged Learning Experiences**
Lisa Brehove, Nathaniel Carter, Mimi Jacobie, Alyssa Perez, Brooke Robie

We are presenting five projects that use an engage learning approach to social justice and service with local and global communities. Alyssa Perez traveled to Argentina as one of the first students to participate in LMU’s CASA program, immersing herself with those populations on the margins and challenging herself to develop as a person for and with others. Over winter break, Mimi Jacobie traveled to Santiago, Chile as part of the Ignacio Companion program. By engaging with current Jesuit volunteers, she gained a wider understanding of the realities of post-graduate service and plans to pursue it after graduation. Lisa Brehove, as a part of a Voices of Justice class, performed *No Homo(phobia)*, an original theater performance aimed at reducing homophobia on campus. Data from pre and post show surveys showed an increase in positive attitudes towards the LGBT community in student audience members. Nathaniel Carter, as part of another Voices of Justice class, composed a multimedia presentation to tell the story of Zane, a low-functioning teenage boy with autism. This was accomplished through the use of largely non-verbal performance means, reflecting the nature of an autistic individual's world perception. Finally Brooke Robie established a dance class for the women of Central Juvenile Hall as part of her senior thesis. This class has shaped both Brooke and the lives of the women she works with. Although these projects vary in subject matter, they all embrace the LMU mission of being men and women with and for others.

**Welcome to Body-more, Murdaland: A Narrative Analysis of The Wire.**
Mario Caballero

The television crime drama The Wire has provided a means of generating discussion surrounding many societal issues plaguing a growing number of modern American communities none more pressing than the omnipresent illegal drug trade. A narrative analysis of this popular TV series reveals that the intentions of the producers was to provide an account based on real experiences that highlight a number of deep conflicts in society that need to be dealt with publicly. The shows use of setting, characters, and narrative type combine to create a fictional narrative that has more emotional impact than non-fictional mediums. The Wire’s narrative indicates the power of the
television medium to shed light on the fallibility of public institutions as a means for promoting action, public discussion, and political change regarding U.S. drug policies.

**Western Coyote Canis latrans Occurrence and Movement Patterns On and Around the LMU Campus**
Zachary Calilung, John P. Waggoner IV

Western coyote (Canis latrans) occurrence, distribution and movement patterns are investigated during this study. Both anecdotal (reports from neighbors) and direct (Game Camera) evidence presently exists indicating coyote activity on or around the LMU campus. Further data collection methods include tracking transect analysis, motion-activated stills through video camera methodology, and audio playback (howls) techniques intended to initiate territorial response. Dietary composition will also be investigated using standard scat analysis techniques.

**Where is the Peace?**
Eunique Day, Mary Jacobie, Jacqueline Pierson, Spencer Sharpe

The Northern Irish “Troubles” and subsequent peace process are the focus of our class research trip to Belfast over spring break. We seek to understand the emergent paradigm of restorative justice at the individual, institutional and international levels and look at Belfast in a comparative context to develop a genuine understanding of the complexities of applying the principles of restorative justice to securing peace. The decades-long struggle was an unusually violent one, given the democratic context of the United Kingdom. While the Good Friday agreements of 1998 established peace between the Protestants and Catholics, “peace” walls continue to be built to help preserve the fragile stability. We will engage in both primary and secondary research, using unique archival data at Belfast Linen Hall library and interviews with politicians, locals, artists, youth, professors and religious leaders from all sides of the conflict. Jackie Pierson will be looking at issues of sovereignty and self-determination drawing on past lessons learned from Kosovo. Spencer Sharpe seeks to understand the influence that the conflict has had on leaders’ loyalty to liberalist-leaning principles. Mimi Jacobie will be investigating the inverse relationship between the sustainability of the peace process and acts of homophobic violence. Finally, Eunique Day will be researching the effects of post third party intervention on society and cultural traditions. While these topics range in scope and subject matter, all students seek to develop a holistic understanding of the wide-ranging and complicated effects that peace can have on a region like Northern Ireland.

**Whose opinion matters? The influence of normative beliefs on college student-athlete alcohol use.**
Daniel Smith

College student-athletes are an at-risk group for binge drinking, consistently reporting higher levels of alcohol use and experiencing more drinking-related consequences than their non-athlete peers. The current study aims to identify the relationship between alcohol-related injunctive norms (perceptions of others’ approval of alcohol) and athletes’ alcohol-related attitudes and behaviors, as well as determine the influence of coaches’ actual attitudes on student outcomes. This study builds on previous research showing that student-athletes overestimate others’ approval of drinking by examining perceptions of coaches’ approval of alcohol use. When data collection is completed in late February, we will have a sample of more than 400 athletes and 50
coaches across two sites. Students report on their alcohol-related behavior, their own attitudes towards alcohol, and their perceptions of others’ attitudes (parents, head coach, typical student, and typical student-athlete); while coaches report on their attitudes towards their athletes’ drinking. We expect that athletes will overestimate coach approval and that perceived coach approval will significantly predict athlete attitudes and drinking. Preliminary analyses with 99 student-athletes reveals that perceived parental and coach attitudes were positively associated with students holding more approving attitudes towards drinking. Further, student-athletes’ perceptions of their coaches’ approval was the strongest predictor of their alcohol use, over and above the attitudes of the other three reference groups. In final analyses, we will examine moderators of the relationship between beliefs and alcohol use including quality of relationship with coaches and closeness to one’s team. The findings will highlight disparities between coaches’ actual attitudes toward alcohol and how they are perceived by student-athletes, as well as the important role of coaches’ influence on drinking. Further research is needed to understand how to leverage coaches’ influences to reduce binge drinking and alcohol-related consequences among student-athletes.

**Why Sex Makes a Music Career**

**Kristina Waters**

Former Disney child star Miley Cyrus' self-sexualization via her clothing choices, dancing, and aggressive behavior in 2013 became a controversial media spectacle and was a major discussion topic in social media. Since her controversial and provocative 2013 MTV Video Music Awards performance, where she cavorted with singer Robin Thicke and suggestively grinded against a giant foam finger, Cyrus has had a major career resurgence. In subsequent performances, Cyrus aggressively asserted her sexuality and embraced a dominant sexual role. In 2013, Selena Gomez, another former Disney child star, partially followed Cyrus’s self-sexualizing lead, but embraced a more traditional and submissive approach to the performance of female sexuality. Her latest single, "Come and Get It", a carefully orchestrated shot at mainstream success, contains lyrics emphasizing her sexual availability. It was also promoted with a video featuring Gomez in submissive sexual positions and touching her body. The single peaked at number six on the Billboard Hot 100 and led to a successful album and a sold-out arena tour.

In this comparative textual analysis, the two singers’ self-sexualization strategies in music videos and taped conference performances are examined. This textual analysis is informed by audience analysis data from social media that demonstrates how the public responded to their performances. Findings indicate that while both Cyrus and Gomez successfully exploited their sexuality, audiences understood their disparate sexual personae to contain significantly different messages regarding the economic class and background of the two artists. These findings build upon existing feminist theoretical concerns regarding the specious links between the aggressive performance of female sexuality and lower socio-economic status.

**Willful Defiance**

**Nadia Kelifa**

In the 2011 school year alone, 700,000 suspensions were handed out in California schools. These suspensions all tie back to one policy, Willful Defiance, which disproportionately impacts minority youth, and contributes greatly to the school to prison pipeline. For this presentation, I will provide an overview of current research on this school discipline policy to increase California residents’ engagement with this issue. Through a literature review, I took a qualitative approach to this project. Using an interdisciplinary approach, I drew on journalistic articles and currently implemented as well as proposed legislation for empirical data, and Critical Race
Theory for the theoretical component. My experience with Community Coalition and the Freedom Schools program also informed my work. Upon collecting a plethora of journalistic articles, case studies, and legislation, I began a process of categorization. I began by separating the case studies on the disparate impact of school discipline policies on minority youth from the rest. I went on to organize all of the sources exploring the specific topic of the Willful Defiance policy, using subcategories that focused on aspects of punishment, school push-out, and solutions (both legislative and restorative justice oriented). Given these findings, policies like Willful Defiance appear to be ineffective in terms of school discipline and contribute to school push-out. Many of these sources favor the notion that eliminating use of Willful Defiance policies, and furthermore, replacing them with restorative justice approaches would be beneficial to students. In essence, shifting the focus of school discipline from punishment to rehabilitation is a plausible solution to this issue. For this reason, Los Angeles Unified School District’s adoption of the School Climate Bill of Rights, which eliminates use of Willful Defiance in the district’s high schools, is commendable. Similarly, it is welcomed that at the state level, legislation like Assembly Bill 420, is pending.

**Wireless Sensor Motion Capture of Lower Body and Robotic Recreation of Motion**
Trent Clifton, Jacqueline Lee, Colleen McVeigh

Robotic skeletons are being used more in both medical fields and entertainment industries, to track and mimic natural human movement. In this project we looked into the use of wireless motion sensors to track the motion of the lower limbs of the body and to use this data to recreate the motion of a human user using robotic joints and artificial limbs. The object of this research is to develop an integrated system consisting of Shimmer Motion Sensors and the Linkbot modular robots to create a human lower body, which will mimic the movement of the human user. The final system will use the data captured from the Shimmer Motion Sensors and will then be coded in C# and Python to transform the human angles for use in the robotic joints. The skeleton will then wirelessly follow the movement of the user and be able to walk forwards across the floor while maintaining balance. This robot will be able to move in a human like fashion and the system developed in the research can be used in numerous fields such as medical, special effects, and to develop other humanoid robots.

**Working Memory Training and Inhibitory Control in Academically At-Risk Kindergarteners**
Nicole Froidevaux, Caitlyn Handy, Natalie Hejran, Kayla Mikasa, Melissa Ortiz, Ashley Oshiro

Inhibitory control, an executive function predictive of academic success among school aged children (Diamond, Barnett, Thomas, & Munro, 2007), involves the ability to ignore irrelevant stimuli or suppress habitual responses (Bialystok & Viswanathan, 2009). Given the link between working memory (WM) and inhibitory control, we hypothesized that WM training would improve inhibitory control. We conducted a study using the computer program Cogmed to train WM in kindergarten students in Los Angeles identified by the teacher as academically at-risk. Cogmed was administered for 40 mins a day, four days a week for six weeks. Children were randomly assigned to receive Cogmed at the beginning of the school year (T1; n = 16) or after the testing reported here (waitlist control group; n = 15). The Flanker Inhibitory Control and Attention Test (NIH Toolbox; www.nihtoolbox.org; ©2012 Northwestern University and the National Institute of Health) is an age-appropriate standardized measure. A 1-way between subject ANOVA controlling for T1 Flanker scores showed that children who had received WM training had faster reaction times (msec) \( (M = 2475.50, SD = 700.81) \) for trials involving incongruent stimuli (requiring inhibitory control) compared to children who had not received WM training \( (M = 2542.95, SD = 908.42) \), \( F(1, 27) = 5.69, p < .05 \). There were no significant
differences for trials involving congruent stimuli (requiring focused attention). Our findings suggest that training aimed at facilitating WM may also develop inhibitory control in academically-at-risk kindergarteners.

**Wow, What did Mao Do? : The Failures of the Chinese Economy in 19491962**
Min-Jung Kim

This paper examines the economics policies in China from 1949 to 1962 under Mao Zedong’s rule. This paper is important in that it explains the catastrophic and misguided policies that eventually caused China to be in distress and to experience one of the biggest famines of the world. My purpose of this paper was to explain some of the reasons why the policies failed in China. I wrote this paper by reading many articles about the topic and writing it under the guidance of Professor Liu. Overall, I learned that Mao Zedong tried his best to solidify the new China, but failed in accomplishing his goals. I concluded with my advice on how to create policies if I were appointed to advise the Chinese leaders at that time.