

April 19, 2012

CREATIVE
COLLABORATIONS

UNDERGRADUATE
student-faculty
research
scholarship
internship
creative works



The Office of Undergraduate Research was established in September 2011 to promote research, scholarship and creative activities across campus. The office aims to ensure that USD undergraduates have the opportunity to engage in these activities both inside and out of the classroom. The Office of Undergraduate Research provides services to both students and faculty, and encourages collaborations across departments and disciplines.

The University of San Diego is an enhanced institutional member of the Council on Undergraduate Research.

WELCOME

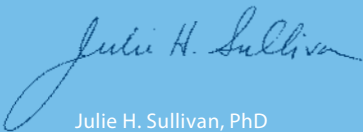
to the 9th Annual Creative Collaborations Conference!

This year's Creative Collaborations marks two important milestones in the University of San Diego's effort to strengthen undergraduate research, scholarship and creative activities. First, we have more participation than ever before — 175 posters and exhibits presented by 282 undergraduate students. Second, the conference was organized and run by the newly established Office of Undergraduate Research. The office, which opened in the beginning of the 2011-2012 academic year, will continue to plan and oversee Creative Collaborations in future years.

Many of our students who participate in Creative Collaborations also publish their work in academic journals and present their projects at national, international and regional conferences. These projects often lead to graduate school acceptances and prestigious scholarship awards. The high-quality work you see reflects the outstanding mentoring abilities of USD faculty, as well as the intellectual curiosity of our undergraduate students.

We invite you to view and experience a variety of presentations during this celebration of faculty-student scholarly collaboration. The presentations you will see represent work from all of our undergraduate units, including the physical and natural sciences, social sciences, humanities, fine arts, engineering, business and education. Enjoy the conference!

Sincerely,



Julie H. Sullivan, PhD
Executive Vice President and Provost



Sarah Kriz, PhD
Director, Office of Undergraduate Research



Schedule

Welcome

11 a.m.

Creative Collaborations 2012 will begin in front of the Hahn University Center with a short welcome address from Vice Provost Thomas Herrinton.

Student Presentations

11:15 a.m. – 1 p.m. and 1:15 p.m. – 3 p.m.

There will be two sessions of Creative Collaborations 2012 presentations. During both the morning and afternoon sessions, posters and interactive exhibits will showcase student research, internships, creative works and scholarship. Interactive exhibits will be presented on the lower level of the Hahn University Center. Posters can be found in UC Forums A, B and C.



Biodex: The Index of Life

Jun Ryan Delacruz

Faculty Advisor: Drew Talley

Department of Marine Science and Environmental Studies

Location: UC 103A

Field guides have a long history of usefulness to biologists as a way to record and view data about specific organisms. The goal of this project was to develop an interactive field guide for mobile devices to provide a cleaner and more efficient means of recording and viewing entries. To accomplish this goal, the author created Biodex, an Objective-C based mobile app, and used MySQL and PHP to manage the organism database on the back-end. Biodex will contain an interactive field guide for organism querying, as well as several additional features such as a data entry form, a documents viewer, and a map that displays the user's current location. This app will be tested by the USD Marine Biology department during their field studies. It is anticipated that Biodex can be utilized by other field sciences.

Planting Seeds of Change: Performative Interactions that Engage, Inspire, and Reconnect People to the Environment and Sustainability

Alison Dressel

Faculty Advisor: Monica Stuftt

Department of Theatre Arts and Performance Studies

Location: UC Upstairs Alcove

Effective solutions to the most pressing issues of our time necessitate a fundamental shift in social consciousness. As co-founder of ReACT: ReACTIONary Theatre, I have devised a series of performative engagements dedicated to redressing the pervasive lack of awareness and/or concern with environmental sustainability and reconnect people to the natural world and each other. By establishing meaningful relationships with participants through highly interactive, visceral, and memorable experiences, my goal is to cultivate an experiential understanding of how individual behaviors impact the environment and others, mobilizing people to consistently incorporate sustainable actions into their lifestyles. Every engagement plants a "seed of change," a personalized gift containing an inscription that inspires pursuit of a sustainable way of life. The seed messages invite people to continue the engagement through ReACT's website, which directly connects people with the growing network of individuals, organizations, and firms whose collective actions will ignite real change toward sustainability.

Transfer Women of Color Student Project with an Acto of “The Calling of my Blood; Llamado de Sangre”

Divina Hernandez

Faculty Advisor: Alberto Pulido

Department of Ethnic Studies

Location: UC 103B

This Independent Study research project will address the struggles of community college and university women of color students in transferring to USD. While simultaneously discussing their struggle in obtaining a higher education in a society that disables them from increasing their upward mobility because of historical institutional power structures. I conducted Participatory Action research, a methodology whose specific focus in regards to this project, was to investigate the issues transfer students of color encounter once they arrive to USD, and acknowledge the unique experiences of transfer students in the hopes of bringing attention to the needs of this specific group. I investigated the resilience of three self-identified Chicana, Mexican, and Mexican-American women who have encountered discrimination, unacceptance, financial struggle, and grief. I demonstrate the battle that these three young ladies including myself have both won and lost while riding on the roller coaster ride of our education.

Color Me White

Phil Miller

Faculty Advisor: Monica Stuftt

Department of Theatre Arts and Performance Studies

Location: UC 104

My performance art piece deals with how being ‘white’ is part of a specifically socially constructed racial group and a culture that is stapled to that racial identity. Using Judith Butler’s work as inspiration, I show in an interactive manner how white racial identity is ‘constituted’ and then performed. I also draw upon Gwendolyn Audrey Foster’s theories of performing whiteness such as her work on ‘white face,’ ‘white spaces,’ and how to perform the ‘good white’ versus the ‘bad white.’ With the combination of the work by these two theorists, this performance art piece seeks to enlighten people, especially white people, about their own identities and to inspire them to self-reflect and learn more about their own whiteness and white identity.

Goya's Disasters of War: A Legacy In Print

Jake Zawlacki

Faculty Advisor: Victoria Sancho Lobis

USD Print Collection and Fine Art Galleries

Location: UC Information Desk

Tours to the gallery will leave every 30 minutes

As a second-semester intern at the Hoehn Print Study Room, I was fortunate to have the opportunity to co-curate the *Goya's Disasters of War: A Legacy In Print* exhibition. My role in the development of this exhibition was to facilitate the contributions of artists who were either USD students or alumni. These contributions represent the contemporary artistic response to Goya's *Disasters of War* series. By carrying out this task, I was able to understand the artist as a person rather than someone out of an art history textbook. I considered this idea as I started to develop my Gallery Talk and was able to have three of the contributing artists—Rafal Kopacz, Rachael Ponn, and Noe Olivas—discuss their artistic work and the driving forces that motivated their responses. Participants in the Gallery Talk were able to understand what the artist was responding to in his or her own words. Rarely as art historians are we able to see the present when so much of the field is focused on the past. This was a very exciting opportunity as I was able to question and even challenge what the artist was doing in order to have a better grasp of his or her creative process.



Love and Leadership

Allie Bright

Faculty Advisor: Daniel Tillapaugh
Department of Leadership Studies
Location: UC 103B

This exhibit is a compilation of work put together throughout the Spring semester exploring the topics of love and leadership and the power that it brings to all of our lives. The final product of this research is a video created to represent the connection and passion that I've found through exploring and breaking boundaries within myself. The video incorporates all of my research, the information gathered from literature on love and leadership, and interviews of leaders. Comprised of still pictures, music, and other media that expresses views of love and leadership, this exhibit will demonstrate a highly reflective and personal aspect of my research project.

Balance and Empowerment through Yoga, Namaste

Kirstyn Bruning

Faculty Advisor: Maria Kniazeva
School of Business Administration, Marketing
Location: UC 103A

This presentation is on the need for balance and empowerment in today's fast-paced American society through the promotion of the art of yoga. This video will demonstrate the beliefs and ideals of yoga instructors, yogi practitioners, and people who have been positively affected by this ancient Indian physical, mental, and spiritual discipline.

Little Einstein: Maze-Solving Robot

Alvin Javier, Spencer Crump, Timothy Welsh

Faculty Advisor: Kathleen Kramer
Department of Engineering
Location: UC Downstairs Foyer

The overall objective of this project was to assemble and program a robot that could successfully solve a maze in the least possible time. The robot was assembled using a Solarbotics Sumovore Robot kit and a PIC18F4550-based brainboard, which was programmed using C. Because the maze has an unknown configuration, the plan for solving the maze was to use the "right hand rule" to move through the maze until the robot reaches the end of the maze indicated by a black area. The design uses an ultrasonic sensor to detect walls in front of the robot and an infrared (IR) sensor to detect walls on the right side of the robot. The robot moves and turns based on the information gathered from both sensors. The robot also includes four line sensors, used to detect the black area at the end of the maze, and a Liquid Crystal Display (LCD) screen, which displays a message that indicates the robot has completed the maze. The resulting robot can successfully traverse the maze.

The Performativity of Punk: Construction, Performance and Redefinition of the Punk Identity

Molly Maslak

Faculty Advisor: Monica Stufft

Department of Theatre Arts and Performance Studies

Location: UC 104

The development of Punk in the 1970s was a departure from previously established aesthetics concerning sound, style and performance. I use a performative methodology as a way of looking at Punk as something which was created as it was performed. Existing secondary sources have begun to acknowledge Punk as both a music genre and a performance genre; I build on this to analyze how the Punk sub-culture was established via performance of the Punk identity, and argue that the state of the Punk identity can be observed in various stages of construction, performance and redefinition. The value of the Punk identity in the shaping of the sub-culture, and the creation and performance of that identity is the focus of my research. I have studied archival materials and performance footage in London and Liverpool, and conducted an interview with a former Rolling Stones journalist to support my analysis.

New Impressions: Recent Acquisitions for the University of San Diego Print Collection

Mari Mazzucco

Faculty Advisor: Victoria Sancho Lobis

USD Print Collection and Fine Art Galleries

Location: UC Information Desk

Tours to the gallery will leave every 30 minutes

As co-curator of *New Impressions: Recent Acquisitions for the University of San Diego Print Collection*, I was able to use the knowledge I acquired from several semesters as a curatorial intern and take part in a rewarding and instructive experience. Working as co-curator was not only beneficial to my work as an intern but also as a student of art history. Having worked closely with prints from the permanent collection, I had a good understanding of which prints I wanted to select for the exhibition. I felt the prints chosen, such as Hans Thoma's *Self-Portrait II* and Emilio Sanchez's *La Casa Vivienda*, best demonstrate the expansive variety of subjects and forms of representation contained in USD's print collection. I wanted this exhibition to highlight the brilliance of print making as an artistic medium and to serve as an informative experience for those unfamiliar with the print collection. I believe this exhibit exemplifies the exceptional educational opportunity the print collection offers, an opportunity that have augmented my own study of art history and as well as my preparation for post-graduate pursuits in the art field.



International Rescue Committee
Immigration Department Intern

2014-2015, A Political Science and International Relations Department

ALPHA PROJECT
New Media Advertising



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1 University of San Diego Industrial & Systems Engineering Senior Project: Design to Improve Drive-Thru Throughput at Quick Service Restaurants

Tariq Abanumay, Joshua Schroeder, Paul Price

Faculty Advisor: Rick Olson
Department of Engineering

Quick Service Restaurants (QSR) process 60% or more of their revenue through the drive-thru window operations. For many QSRs, a high percentage of their drive-thru revenue is obtained in 3 or 4 peak periods during the day. During peak hours, a high volume of cars impacts the overall wait and service time for customers, resulting in longer wait times and queue length. This could result in unsatisfied customers or deterrence of future customers. The main project objective is to determine the optimum layout of the drive-thru operations components for the single lane drive-thru window operation. We will determine what factors have the greatest impact on customer wait times and how these factors interact to form the optimal layout. We will present the optimal layout as drawings with the critical measurements noted for each drive-thru component used in the layout. In addition, provide alternate optimum layouts based on the QSR's layout and service characteristics.

2 Determining the Rate of Otolith Increment Formation in Adult and Juvenile *Fundulus parvipinnis*, California Killifish

Jessica Andrade

Faculty Advisor: Drew Talley
Department of Marine Science and Environmental Studies

The rate of otolith increment formation and the average size of otolith increments are being studied in juvenile and adult California killifish, *Fundulus parvipinnis*. Calibrating otolith increment formation of this ecologically important species allows for future studies involving age determination and identification of environmental sources affecting formation. We expect to find that *F. parvipinnis* forms a new otolith increment every day and that there will be wider increments closer to the otolith core surrounded by increments with gradually decreasing widths due to the switch from rapid growth as a juvenile to slower growth as an adult. We will stain the outermost portion of wild-caught *F. parvipinnis* otoliths by immersing them in calcein solution, clipping part of their caudal fins for identification, and releasing them back into their habitat. Fish will be recaptured ten days later and sacrificed to obtain their otoliths. Otoliths will be examined under ultraviolet light to allow determination of the increment that was being formed at the time of first capture, and then days at liberty will be used to verify daily increment formation for *F. parvipinnis*.

3 Achieving an Everlasting Peace

Ashley Attia

Faculty Advisor: Michael Pfau

Department of Political Science and International Relations

Acquiring global peace has always been of great concern in the field of international relations. It is apparent that achieving this goal has proven to be a difficult feat. Several factors such as ideological, religious and economic differences between nations have hindered the process of attaining such a peace. Although a world nearly free from violence and war is currently out of reach, several approaches may lead us closer to a more pacifistic world. Promoting democracy as a method of non-violence as well as advocating the creation of international governments could very well provide the foundation for achieving an everlasting peace.

4 Stress and Coping in College Students

Carolina Bellizzi, Kelly Correa, Alexandra Clancy, Cynthia Gutierrez de Velazco, Kittric Lovel, Sarah Jensen, Kandice Ocheltree

Faculty Advisor: Veronica Galvan

Department of Psychological Sciences

College students are reporting higher stress levels now than ever before. Record high numbers of students are also expressing a desire to be involved in extracurricular activities and to maintain a good grade point average. The current study surveyed undergraduates on their college involvement, substance use, personality traits, social support, daily stressors, and sleep habits in order to shed light on possible reasons for the record high stress levels. Saliva samples were taken to measure levels of the stress hormone, DHEA, and immunological marker, IL-6. We predict that college students with higher expectations of involvement in extracurricular activities, poor sleep habits, and less social support will experience increased stress levels and decreased immune functioning when they are not meeting these goals. Additionally, we predict that as the number of extracurricular activities a student is involved increases, their immune functioning will decrease and their stress levels will increase.

5 Structural Studies of the Hif1 Chaperone and its Interaction with Histones

Allison Bigeh, Michael Bagley, Nessa Seangmany

Faculty Advisor: Robert Dutnall

Department of Chemistry and Biochemistry

Hif1 is a histone chaperone protein that binds histones and deposits them onto DNA. Hif1 is part of a complex containing the histone acetyltransferase enzyme Hat1 that covalently modifies histones. The Hat1 complex specifically acetylates histone H4 and plays a role in the assembly of chromatin, the packaged form of DNA. Genetic studies indicate that the Hat1 complex is involved in regulation of gene expression and DNA repair. We have expressed the yeast Hif1 protein in bacteria. Purified Hif1 is predominantly a dimer in solution and interacts with core histones. Using truncation mutants we are mapping the regions of Hif1 required for dimer formation and histone interaction. The goal is to understand the molecular basis for interaction of Hif1 with histones and provide insight into the contribution of Hif1 to the biochemical activity and biological function of the Hat1 complex.

6 Transborder Challenges in Water Quality

Chelita Borbón

Faculty Advisor: Bethany O'Shea

Department of Marine Science and Environmental Studies

This study examines the water quality issue(s) of the Tijuana River and the influence that water quality can have on the communities living within this urban watershed. There are many sources of contamination in the Tijuana River such as illegal dumping (i.e. raw sewage, medical waste), run-off from maquiladoras (factories), and community trash dumping, to name a few. The Tijuana River empties into the estuary on the US side of the border where eight sediment samples were collected for heavy metal analysis. Preliminary hypotheses will be made regarding the likely sources of these metals. An examination of the policies that allow these kinds of contamination to occur and the perception people have of the Tijuana River contamination will also be presented.

7 The American Red Cross: Measles Initiative

Diana Boyd

Faculty Advisor: Gary Gray

Department of Political Science and International Relations

The American Red Cross works on several different International Initiatives every year. As an intern for the American Red Cross I have been working on the Measles Initiative. This initiative is a partnership committed to reducing measles deaths globally. Measles is one of the leading causes of death among young children, especially in developing countries. It costs less than U.S. \$1 to vaccinate a child against measles, meaning that this is one of the most cost-effective health interventions available. The American Red Cross has collaborated with the United Nations Foundation, the U.S. Centers for Disease Control and Prevention, UNICEF, and the World Health Organization to provide technical and financial support to communities on vaccination campaigns and disease surveillance. Despite the significant drops in measles deaths, there is more work to be done to monitor new measles outbreaks, especially across Africa that threaten to reverse the progress of the past decade.

8 Eastern Spirituality In The Western Supermarket

Matthew Bregar

Faculty Advisor: Maria Kniazeva

School of Business Administration, Marketing

Enthusiasm for Eastern things in the West is not a new concept, but recently there has been a novel shift in the West's Eastern interests. Eastern wisdom has replaced the old styles of pure artistic and aesthetic traditions. The Eastern world religions of Buddhism, Hinduism, and Taoism have become a major focus in the West, along with Eastern spiritual practices such as feng shui, yoga, reiki, and tai chi. In this way, Westerners have largely taken over the teachings of Eastern religiosity and spirituality from Easterners. I will be exploring how Eastern-style spirituality is communicated in the secular marketplace through the use of retail channels that reach mainstream consumers. I will be closely analyzing the narratives found on food and drink labels in the US supermarkets. I hope to determine the lifestyle guidance and lessons that spiritual messages of Eastern Wisdom offer to the US mainstream consumers.

9 Immigration Intern at the Trans-Border Institute

Amy Callahan

Faculty Advisor: Gary Gray

Department of Political Science and International Relations

Through the Trans-Border Institute (TBI) I established a solid platform of knowledge about border issues, particularly those related to immigration. I was able to work with visiting scholar and immigration expert Olivia Ruiz on events such as “The Effects of Violence in Mexico on Migration and Immigration Policy” and “State and Local Immigration Policy.” Through TBI I was able to meet such high profile diplomats as U.S. Ambassador to Mexico Anthony Earl Wayne and Mexican Secretary of Foreign Affairs Secretary Espinosa, among others. I was able to further develop my writing skills by writing blog entries, event summaries, book reports, documentary reviews, grant proposals, transcriptions, and interviews. Working with the TBI was an excellent way to learn about issues affecting the border region, and about the organizations, agencies, and people that play a role in shaping border policy outcomes.

10 Children’s Power Play! Campaign, Network for a Healthy California

Jessica Capaldi

Faculty Advisor: Gary Gray

Department of Political Science and International Relations

The Network for a Healthy California San Diego and Imperial Counties’ Children’s Power Play! Campaign is a California Department of Public Health program coordinated by UCSD Department of Pediatrics. The campaign’s goals are to encourage elementary school children ages 9 to 11 to eat 3 to 5 cups of fruits and vegetables and to get at least 60 minutes of physical activity every day. These initiatives are intended to improve children’s health and longevity by reducing the risk of chronic lifestyles diseases, such as heart disease, cancer, obesity and diabetes. Community involvement and awareness are integral elements contributing to the success of this program, as well. The campaign works towards improving the accessibility of healthy foods and safe places to exercise for children in low-income communities.

11 Travel Literature in the Late Medieval World

Ricardo Carmona

Faculty Advisor: Thomas Barton

Department of History

This study compares two 14th century travel narratives written by Muslim and Western Christian sources, in an effort to understand their culturally and religiously biased interpretations of foreign cultures. It finds that the narratives were heavily shaped by the political and religious preferences of their authors, who sought to reinforce or question authority in their homelands. The study further depicts the value of travel literature as a historical source for understanding the late medieval world.

12 The Urban Superblock

Giovanni Carvajal

Faculty Advisor: Juliana Maxim

Department of Art, Architecture + Art History

For my thesis, I've decided I want to address rising density issues in major cities and metropolis's through integration of super block ideals and rethinking the zoning of vertical space. By re-utilizing vertical space, I can introduce green systems and social centers for areas that were previously bleak, and unofficially closed off to family dwellers. My thesis is a new type of urban intervention to adapt the paradigms of the city setting and produce urban centers that are focused on the individual and living space. Much of my research is based on the now extinct Kowloon Walled City, which helped me develop successful urban patterns.

13 Interacting With the Homeless

Jacob Centeno

Faculty Advisor: Juliana Maxim

Department of Art, Architecture + Art History

As an architecture major, I have been working to solve one of an architect's biggest problems of all, making sure everyone is housed. The homelessness situation in San Diego is one of the largest in the United States of America. As a local I have been able to study the 37 homeless shelters in the downtown San Diego region, the homeless population and some of their wants and needs. Altogether, I will propose a unique solution for the homeless in San Diego.

14 Do Elections Provide an Effective Way for "Post-Conflict" States to Create Countrywide Peace and Stability?

Carmyn Chapman

Faculty Advisor: Mike Williams

Department of Political Science and International Relations

This research project will concentrate on the impact elections have on society, government, and peace in countries categorized as in a post-conflict stage. Post-conflict indicates countries that have recently experienced a civil war, internal conflict, uprising, or large displacement of its citizens due to violence. These countries are often very vulnerable and highly politicized and often-present opportunities for distinctive change in policy, growth and society, while at the same time face election processes that are unstable or dangerous. This project will identify countries categorized as "post-conflict," and assess how elections have affected their ability to solidify peace and stability in government, society, and law.

15 Short Sale Solutions

Johnny Cilch

Faculty Advisor: Gary Gray

Department of Political Science and International Relations

I am currently an intern for Jacalyn Blank who owns Short Sale Solutions. Short Sale Solutions helps people who have purchased homes, and the homes that they purchased are now worth less than what they owe to the bank for the homes. This has now become a common situation among homeowners because of predatory lending and a weakening U.S. economy. Many people have been foreclosed on and now have nowhere to live. The short-sale negotiator, a rarity a few years ago, became necessary as short sales became lengthy and complicated. A short sale negotiator is the person who puts together the financials of the homeowner who wants to do a short sale. The negotiator works with the seller's agent and the buyer's agent and puts together a short-sale package for the bank. In this case Jacalyn is the negotiator and I work for her as an office administrator.

16 The Effects of Language on Pain Tolerance

Lindsay Colletti, Samantha Kodama, Neesha Daulat, Heather Ford, Jessica Flores, Courtney Napoli, Gabriella Taverite

Faculty Advisor: Annette Taylor

Department of Psychological Sciences

Stephens, Atkins and Kingston (2009) showed that people who repeat swear words out loud during the application of an uncomfortable stimulus show reduced pain perception and increased heart rate. One alternative explanation is that profanity is not necessary; any type of emotional exclamation may mediate pain, including mild swear words and positively balanced emotional expressions. We studied these conditions and personality in replication of the Stephens' study. We hypothesized that participants would be able to keep their hand in water while they repeat the mild word for relatively the same amount of time as those that repeat the swear word. Thus we would be able to conclude that there is no need to use profanity to decrease pain perception. If the mild swear words do not have an effect on pain tolerance, then our study supports the previous findings in that profanity and possible emotional words are the case.

17 A Different Shade of Green: A New Typology of Sustainable Homes

Mason Davis

Faculty Advisor: Daniel Lopez-Perez

Department of Art, Architecture + Art History

I am looking to develop a new typology of affordable and sustainable housing. The project is based on the work by the Make it Right initiative in New Orleans. This project looks to redefine the single family home through sustainable, safe, and durable strategies while keeping costs affordable to middle and lower class families.

18 Love in Cyberspace

Hannah Dobbas, Elle Ortega, Sarah Kinsella, Alyssa Ong

Faculty Advisor: Mary Brinson

Department of Communication Studies

Love in cyberspace: How Communicating through CMC vs. Face to Face Affects Satisfaction Levels in Dating In today's society CMC (Computer Mediated Communication) has become the preferred way to communicate in dating relationships. In many instances face-to-face interactions have been nearly eliminated due to college students' reliance on CMC communication. It is our interest in discovering whether CMC or face-to-face communication allows relationships to achieve ideal levels of satisfaction. The current study will investigate how CMC alters college students' satisfaction levels with their partner. It will also investigate the use of CMC in conflict resolution, in order to better understand whether CMC or face-to-face communication is more successful. A cross-sectional survey of USD college students will be implemented. Both local and long distance relationships will be analyzed.

19 Hurricane Frequency and Intensity in Relation to Teleconnection Patterns in the North Atlantic, West Pacific, and North Indian Oceans

Kerri Englert

Faculty Advisor: Zhi-Yong Yin

Department of Marine Science and Environmental Studies

I recently examined the relationship between sea-surface temperature (SST) and parameters of hurricanes that passed through the Caribbean region, but did not observe a statistically significant positive relationship between SST and hurricane frequency and intensity during 1950-2008. This study will expand the analysis to the West Pacific, and North Indian Oceans. Effects of oceanic teleconnections, such as Atlantic Multidecadal Oscillation and El Nino-Southern Oscillation, will be analyzed to determine their contributions to tropical cyclonic storm frequency and intensity. The hurricane and SST time series will be divided into groups corresponding to the positive and negative phases of the teleconnections during 1971-2010. The group means will be compared using statistical methods to determine whether significant differences exist. Storm parameters will be correlated with SST from the respective ocean basin to determine whether SST variation caused by shifting teleconnections has a significant impact on the tropical cyclonic storms.

20 The Ties that Bind: Argentinean Identity and Cultural Icons

Eduardo Estrada

Faculty Advisor: Alejandro Meter

Department of Languages and Literatures

Beginning in the 1960s global politics had the world torn between east and west. The Cold War was emerging; and the CIA feared communism would spread to the western hemisphere. To suppress this political ideology the USA began to back Latin American dictatorships. This developed into a dirty war in which governments were attacking their own citizens in attempt expel any leftist thought. This suppression included restriction of information, and a repression of emerging political leaders. During this time over 200,000 citizens fled the country in fear for their lives. All sense of national identity would have been lost if it were not for Diego Maradona. Diego led the Argentinean national soccer team to two world titles, he became the "people's champion" and unified the country during one of the most volatile times in history.

21 From Spheres to Atmospheres

Sou Fang, Devon Morris, Jacob Bruce

Faculty Advisor: Daniel Lopez-Perez

Department of Art, Architecture + Art History

Looking through Buckminster Fuller's architectural designs for domes, we analyzed, categorized, reconstructed, and even deformed his original works - many of which were never formally produced. From this, we created a book incorporating our efforts in understanding Fuller and his domes.

22 Atmospheric Reactions of Glyoxal and Methylglyoxal with Peptides and Proteins

Kevin Forey

Faculty Advisor: David De Haan

Department of Chemistry and Biochemistry

Reaction rates were measured by LCMS and NMR for the reactions of the alpha-dicarbonyls glyoxal and methylglyoxal with insulin and a dipeptide. The dicarbonyl molecules form imidazole crosslinks between primary amine groups on peptides and proteins. Insulin reaction rates with the alpha-dicarbonyls are much faster than corresponding reactions with free amino acids. This suggests that contact with the non-polar protein microenvironment shifts dicarbonyl equilibria away from hydrates, re-forming reactive aldehyde functional groups on the protein surface. Dipeptide – dicarbonyl reaction rates will also be reported.

23 Madeleine Z. Bordallo

Stephen Gatewood

Faculty Advisor: Gary Gray

Department of Political Science and International Relations

As a Territory of the United States of America, Guam possesses a unique status, and as an island in the South Pacific, Guam is in a special geopolitical position. Guam's representative in Congress is Madeleine Z. Bordallo. Her task is to accurately represent the concerns of her constituents in Congress. This relatively small island is home to many military personnel. Balancing her constituents' concerns with the priorities of the Federal Government is a formidable task. Responding to issues that arise from the Compact of Free Association, the Military Realignment in the Pacific, the presence of Federal Cantonments and many other federal policies that directly affect Guam, Congresswoman Bordallo is challenged more so than her Congressional counterparts because she is a non-voting Member of Congress. This project aims to elucidate Congresswoman Bordallo's goals and to share my experience as her intern in her Washington D.C. office.

24 Dating in an Online World

Kelly Giles, Paige Brewin, Nicole Del Vecchio, Malia Eugenio

Faculty Advisor: Mary Brinson

Department of Communication Studies

This study will investigate whether or not levels of computer-mediated communication (CMC) versus levels of face-to-face communication have an impact on intimate/dating relationships. Further, it will investigate how these levels of CMC and F2F communication correlate to overall relationship satisfaction. We will conduct our research using a cross-sectional survey method and collecting quantitative data. Surveys will contain questions regarding relationship satisfaction, conflict resolution, reasons for using specific social media, and time spent using different methods of CMC communication. Both local and long-distance relationships will be investigated separately. Our sample consists of students at the University of San Diego ranging from 18-22 years of age who have been in an intimate/dating relationship in the past, or are currently involved in one.

25 Determining Effective Predatory Stimuli for Zebrafish

Kelly Goldsteinholm

Faculty Advisor: Rachel Blaser

Department of Psychological Sciences

Because there is homology between specific genes in zebrafish that seem to have similar functions to analogous genes in humans, as well as in the neuroanatomy of zebrafish and humans (or other vertebrates), the zebrafish has been established as an important animal model in fields ranging from developmental biology to psychology. Zebrafish offer an attractive model to study the genetic basis of anxiety and other human disorders. A multivariable between-groups study was conducted to compare types of synthetically manufactured predatory stimuli to determine which most effectively induced an anxiety response in zebrafish. Using the diving task, a standard paradigm for anxiety research in zebrafish, the responses of approximately forty zebrafish were analyzed using visual and auditory/vibratory synthetic predatory stimuli. The response to each stimulus was evaluated in the diving task, by measuring the amount of time each experimental fish froze at the bottom of the tank using automated video-tracking software.

26 Using Tropical Foraminifera as Indicators of Water Quality in Coral Reef Environments, USVI

Amanda Greenstein

Faculty Advisor: Sarah Gray

Department of Marine Science and Environmental Studies

Coral reefs worldwide are declining due to threats associated with decreased water quality from nutrient enrichment and sedimentation. Certain genera of large tropical benthic foraminifera (Protists) rely on symbiotic algae, like corals, and historically dominated sediments in nutrient depleted waters. The FORAM Index (FI) uses benthic foraminifera as bio indicators for water quality and suitability for coral growth and recovery. The objective of our study was to determine whether the FI could be used as a proxy to measure water quality on reefs in St. John, USVI. If so, we wanted to know whether there was a difference in the FI between reefs in developed versus undeveloped areas. Sediments were collected in July 2011 from St. John and brought back to USD where foraminifera were picked, enumerated, and the FI was calculated. This research will build upon our understanding of water quality and coral reefs on St. John.

27 Effects of Climate Change on Swimming Behavior of *Pachygrapsus crassipes* Larvae

Olivia Hager

Faculty Advisor: Nathalie Reyns

Department of Marine Science and Environmental Studies

With increasing concern about climate change and the anthropogenic impacts of atmospheric CO₂ on the environment, ocean water is predicted to become more acidic and warmer. It remains unclear how such changes might impact marine organisms, and their vulnerable larval stages that develop in the water column. This study tested whether vertical movement of the lined shore crab, *Pachygrapsus crassipes*, larvae was affected by lower pH (more acidic) or higher temperature water. We also determined if acidic conditions or temperature affected larval swimming behavior. These experiments are important because changes in larval swimming behaviors may determine how well larval dispersal connects marine habitats, ultimately impacting marine population growth.

28 Associated Students through the Lens of Political Science

Jacqueline Harris

Faculty Advisor: Gary Gray

Department of Political Science and International Relations

The Director of Academics is a position in Associated Students that is concerned with scholastic and academic integrity related issues. Members of Associated Students serve as representatives of the undergraduate community and focus on enriching the undergraduate experience at the University of San Diego. Through the role of Director of Academics, I have held an internship that enhances and supplements the already existing job. The purpose of my efforts in this political science internship is to allow for more exploration of the connections between political science and student government and apply skills that are stressed upon in this field to my role in Associated Students.

29 No Tips in his G-String: Gender and Power in Strip Clubs and Male Revues

Darcy Hauslik

Faculty Advisor: Lisa Nunn

Department of Sociology

Traditional strip clubs have long been observed under the sociological lens as sexualized work places where men, with some exceptions, exert power over female dancers. If female dancers' relative powerlessness is due to the job itself, working in the sex industry, then we would expect to find men who strip in male revue clubs to be similarly disempowered by the female patrons. I challenge this theory of a simple role reversal through a comparative analysis of a traditional strip club and two male revues. Specifically I look at how the clubs themselves – the structure, format and available services – provide gendered backdrops for the interactions and negotiations of power between and among men and women. The findings offer an analysis of the limitations of women's ability to have the upper hand in the power dynamics of a sexualized space, even when they are the paying clientele rather than the hired bodies.

30 Multiyear Analysis of Three Proteins as Biomarkers of Chemical Stresses in the Common White Clam (*Chione californiensis*), Bahía Magdalena, Baja California

Heidi Hirsh

Faculty Advisor: Michel Boudrias

Department of Marine Science and Environmental Studies

The objective of my research is to develop a time-resolved picture of protein expression in response to point-source pollution on the common white clam, *Chione californiensis*, in Bahía Magdalena, Baja California Sur. Clams are suspension feeders and they can consequently incorporate heavy metals and organic pollutants into their tissue if they are living in a polluted environment. A clam responds to chemical stressors by expressing various proteins and increasing activity in certain metabolic pathways so as to speed up the expulsion of contaminants from its system. Clams were collected at time zero and then at 24 hour increments for four days. These tissues were analyzed for the expression of three different proteins: metallothionein-like protein concentration, glutathione S-transferase (GST) activity, and cytochrome P4501A1 activity. This biochemical analysis will indicate the clams' relative exposure and response to various pollutants at a known impacted site versus a more pristine reference location.

31 Selling Mr. Darcy

Francis Hoe

Faculty Advisor: Abraham Stoll

Department of English

My thesis presentation is an examination of Jane Austen's Mr. Darcy from *Pride and Prejudice* and his journey from on page character to marketable asset. I trace his development using Austen's text as a basis for our understanding. I use a variety of film adaptations to show how society has developed Mr. Darcy into the icon male figure of today. I identify the elements of this new Darcy that appeal to consumers today, as well as elements of Austen's works that has a lasting message and appeal. This presentation focuses the transition from novel to film to societal sweetheart and how/why that journey took place.

32 US GAAP and IFRS Convergence

Audrey Hoel

Faculty Advisor: Dianne Pattison

School of Business Administration, Accountancy

The continually globalizing economy makes it impossible, even for companies that only work within the borders of one country, to avoid international influence and involvement in their business. Since different accounting methods can lead to vastly different reported amounts in financial statements, it is vital to have an understanding of all political, legal, cultural, and other influences on a company when they are preparing these statements. It is only with such an understanding that one can accurately evaluate financial statements and reports from businesses around the world. Currently the Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB) are engaged in a convergence project with the goal of creating a consistent, high-quality global accounting standard. The issues and challenges associated with this project are explored through presentations, discussions, and interviews with accounting professionals in the United States and Europe.

33 Synthesis, Characterization, and Reactivity of diamidato-bis(phosphino) Nickel Complexes

Daniel Huh

Faculty Advisor: Christopher Daley

Department of Chemistry and Biochemistry

Metal-amidato bonding in metalloenzymes has attracted significant attention owing to the interesting structural and functional properties these possess. While it is rare, examples include the nitrile hydratase and thiocyanate hydrolase family of enzymes as well as the A-cluster in carbon monoxide dehydrogenase acetyl-CoA synthase (CODH). In the examples noted, the metal sites also contain sulfur donor ligands. We used a phosphorus-for-sulfur replacement to prep. a series of nickel complexes as model complexes for the distal nickel center found in CODH. Herein we report the synthesis and characterization, including cyclic voltammetry and X-ray crystallography, of these complexes as well as their reactivity with small molecules, specifically carbon monoxide.

34 Effects of *pleC*, *divK*, and *divJ* Mutagenesis in *Rhodospirillum centenum*

Samantha Jasso, Daren Ginete, Stephen Szabo

Faculty Advisor: Terry Bird

Department of Biology

The asymmetric cell division in *Caulobacter crescentus* has been studied extensively, and the genes regulating this event have been well defined. We have chosen several genes that are key in establishing polarity during asymmetric cell division in *C. crescentus* and have orthologs in *Rhodospirillum centenum*, a purple photosynthetic species that does not divide asymmetrically. Because *R. centenum* does not use these genes to establish cell polarity, the function of these genes in this species is intriguing. Cloning and mutagenesis procedures will be used to investigate the function. We hypothesize that we shall see a change in cell morphology and/or cell division in the mutant *R. centenum* strains we create.

35 Olympic-sized Gender Constructions

Cara Jorgensen

Faculty Advisor: David Sullivan

Department of Communication Studies

University of San Diego Honors Program Senior Thesis: Combining the fields of Communications Studies and Sports Marketing I developed a research project focused on the manner in which framing, visual representations, and viewer experience construct men's sports as "more entertaining" than women's sports. The specific goal of my research is to prove that this concept can be applied to Olympic sporting events despite the unique environment of the Olympic Games. Case studies comparing Men and Women's Soccer, Gymnastics, and Swimming at the 2008 Summer Olympics in Beijing, China aim to support the concept of constructed gender.

36 Media and the Female Body Image

Anna Kincaid, Nicole Lawrence, Allison Mercado, Constance Summar

Faculty Advisor: Mary Brinson

Department of Communication Studies

Cultivation theory suggests that varying levels of media exposure over time have various effects on viewers' perceptions of the world. As the models in television commercials, magazine ads and editorials continue to represent the idea of "thinness," college-age females may begin to develop distorted perceptions about body image. They may subsequently feel the pressure to conform to this highly idealized body composition. This study intends to measure how the level of exposure to popular media affects a college-age female's perception of "normal" body composition. In this study, a cross-sectional survey of college-age females at the University of San Diego will be conducted. This study will assess if media representations of a female body significantly affect what a college-age female considers to be "normal," as well as how this idea of "normal" affects her need to conform.

37 Computational Study of the Formose Reaction

Christopher Lee

Faculty Advisor: Jeremy Kua

Department of Chemistry and Biochemistry

The oligomerization of formaldehyde in the Formose reaction has implicit importance in the study of the origin of life. Ribose, the sugar in RNA is a pentameric oligomer of formaldehyde, but only one among a variety of pentoses and hexoses synthesized in the unselective formose reaction. We use Density Functional Theory (B3LYP//6-311+G*) to study the formose reaction in aqueous solution. Specifically, we calculate the solution free energies and activation barriers of a range of intermediates and products formed in the oligomerization reaction. This allows us to identify the low-barrier pathways and the thermodynamic sinks in the reaction. In doing so, we hope to obtain a better understanding of the complex product distribution found in the Formose reaction and elucidate conditions by which certain products may be selected for over others.

38 Investigation of Molecular Level Stress-Strain Relationships in Systems of Entangled F-Actin by Combined Force-Measuring Optical Tweezers and Fluorescence Microscopy

Kent Lee

Faculty Advisor: Rae Anderson

Department of Physics

Actin plays a major role in cell structure, cell motility, vesicle and organelle transport, and muscle contraction. Actin's ability to play these major roles is a direct consequence of the intricate relationship between stress and strain in a variety of filamentous actin (F-actin) networks. A thorough understanding of the unique stress-strain relationships in complex F-actin networks at the molecular-level is currently lacking despite the importance of such networks to fields such as biomimetic material engineering and cell biology. With fluorescence optical tweezers, single F-actin "probes" are used to apply molecular-level strains and measure induced stress within entangled F-actin systems while the deformations and dynamics of surrounding fluorescent-labeled filaments are simultaneously imaged. This powerful single-molecule technique allows simultaneous measurement of intermolecular forces and dynamics and deformations of single molecules, providing the much needed link between stress and strain at the molecular level in complex F-actin networks.

39 The Herfindahl-Hirschman Index and its Effect on Profits

Brittany Leeder

Faculty Advisor: Andrew Narwold

School of Business Administration, Economics

The Herfindahl-Hirschman Index is a measure of the competitiveness of an industry that considers the number of firms and their respective market shares. The index is used to classify industries in categories from monopolistic to perfect competition. Classic economic theory would suggest that firms with a greater market share, as indicated by the Herfindahl-Hirschman Index, would enjoy greater economic profits in conjunction with their monopolistic market power. Furthermore the U.S. Department of Justice and the Federal Trade Commission use the Herfindahl-Hirschman Index to guide their decisions in accepting or rejecting company mergers with the aim of maintaining competition within industries and preventing prices from becoming falsely inflated. Using econometrics and regression techniques, this project will determine if there is a correlation between the Herfindahl-Hirschman Index and company profits, as is expected. If no such correlation is found, we will investigate the possible causes and implications of the results.

40 How Persistent is Affective Distress Following Ostracism?

Julian Leiro, Jamie Shea

Faculty Advisor: Jennifer Zwolinski

Department of Psychological Sciences

This study examined the persistence of negative and positive affect following ostracism. A total of 143 college students played two games of Cyberball, an experimental manipulation of ostracism. In game one, participants were randomly assigned to the ostracism or the inclusion condition. In game two, all participants were included. The PANAS-Positive and Negative Affect scales were administered at baseline, after Cyberball game one, after Cyberball game two and 20 minutes post-Cyberball game one. ANOVA examined the effects of Cyberball group and time on affect; this showed an interaction for negative and positive affect. Affective distress is highest immediately after ostracism; still, ostracized participants continued to show distress at 20 minutes post-ostracism. Ostracized participants in the first game showed less distress following inclusion in second game. Although numerous studies have examined the immediate negative consequences of ostracism, this is one of the first studies to examine the persistence of affective distress.

41 As California Goes, So Goes the Nation: Latin@s and Education

Yanet Lopez Cardenas

Faculty Advisor: Thomas Reifer

Department of Sociology

This study focuses on the question of American Exceptionalism, through an examination of US public education from the late nineteenth to early twenty-first century. Once, the United States was the world's leader in public education, albeit primarily for white students. While this system of separate and unequal education changed in part due to *Mendez v. Westminster* (1947) and *Brown v. Board of Education* (1954), today we are witnessing what Jonathan Kozol calls "a restoration of apartheid education," with the California public school system the most segregated in the nation, according to the UCLA Civil Rights Project. This study intends to understand the implications of today's massive attack on the nation's public education system, fueled by property tax cuts and growing spending on incarceration versus education, for the Latin@ future, most especially in California, where the greatest numbers of this majority-minority are located.

42 The Discourse of Human Rights in Relation to Mexico's Maquiladoras and the Myth of Disposable Women

Corina Lopez Ramos

Faculty Advisor: Kevin Guerrieri

Department of Languages and Literatures

The international discourse on the importance of human rights flourished after the atrocities of the Nazi regime; over sixty years have passed and a number of declarations, treaties, and documents have been promulgated since. This project is based on the exploration of three fundamental paradoxes of the discourse of human rights: the disconnect between the discourse and the implementation of human rights, the contention between universality and cultural relativism, and the disjuncture between the physical violations of human rights and their representation. I analyze the connections between the aforementioned paradoxes and the exploitation of female workers in Mexico's maquiladoras. More specifically, the concept of female workers as cheap, disposable labor is examined in relation to the idea of patriarchy. I consider the ways in which the female workers represent themselves in interviews and testimonial texts in contrast to their representation in Carlos Fuentes' short story "Malintzin de las maquilas."

43 Pyrvinium Promotes the Activation of Casein Kinase 1 alpha Towards its Intracellular Substrates

Sylvester Luu, Brian Hang

Faculty Advisor: Hugh Ellis

Department of Biology

We recently performed a small molecule screen and identified pyrvinium, an anti-helminthic drug, as a potent nanomolar inhibitor of the Wnt pathway. Addition of pyrvinium to cultured mammalian cells promotes turnover of the Wnt pathway proteins, β -catenin and Pygopus. We have previously shown that pyrvinium binds and enhances the activity of casein kinase 1 alpha (CK1 α). Pyrvinium is one of a few small molecules identified to date that activates protein kinases. CK1 α has been previously shown to act on numerous substrates other than β -catenin, such as p53. p53 is a tumor suppressor that plays a critical role in maintaining genome stability and is normally activated to block inappropriate growth responses. Phosphorylation of p53 by CK1 α has been previously shown to prevent p53 binding to its negative regulators Mdm2/4. We hypothesize that pyrvinium is a positive regulator of the p53/MDM2 pathway that promotes the phosphorylation of p53 by CK1 α to stabilize p53 activity.

44 MegaCMS: A Better Way to Create, Manage and Customize Websites

Megan Mahoney

Faculty Advisor: Luby Liao

Department of Computer Science

A web content management system (CMS) is a powerful tool to help users with little or no knowledge of web programming create and manage their website with ease. We have observed through substantial use of popular CMSs that many of them are not customizable and as a result they fail to meet customer needs. These CMSs lack the ability to create a completely custom theme, and the learning curve for many is steep. Thus we have designed and built megaCMS, a robust CMS, customizable to various user needs, such as the ability to manage documents, layouts, themes, and widgets while maintaining a user-friendly interface. Through the use of PHP and MySQL, this CMS allows customers to easily create the website they have always dreamed of.

45 Social Identity Theory in Social Networking Sites

Chloe Manese, Alisha Agrellas, Kelly Rumsey, Alyssa Aninag

Faculty Advisor: Mary Brinson

Department of Communication Studies

In today's world social networking plays a predominant role in society as an integral part of our everyday lives. College students, especially, have accounts on several different social networking sites, with each one providing a different purpose. These purposes range from purely social, to seeking romantic partners, to providing a professional profile. Self-Presentation, through pictures, biography descriptions, postings, and other means, plays an important part in the social networking realm. The social identity theory (SIT) tells us that within different contexts, certain group identities of individuals become more salient than others. If SIT holds true, then peoples' identities will change from one networking site to the next. This study looks at social networking behaviors of college students at the University of San Diego and evaluates whether or not self-representation changes from site to site as one's various social identities become salient.

46 BioVSS: Biological Vision Sensor System

Anthony McConnell-Collins, Matthew Jauregui, Allen Cadreau

Faculty Advisor: Ernest Kim

Department of Engineering

BioVSS is a system designed to provide automatic reports of the position and status of personnel in the field. We are designing an extensible package of sensors including a heart rate monitor, core body temperature and external temperature. Possible additional sensors could include detectors for various chemicals or radiation. An Arduino microcontroller board retrieves data from the sensors and translates it into the necessary format. The microcontroller transmits the sensor data to an Android device (phone or tablet) using Bluetooth. The Android device combines the data with position information provided by its GPS and sends it to a central server. The specifications for the format of this data must match the specifications for the KAB Vision system for later integration. The server receives the information and displays it on a map.

47 Synthesis of a Novel Nitrogen-Based Ligand to be Used in Metal Mediated Enantioselective Catalysis

Danielle McCourt

Faculty Advisor: Christopher Daley

Department of Chemistry and Biochemistry

Enantiopure (chiral) molecules have a wide range of uses in the medical field, industry, and other broad areas of science; their expansive applications necessitate catalysis pathways to prepare pure chiral molecules. Chiral ligand-metal based enantioselective catalysis provides an effective method for producing enantioenriched compounds from a small amount of chirally pure ligand. Our group is interested in nitrogen-based ligand systems; with the goal of making a novel ligand, we set out to make chiral 1,3-bis(4,5-dihydrooxazol-2-yl)propan-2-ylimino)isoindoline. This ligand is proposed to be effective in enantioselective catalysis because of the following features: (i) structural similarity to previously successful ligands, including C₂-symmetry and mer-coordinating geometry (ii) chiral oxazoline arms, which have been shown to effectively transfer chirality to substrates and (iii) the isoindoline unit, which maintains a readily available proton transfer source. Herein we report on our progress toward the synthesis of this novel ligand.

48 The Celibate Priesthood: A Critical Look at the History, Theology, and Need for Change in the Church

Thomas Nolan

Faculty Advisor: Florence Gillman

Department of Theology and Religious Studies

“As long as celibacy is used in the Roman church as a means of control, it also will be abundantly clear that the hierarchy’s underlying preoccupation is not about feeding the flock the eucharistic bread” said Michael H. Crosby in his book “Rethinking Celibacy, Reclaiming the Church.” The mandatory celibacy of the clergy is not only a modern issue, but has been a dilemma faced by the Catholic Church since about the third century. The problem with mandatory celibacy is that it has been continuously supported by weak, post-facto theological arguments. It is now necessary to take a closer look at the current situations of the priest shortage, clerical sex abuse scandals, an increasingly dominant homosexual seminary culture, and the societal norms of the twenty-first century in order to determine the potential change in canon law to allow for a healthier leadership of the community of believers.

49 Interaction of Petroleum-Based Organosulfur Compounds with a Titanium Dioxide Surface

Aileen Park, Michelle Mezher, Jenelle Corey

Faculty Advisor: Lauren Benz

Department of Chemistry and Biochemistry

Petroleum is the most predominant fuel source used in society today. As consumer usage increases, suppliers must turn to dirtier fuel sources to meet increasing demand. Unfortunately, these new petroleum sources are contaminated with nitrogen, oxygen and sulfur, which must be removed prior to utilization. In particular, sulfur-containing molecules in petroleum have the potential to create acid rain by converting to sulfur oxides upon fuel combustion. Sulfur oxides can then react with atmospheric water, leading to sulfuric acid, which causes acid rain. Thus it is important to investigate methods to eliminate sulfur from petroleum prior to combustion. Herein, we've examined desulfurization reactions on a fundamental level by examining the interactions between several sulfurous compounds and a titanium dioxide (TiO₂) surface, a stable catalyst currently used in oil refineries. We've also explored modification of this surface to make it more active in the removal of sulfur.

50 Celebrity Scandals and Parasocial Relationships

Samantha Paulus, Courtney Napoli, Elizabeth Ducote, Emily Sulman

Faculty Advisor: Mary Brinson

Department of Communication Studies

The phenomenon of parasocial relationships is a growing situation in which audience members develop a one-sided relationship or friendship with media personalities. In extreme cases, one may develop an obsessive addictive disorder called celebrity worship syndrome in which they become overly involved with the details of a celebrity's personal life. Celebrities rely on these relationships in order to maintain relevance in society. When these media personalities find themselves in scandals, they must turn to public relations specialists in order to repair their image. This study will include a cross-sectional survey of college students at the University of San Diego. The study will be testing the levels of celebrity worship syndrome and the impact it has on college students' level of forgiveness towards a celebrity who has been involved in a scandal.

51 Political Satire and Influence

Ricardo Pecina, Kristin Swasing, Melissa Krause

Faculty Advisor: Mary Brinson

Department of Communication Studies

Political satire has become a main source of knowledge gathering for 18-24 year olds. Shows like the Colbert Report and the daily show have taken off in popularity. The current Study aims to find out whether or not young people are really 'getting' the satire. More specifically, this study, through an experimental design, will investigate whether political ideology causes individuals to perceive the content differently. Cognitive dissonance theory tells us that this content should make more conservative viewers uncomfortable. We predict that this discomfort will lead to defense mechanisms of selective retention and perception.

52 CtrA Positively Regulates Flagella Expression in *Rhodospirillum centenum*

Mark Pelka

Faculty Advisor: Terry Bird

Department of Biology

Rhodospirillum centenum is a metabolically diverse bacterium that grows through anaerobic and aerobic respiration or anoxygenic photosynthesis. *R. centenum* can differentiate between swim and swarm cells and, to avoid starvation when nutrients are scarce, can also develop into dormant cysts. Because they have no active metabolism, cyst cells do not require nutrients and are resistant to desiccation. We hypothesized that a pathway, which included three gene products, was responsible for initiating encystment. The proteins involved in this pathway include Cyt2, a histidine kinase, ChpT, a phosphorelay protein, and CtrA, a response regulator. Through observation of different knockout phenotypes we discovered that it is unlikely that all three proteins function in the same pathway in *R. centenum*. However, ChpT and CtrA do appear to be in the same pathway that regulates flagella expression because analysis of strains with *chpT* or *ctrA* mutations exhibited lower expression of genes that contribute to flagella biosynthesis.

53 Characterization of a Novel CLC Homolog from *Citrobacter koseri*

Sabrina Phillips

Faculty Advisor: Kimberly Matulef

Department of Chemistry and Biochemistry

CLC chloride-transport proteins are expressed ubiquitously and are vital to several physiological processes. This family is distinctive in that some members are chloride channels while others are chloride/proton antiporters. To better understand the mechanics of CLC proteins, we have characterized a novel bacterial homolog, CLC-b. CLC-b is 24% identical and 42% similar in sequence to CLC-ec1, but lacks several highly conserved amino acids near the chloride binding sites. Despite lacking these regions, we found that CLC-b does transport chloride ions. CLC-b contains an isoleucine at the position equivalent to the intracellular proton transfer glutamate. Since all known CLC ion channels contain a hydrophobic residue at this position whereas all antiporters contain a protonatable residue, we had hypothesized that CLC-b would be an ion channel. To our surprise, we found that CLC-b is a chloride/proton antiporter. Hence, a protonatable residue at the intracellular glutamate position is not necessary for proton transfer.

54 Sources of Brown Carbon: Aldehyde/Amine Reactions in the Aerosol Phase

Michelle Powelson

Faculty Advisor: David De Haan

Department of Chemistry and Biochemistry

The formation of light-absorbing 'brown carbon' in atmospheric aerosol has an important impact on climate. However, the processes and precursors responsible for brown carbon formation have not been identified. Several carbonyl compounds are present in clouds and have the potential to create brown products when reacted with ammonium sulfate or primary amines such as methylamine. The formation of light-absorbing products from these reactions is characterized as a function of temperature and cloud-relevant pH (from 3-6) using UV Visible spectroscopy. The formation of light-absorbing products in the methylamine-methylglyoxal reaction was faster at higher pH and higher temperature, consistent with NMR kinetics measurements. It was found that glycolaldehyde produces light-absorbing products at the fastest rate of any aldehyde tested,

and that primary amines produce more light-absorbing products than ammonium sulfate at equal concentrations. Our results suggest that glycolaldehyde is the most important source of atmospheric brown carbon of the four aldehydes studied.

55 Relationship between Naturally Varying Growth Rates, Muscle IGF 1 Expression, Cell Proliferation and Muscle Fiber Diameter in Juvenile *S. lalandi*

Mark Prator

Faculty Advisor: Sue Lowery

Department of Biology

Aquaculture is becoming an increasingly important enterprise to provide fish for the commercial market and the replenishment of wild fish populations. Muscle growth in California yellowtail (*Seriola lalandi*) is the primary determinant for body size, an essential factor for a commercially important species. Previous observations indicate that juvenile fish of the same spawning event and reared in similar environmental conditions will exhibit a range of body sizes. Here we attempt to answer why this is occurring and what causes these differences. I investigated three factors known to be involved with muscle growth. Initial results indicate individuals with faster growth rates exhibit higher expression of insulin-like growth factor 1 (IGF-1) in white muscle tissue. I also examined the expression of IGF-1 in the liver, muscle tissue cellularity including fiber size and number, and the activity of proliferative nuclei. These data will help to elucidate the processes influencing fish muscle growth.

56 Femme Fatales and the Gender Constructions in 'Sunset Boulevard'

Catherine Quirk

Faculty Advisor: David Sullivan

Department of Communication Studies

There have been various portrayals of a man-eating woman, who exudes power and sexiness, that have defined a cinematic genre of film. During the 1950s, dark films, or as defined by a French critic, film noirs, found their place in Hollywood history. It is because of these women, who have become known as "femme fatales" that many of these movies have become classics in the genre of film noir. Feminists, scholars, film critics, and movie lovers have all had their say on the emergence of the femme fatales and many have commented on the way these bombshell and fatal women affected the collective male and female psyche and society at large. One of the most famous leading ladies of any film noir can be found in the 1950s film 'Sunset Boulevard'. The character of Norma Desmond, played by Gloria Swanson, is iconic because of what she symbolizes for women, Hollywood, and a transforming society. The portrayals of Norma and the male characters significantly affected female and male viewers and their self-perception. By analyzing the character of Norma Desmond and her portrayal on the silver screen, I will be able to draw conclusions regarding the culturally created roles of men and women in this 1950s film and how it reflects the male fantasy and viewpoints on the woman's social and financial role in the home in a Post WWII society.

57 Scripps Mercy Trauma Internship

Emerald Raney, Victoria Park, Austin Apramian, Justin Bergh, Alexandra Bitsimis, Brenna Espelien, Heather Ford, Kevin Forey, Samantha Kodama, Erin McCabe

Faculty Advisor: Michael Ichiyama
Department of Psychological Sciences

The Scripps Mercy Trauma Internship provides undergraduate pre-medical students the opportunity to witness the doctor-patient relationship and its role in the treatment and prevention of trauma-related disorders. During this semester-long internship, students shadow and interact with attending surgeons, residents, and interns of the Trauma Center. In addition to being exposed to the clinical environment of trauma surgery, students are able to observe emergency surgery and bedside rounds at the site. The Trauma Center's success relies upon the cooperation between various medical personnel. From attending surgeons to nurses, radiology technicians, and clean-up staff, every team member plays a critical role. Through this internship, students are better able to understand the workings of the trauma service and the importance of communication among team members. The USD student interns are able to observe patients in their most vulnerable state and gain valuable knowledge of the importance of the doctor-patient relationship.

58 The Consequences of Exposure to Unrealistic Body Images

Heather Rasameetham, Elizabeth Redondo, Jonathan Sanchez, Courtney Watson

Faculty Advisor: Mary Brinson
Department of Communication Studies

Photo-shopping has become a normal staple in the advertising industry in recent years, and consequently – society has become misled as to what is normal or real anymore. This study will examine the effect that exposure to unrealistic body images featured in the media can have on perceptions and self-esteem of college students. It incorporates an experimental design where one group of students will view unrealistically thin models in advertisements, while another group will view the same advertisements but with photo-shopping disclaimers below them. Participants will complete a post-test regarding their perceptions of body image and their self-esteem. The goal of the study is to determine whether or not placing a photo-shop disclaimer in advertisements will help reduce the negative consequences of exposure to unrealistic body images.

59 Media Portrayals of Extreme Masculinity: Is Male Body Image and Self-Esteem being Influenced by the Media

Monique Rico, Taylor DeVries, Megan Eilers, Keaton Kovatch, Martin Harris

Faculty Advisor: Mary Brinson

Department of Communication Studies

In recent years, areas of communication research have focused on how unrealistic portrayals of women in the media affect women's body image and subsequently their self-esteem. In accordance with cultivation theory, which states that long-term media exposure influences one's perceptions of societal norms, researchers have found that women are in fact affected by the media in this way. Even more recently, researchers have begun to extend their examinations on the effects of media to males. Today's society has seen many changes in the media regarding male body image, with a particular increase in the portrayals of extreme masculine qualities. Utilizing a cross-sectional survey study of University of San Diego students, this study will attempt to examine the relationship between media exposure and male body image and self-esteem among college-aged males. The current study will delve into whether or not cultivation theory also holds true for male body image norms.

60 Synthesis, Characterization, and Reactivity of Nitrile Hydratase Analogues

Jessica Rodriguez

Faculty Advisor: Christopher Daley

Department of Chemistry and Biochemistry

Nitrile hydratase (NHase) are enzymes that convert nitriles to amides through hydration. They are of broad interest because of their use as industrial biocatalysts for kiloton/year amide production and their use in the bioremediation of nitrile-containing waste streams. The NHase active site consists of a low-spin metal ion (Fe(III) or Co(III)) that is coordinated to the enzyme through two amide nitrogens and three cysteine sulfurs, two of which have been post-translationally modified via oxidation. The coordination of the backbone amide N-atoms is uncommon in nature, as is the oxidation of the sulfur atoms, and the active site metal ion is at odds with common non-redox active enzymes. These unusual coordination features inevitably affect the NHase function. The successful preparation of functional models of NHase will allow for a better understanding of the structure-function relationship in NHase. Our progress on the synthesis of Co(III)- and Fe(III)-analogues will be presented.

61 The Voice of the Child

Lindsey Roth

Faculty Advisor: Monica Stuftt

Department of Theatre Arts and Performance Studies

Lindsey Roth is filming a documentary on the voice of the child in Ohio and California divorce cases. This documentary explores the role that a child's voice plays in family law and what function it should have in the future through interviews with families who experienced divorce, attorneys, counselors, and judicial officials. It is important to investigate this subject matter, because children are not litigants in a divorce and yet their lives are greatly impacted by it. Divorce affects who kids live with, where they live, their schooling, their financial situation, and their religious upbringing. It is the responsibility of the court to issue an order that is in the best interests of the child. The question this documentary seeks to answer is what role the child's voice should play in order for this to occur.

62 Environmental Sustainability and Immigration

Kevin Santamaria

Faculty Advisor: Gary Grey

Department of Political Science and International Relations

Working at the Trans-border Institute (TBI) has given me phenomenal exposure to what it is like to work in a successful non-profit and creditable institution. I have been working under the environmental sustainability division and immigration division. Projects I have been a part of are ensuring the proper collaboration between TBI, a municipality agency of Tijuana, and 4 walls international to ensure we implement a survey evaluation to the local community in Tijuana we are trying to provide affordable housing for. I have also been involved with data gathering of drug violence related deaths and working to establish a bi-national photography contest that corresponds to TBI's theme of trans-border communication. I often blog on the Trans-border blog as well to promote a balanced view of Mexico, that is often misconstrued as ominously dangerous by the media and the state department.

63 Daffy Desks (A Better Student Desk)

Josh Schroeder, Kyle Young, Cameron Clark

Faculty Advisor: Leonard Perry

Department of Engineering

Thousands of students utilize desks on USD's campus every day in the classrooms. The limited desktop space makes it uncomfortable and inconvenient to work effectively. Because of the limited space, students are hesitant to get out any supplies needed for the lecture. Furthermore, the plastic seats are uncomfortable and make distracting noises whenever students shift their weight. With these factors in mind, we can enhance the product design by implementing design for Six Sigma techniques. Some of the techniques we will use will be collecting the voice of the customer by conducting focus groups and distributing surveys, creating physical and functional specifications, and observing competitors to further our knowledge on existing products. The final product will include a desktop surface area that is significantly larger, offers more comfort, and has an extended product life cycle.

64 E-Z Up Vertical Storage

Colleen Sevier, Elissa Magracia, Carlos Barboza

Faculty Advisor: Ming Huang

Department of Engineering

Students at the University of San Diego utilize the "E-Z Up" tents for a variety of activities. There is very little storage underneath these tents other than the ground, and this project will address this need. There is clutter on the ground, items are being damaged and tripped over by users as a result of having no place to store them. Through "Voice of the Customer" research and innovative project design, the project team will create a product following the Six-Sigma methodology. The team will reduce the quantity of items currently being stored on the ground and increase usable space under the "E-Z Up" tent. The team will be applying tools and methods learned within the Product Design course.

65 The Mechanism of Oxygen Activation by Pea Seedling Amine Oxidase

Dayn Sommer, Eunah Choi, Alexandra Bitsimis, Courtney Chow

Faculty Advisor: Stephen Mills

Department of Chemistry and Biochemistry

Copper Amine Oxidases (CAOs) are a family of enzymes that catalyze the oxidation of primary amines to aldehydes and ammonia with reduction of O₂ to H₂O₂. These enzymes utilize two cofactors, topaquinone (TPQ) and a Cu(II) ion. Catalysis occurs in two half-reactions. Two mechanisms have been proposed for the second half-reaction. In one mechanism, Cu(II) is reduced to Cu(I) and O₂ binds to Cu(I) to begin the second half-reaction. In another mechanism, O₂ accepts an electron from TPQ with no reduction of Cu(II). To study the preferred mechanism for PSAO, Cu(II) was replaced with Co(II) and the kinetics were studied. Since Co(II) cannot be reduced to Co(I) in the protein, the first mechanism is blocked, yielding inactive protein if PSAO uses the first mechanism. If CoPSAO is active, then it probably uses the second mechanism. CoPSAO showed a 95% decrease in k_{cat}, showing preference for the first mechanism.

66 Exploring China's Environment

Chelsea Sosnowski

Faculty Advisor: Yi Sun

Department of History

During the summer of 2011 I spent a month in China researching the environment. I was able to work with many NGOs and non-profit organizations that helped me gain very valuable information. My main focus was regarding the waste and recycling issues in the city of Beijing, but I also had the opportunity to talk with companies who focused on the air pollution and water contamination issues. During my research, I learned that the NGO and non-profit organizations are the driving forces towards a more environmentally conscious China. I explored what these organizations are doing to try and push the government towards focusing more on the environment, along with how they are educating individuals about the environmental problems. While China has started to show some basic signs of progress towards a cleaner environment, there is a long way to go.

67 Development of an Improved Control System for a Heat Exchanger Experiment

Mackenzie Sparks

Faculty Advisor: Frank Jacobitz

Department of Engineering

The Mechanical Engineering Department has a heat exchanger experiment that is used to demonstrate the principles of heat transfer and fluid dynamics to upper division engineering students. The apparatus requires an updated control system that better utilizes its ability to create and distribute thermal energy. The benefits of such an improved control system are quicker start-up times and, more importantly, a better control of the independent variables involved in laboratory experiments. The updated control system therefore allows for better experimental data. This new control system consists of a maximum of two new electronic devices and the reprogramming of the current logic controllers installed in the heat exchanger. A comparison of the performance of the original and improved control systems is performed.

68 The Health Implications Associated with the Evolution from Quatrupedalism to Bipedalism

Katrina Tate

Faculty Advisor: Tori Randall

Department of Anthropology

My poster will be based on my Honors Senior Thesis which is through the Department of Anthropology. This poster will explore various health implications associated with the transition of humans from quatrupedalism to bipedalism. I will show how the transition to bipedalism was and still is accompanied by negative side effects such as back problems, hip issues, and hernias.

69 Analysis of the Impact of Trade Agreements on the Economic Development of Chile

Colleen Temple

Faculty Advisor: Stephen Conroy

School of Business Administration, Economics

This analysis of the impact of trade agreements on the economic development of Chile discusses the factors that contribute to the economic development of Chile and focuses on the relationship between free trade and economic growth. The paper analyzes the historical background and current account of Chile's economic development. Then, after a general discussion on the role of free trade agreements in economic development, this analysis explains the role of trade agreements in Chile through data collection and regression analysis. Quantitative data is assembled to collect cross sectional results on GDP growth as a function of the number of regional trade agreement partners controlling for other factors for a variety of nations. It is predicted there is a positive relationship between the number of countries with which Chile has regional trade agreements and its growth rate in GDP.

70 Hedonic Pricing and its Practical Application to Pricing Las Vegas Hotel Rooms

Nicholas Toma

Faculty Advisor: Stephen Conroy

School of Business Administration, Economics

My senior thesis investigates what contributes to the pricing of Las Vegas hotel rooms. In my research, I hope to find which variables or amenities contribute most, as well as answering some tangential questions such as: What is the Las Vegas strip "premium?" Is square footage directly related to price? As a hotel ages, does the average price of hotel rooms fall? I have collected my own data online, mock-booking various hotel rooms and creating a spreadsheet with hotel features. To isolate last-minute hotel room price fluctuations, I have collected my data looking a few months in advance. This topic is relevant because such a model would allow hotel managers to decide whether it would be worth investing in various amenities based on the expected earnings associated with each. It would also benefit vacationers by allowing them to evaluate whether a hotel room is appropriately priced based on its features.

71 Addicted to Aid: Breaking the Cycle of Aid Dependence in Africa Using the Principles of Social Entrepreneurship

Veronica Tracy

Faculty Advisor: Mike Williams

Department of Political Science and International Relations

Many scholars argue that Sub-Saharan African is irrefutably addicted to Western aid. The current aid-based development model has not only failed to achieve many of its development and democratization goals in the region, it has also unintentionally created a cycle of dependency among its beneficiaries, thus perpetuating the same ills the system seeks to remedy. The failure of this top-down system of aid has spurred the development of innovative and decentralized bottom-up solutions encompassed by the emerging field of social entrepreneurship. Through the use of comparative case studies, content analysis, and descriptive statistics, the research conducted in this project will examine if the underpinning principles of these social enterprise organizations offer a more effective and sustainable alternative to the current system of public and private aid. The goal of this research is to determine if a paradigm shift is necessary in the way that socioeconomic development is traditionally approached in Africa and the rest of the aid-dependent developing world.

72 The Fad of Fortune- Corporate Social Responsibility

Alexandra Tubbs

Faculty Advisor: Michael Pfau

Department of Political Science and International Relations

Corporate Social Responsibility is no longer just a catch phrase used in the realm of Fortune 500 companies, but is a growing reality and therefore must be defined. Political policies fiscally encourage companies to be “socially responsible”, but there has not only been a shift in policy but in consumer choices. Therefore the question is raised: What does it take for a company to be socially responsible, and where does the threshold lie? Corporate Social Responsibility is more than just implementing policies on the surface; it is emerging as a change in business practices and theories. This trend has now translated into holding businesses to higher standards, and holding them responsible for their actions. Companies that are truly enacting the changes to be socially responsible are still in the minority. With exploration of more stringent policies and a few case studies I plan to find a threshold for company socially responsible.

73 The Evolution of Unchecked Presidential Power at the Turn of the Century (1899-1917) What Congress Said and What They Actually Passed

Cynthia Villacis

Faculty Advisor: Casey Dominguez

Department of Political Science and International Relations

My research topic was motivated by a question common in much of the literature about Congress and the presidency, “how did Congress respond or contribute to presidential expansion?” The objective of this quantitative case study analysis is to not only document changes in the legislative behavior of Congress during this era of the nation, but to describe the fluctuations behind these changes. By analyzing the various independent variables (congressional partisanship, etc.), the study will describe the dependent variable, fluctuations in the implied and explicit powers of the president. This study includes a documentation of each specific instance the president was referred to as “commander-in-chief” in the Congressional Record and U.S. Statutes at Large. This will be used to demonstrate the how and the when, in other words, exactly what changes in this period. References are found by searching electronically for the words “commander” and “chief” in the digital library HeinOnline. By providing a comparative tool describing American political development, this research will indicate how the perceived view regarding the scope of presidential power affects the legislative behavior of Congress.

74 Banking and Political Environment

Marc Wallenberg

Faculty Advisor: Gary Gray

Department of Political Science and International Relations

I spent two months working at the Swedish bank, Skandinaviska Enskilda Banken. During my internship I got to learn about the various mechanics and functions of a bank in society. My duties varied during my internship. I was appointed the task of performing research consisting of possible future prospects for the bank’s Asset Management department. I devoted much time researching foreign banks and possible merger opportunities, if deemed as beneficial for the banks customers. I further learned about the legal implications of such mergers. I got to learn about how banks operate in society and the way banks are controlled by the Central bank when it comes to deciding interest rates, reserve ratios and other important markers for its operation. Banks are clearly heavily influenced by the Government. My internship gave me a chance to learn about how a bank manages to balance its own interests with the societies.

75 Magnetic Fields inside Superconducting Topologies

Tim Welsh

Faculty Advisor: Greg Severn

Department of Physics

In this experiment we tested a classic problem of Lenz’s law. If a magnet is dropped through a conducting tube its descent is slowed by resistive damping in the electron circulation currents. A common question posed to students inquires what would happen in the event that the tube was made superconducting. We performed the experiment and found that because superconductors exhibit no electrical resistance, a magnet will suspend itself indefinitely so long as the superconducting state of the tube is maintained.

76 An Analysis of Sports as a Means of International Soft Power

Tyler Wilson

Faculty Advisor: Michael Pfau

Department of Political Science and International Relations

Sports have increasingly been used as a means to promote a nation's political agenda in the world. More specifically, it has been a source of soft power which helps a nation gain international appeal and legitimacy in the international public eye. China has bred players such as basketball star Yao Ming and tennis star Li Na which have helped spread China's soft power in the world. Soccer is also a major soft power tool in the world, as the most popular team in the world, England's Manchester United, has about 200 fan clubs in 24 countries and signs players from all over the world. Successful hosting of sporting events, such as the 2008 Beijing Olympics in China, the 2010 Commonwealth Games in New Delhi, India, and the 2022 World Cup in Qatar display and will display to the world a country's advancement and ability to be an influence in world politics. Sports are rapidly becoming a main source of soft power for countries to promote their political agendas and legitimacy to the international community. Sports does not merely mirror the state, it is often an extension of it.

77 Latina Representation in California Cities

Cathy Wineinger

Faculty Advisor: Karen Shelby

Department of Political Science and International Relations

This McNair research project focuses on the issues of gender politics and two-tiered pluralism within the United States. Specifically, it examines the impact that city structures in California have on the political influence of Latinas in California. Two kinds of city governments exist in California: the strong-mayor system and the city-manager system. My research will determine whether or not two-tiered pluralism is more prevalent within one of these structures. Overall, it will conclude which kind of city, if either, better represents Latinas in the political realm.

78 The Misrepresentation of Females in Sports Illustrated: Swimsuit Edition

Morgan Woodrow

Faculty Advisor: David Sullivan

Department of Communication Studies

Females over time have been represented in male dominated sports magazines as hyper-sexualized objects to please the male eye. Through these repetitive images, it has created the ideal of what a female should look like. Therefore, when a female athlete does not match up to this ideal, they are not accepted into the gender category society as labeled as feminine. Unfortunately, female athletes resort to over-sexualizing themselves in order to fit into this gender category. This is both hurtful and harmful to females because of their attempt to gain respect as athletes, but reinforcing that athletes are only beautiful and accepted if they sexualize themselves. By objectifying females and female athletes through magazines such as Sports Illustrated: Swimsuit Edition, it reinforces the idea that women are simply objects, not worthy of being recognized for their athletic accomplishments. Ultimately, working against the females attempting to have equal recognition. Although the Swimsuit Edition is an extreme example, there is a common theme between most sports magazines. There is hope that one-day women will have equal support whether they are aggressive, sweaty, and passionate about their sport, or if they are dressed up with make-up representing their femininity.

79 Wise Gremlin: Algorithmic Stock Trader

David Yandell

Faculty Advisor: Simon Koo

Department of Computer Science

In 2009, the TABB Group estimated that annual aggregate profits of high-frequency arbitrage strategies exceeded \$21 billion. In light of this, Wise Gremlin was created as a high-frequency stock trading software package that focuses on the implementation of an effective statistical arbitrage algorithm. The software continuously gathers real-time price information, makes financial decisions, and updates visual graphics for any number of stocks. The strength of Wise Gremlin is a simple, yet powerful decision-making algorithm that takes advantage of predictable, temporary fluctuations in data rather than using news analysis or traditional long-term investment plans. Performance is measured by the return on investments (ROI) on a simulated portfolio using real, live data.

80 Salt-Tolerant Physiology of Larval Mosquitos

Andrew Zogby

Faculty Advisor: Marjorie Patrick

Department of Biology

Larvae of the black salt marsh mosquito, *Ochlerotatus taeniorhynchus*, have been uniquely tuned to harsh and variable environmental salinity through the evolution of a posterior rectal segment that acts as the primary site of sodium excretion. Since the summer of 2011 I have been actively involved in the characterization and description of the physiological mechanism behind this feat of sodium elimination, working with Dr. Patrick of USD's Biology Department. My work has helped to confirm the presence of a vacuolar type H⁺ ATPase providing energy for sodium elimination through the sodium-hydrogen exchanger NHE3 on the apical membrane of posterior rectal cells. Further, I have collected evidence suggesting the presence of NHE3 on the basal membrane of posterior rectal cells, and I have contributed to the sequencing of the gene coding for NHE3. In this presentation, I will display my findings and current direction in perspective of Dr. Patrick's overarching project.



1 Office of State Senator Juan Vargas 40th District

Stephanie Abizaid

Faculty Advisor: Noelle Norton

Department of Political Science and International Relations

Networking, learning and being exposed to real world situations were some of the goals I had in mind when I decided to apply for an internship position. After doing research on various offices, I finally found one that caught my attention, the office of State Senator Juan Vargas. Luckily, after a stressful interview I was given the opportunity to be an intern. What caught my attention was not only does Senator Juan Vargas come from a Mexican family and come from a border town, like me, but he represents the 40th district, which includes California's entire US-Mexico border. This position has given me the opportunity to work with an excellent team that brought unity to the work environment and taught me many things. Working at Senator Vargas's office taught me through an inside perspective, how a local state government senate office operates, deals with things on a daily basis, and the types of goals they hold for the long run.

2 Efficient E-waste Recycling

Aisha Alshuaib, Ghassan Abuzinadah, Carlos Barboza, Dan Ode

Faculty Advisor: Rick Olson

Department of Engineering

The main purpose of USD's E-waste recycling center is to accept donated electronics and recycle them by either selling them on eBay or selling them to a recycler. The staff who work at the facility now accept the donated items and process them in one of three ways. They may put the donated electronics on eBay for sale, recycle the full item, or disassemble the item and recycle its components. The main goal of this project is to make the sorting and processing operation more efficient. This will be done by creating a checklist with steps for different type of E-waste. We will also provide the facility with a new improved layout where the storage and workstations will be located logically in the facility plant.

3 The Library in the Age of Technology

Sarah Arnesen

Faculty Advisor: Can Bilsel

Department of Art, Architecture + Art History

My senior thesis project aims to develop a library for the future, more specifically regarding this new age of emerging technology. In order to understand the complex program of the library I studied numerous case studies through illustrating floor plans and sections. Once I developed and analyzed these "successful" libraries of the past, I began to create my own type for the future. My project focuses on the uplifting experience of being in such an architectural monument. My goal is to theoretically integrate my library into San Jose, as it is the technology center of Silicon Valley. My library would be placed within a park, Kelley Park, in order to provide a peaceful and elevating experience both inside and outside of the library.

4 A Study on How to Approach Data Mining Problems

Cameron Askew

Faculty Advisor: Eric Jiang

Department of Computer Science

Data mining is a new and growing practice of Computer Science which helps discover previously unknown patterns from large data sets using a combination of artificial intelligence, statistics and database management. Due to the wide variety of data mining problems, there are few standards defining how to approach a problem. This project considers how to appropriately construct a data mining solution for a specific problem. Previously proven algorithms including random forests, neural networks, multiple regressions, and gradient boosting will be tested to evaluate their effectiveness in different scenarios. More refined techniques may be tested for less common problems. As a result, we will have a better understanding of why different techniques are more appropriate for different problems.

5 The Impact of Leadership Style on Employee Motivation

Daniel Beeunas

Faculty Advisor: Veronica Galván

Department of Psychological Sciences

This research evaluates the impact of three different leadership styles (Transformational, Transactional, and Passive/Avoidant) on employee motivation using a hypothetical scenario which participants must read.

6 Identifying Myostatin (MSTN) Sequence and Expression Patterns in Yellowtail (*Seriola lalandi*) Using PCR

Alyssa Bernardi

Faculty Advisor: Sue Lowery

Department of Biology

Myostatin (MSTN) is a negative regulator of skeletal muscle growth in fish and other vertebrates and has been associated with affecting fish growth by limiting muscle masses and fiber diameter. Treatments or diets that result in a downregulation of myostatin expression should be effective in stimulating growth of California yellowtail (*Seriola lalandi*), an important aquaculture species. Primers were designed for degenerate polymerase chain reaction (PCR) based on the conserved MSTN sequence in bony fish. Yellowtail genomic DNA was used as a template and two fragments of the California yellowtail MSTN gene were amplified, cloned, and sequenced. Using information from these two smaller sequences, a larger portion of the MSTN gene was cloned using nondegenerate PCR. The yellowtail MSTN sequence will be used to design primers for qPCR in order to study the effects of exercise on expression of myostatin in juvenile fishes reared under elevated current velocity.

7 I Love a Clean San Diego

Madelyn Blake

Faculty Advisor: Gary Gray

Department of Political Science and International Relations

For my Creative Collaborations presentation, I will show a poster that describes my internship at an environmental non-profit organization – I Love A Clean San Diego. Although I was first hired as an Outreach Intern, I was later offered a position doing marketing as well. I plan to use my marketing skills to develop my poster, but would really like to showcase what the organization does for our community and the greater San Diego area. I plan to have one part that describes the mission of ILACSD, one section that describes some of our biggest cleanup events and another that showcases the work that I have done. I also plan to use many photos from our events to show what we do!

8 Emergency Vehicle Alert System

Jennifer Boles, Leah Fairhead, Brandon Kopinski, Scott Gump

Faculty Advisor: Ernest Kim

Department of Engineering

The Emergency Vehicle Alert System (EVAS) will become a device that sounds an alarm and flashes lights when an emergency vehicle approaches drivers from behind. It will be a cost-effective means of warning in the forward visual range before the sirens and lights of emergency vehicles are apparent. EVAS aims to clear traffic in a more efficient way, reduce the number of injuries in emergency vehicle related accidents, and decrease emergency vehicle response time.

9 The Copper-Catalyzed Diboration of Carbonyls and Selective Formation of Beta-hydroxyboronate Esters by a Diboration/Homologation Reaction Sequence

Peter Cannamela, Randall Clendenen, Weiye Guan

Faculty Advisor: Timothy Clark

Department of Chemistry and Biochemistry

The carbon–boron bond is a versatile group in organic synthesis due to the ability to convert it into new carbon–carbon, carbon–oxygen, carbon–nitrogen, and other carbon–heteroatom bonds. Since these reactions allow access to a number of common groups in pharmaceutical targets, natural products, and materials, new methods that incorporate boron into an organic molecule are valuable. The copper-catalyzed diboration of carbonyls is one of these reactions and will be presented in this poster. This reaction selectively installs a boron-containing group next to a hydroxyl substituent. Both aldehydes and ketones have been subjected to the reaction conditions to provide unique alpha-hydroxyboronate esters. We have also developed a homologation reaction utilizing these substrates, which inserts a “CH₂” group into the carbon–boron bond. This process has been advanced to allow diastereoselective formation of alpha- and beta-hydroxyboronate esters.

10 High Metal Concentrations in Magdalena Bay, Baja California: Is The Natural Environment a Likely Source?

Christian Capistrano

Faculty Advisor: Bethany O'Shea

Department of Marine Science and Environmental Studies

The pristine environment of Magdalena Bay, Baja California, has several anthropogenic point sources discharging waste into the bay. Previous studies have shown elevated levels of some metals in sea grasses and blue crabs living in the Bay. In the absence of any geologic data, it has been assumed these metals originate from anthropogenic sources, such as outputs from the fish cannery along the bay. However, the natural geology and the weathering of geomorphic units can make metals bioavailable and can be a likely source of contamination. This research thus investigates whether these metals originate from an anthropogenic or geogenic source. Preliminary data shows that compared to average concentrations in the crust Nickel, Cobalt, and Copper are elevated in natural rock units around the bay. These results may conclude that metal concentrations in marine biota are influenced by the natural geology instead of, or in addition to, the local anthropogenic point sources in the bay.

11 Investigating Communication Networks via Expander Graphs

Theresa Chadwick

Faculty Advisor: Lynn McGrath

Department of Mathematics

A graph G can be used to model of a communications network. The vertices of a graph can represent entities that communicate with each other and edges represent lines of direct communication. $H(G)$ (the expansion constant of the graph) is one way to measure how good the graph is a communication network, taking into account speed and cost. We investigate the expansion constant for 2-bicycle graphs.

12 Nathan Fletcher for Mayor

Rashmi Chugani

Faculty Advisor: Gary Gray

Department of Political Science and International Relations

I am going to be presenting a poster describing my experience in an ongoing mayoral campaign. I hope to present my goals as well as encourage my candidate's message.

13 Benthic Community Structure of Mangals in Bahia Madalena, Baja California Sur, Mexico

Nick Circosta

Faculty Advisor: Michel Boudrias

Department of Marine Science and Environmental Studies

Mangroves, one of the few true-flowering marine plants, have major impacts on coastal habitats, including benthic community structure of sediments around them. The objective of my research is to compare the sand-dwelling benthic communities of mangrove sites at various locations throughout Magdalena Bay, Baja California Sur, Mexico. Comparisons with the historical data collected at other beaches will provide contrasts between mangrove communities and adjacent sandy beaches. Six 50cc cores were taken at five sites ranging from heavily impacted by organic

loading, moderately impacted away from non-point source pollution, and pristine to allow quantification of meiofauna. Cores were sub-sampled, looking specifically at the meiofauna, such as copepods and nematodes. Additionally, sediments were analyzed for organic content through the LOI technique, grain size and elemental content through a laser particle sorter and CHNOS analyzer, respectively. Preliminary data indicates that the meiofauna community make up varies little between sites, while sediment characteristics do.

14 Chicano Park Mural Documentation

Daniela Conde, Victor Sanchez, Jasmine Mallen, Julian Duran, Debora Villegas, Sara Padilla, Michelle Padilla, Yasmine Mahallaty, Diana Aguiar, Alexa Sanchez

Faculty Advisor: Alberto Pulido

Department of Ethnic Studies

Our Chicano/Latino Studies class, consisting of 13 students, will be showcasing the information gathered from the murals of Chicano Park. Our work entails interacting in the Barrio Logan community and recording the unwritten history of the park, the lives of the muralists, and their art. Not only will our research display a visual presentation of the murals but there will also be insightful information that will shed light on the Chicano experience and culture. In our efforts to preserve the history of Chicano Park, we will also be assisting the Chicano Park Steering Committee in developing a clear and accessible pamphlet of the murals in the park. This pamphlet will be distributed by our class to the community on the 42nd Annual Chicano Park Day event held on April 21, 2012. Our hope is to continue the discussion of the struggles encountered by oppressed peoples and their inspirational resistance towards suppression, in order to form connections between USD and its surrounding communities. Please add the following students, they are also presenters: Janell Johnson Maria Ruvalcaba Mina Nhi Nguyen

15 Power Dynamics of the Gender Achievement Gap among Youth

Katherine Corey

Faculty Advisor: Lisa Nunn

Department of Sociology

Americans profess equality of opportunity as an essential tenet of our democratic system, yet girls are denied opportunities as early as kindergarten in the education system, setting them at a disadvantage for years, if not life. Standardized tests often reveal that male students score higher in math and sciences, while females score higher in reading, but why does this gender achievement gap occur and how does it affect learning outcomes? Through participant observation I analyzed the interactions of elementary school children amongst each other and with adults in an attempt to better understand the educational effects of gender socialization at a young age. My research examines how power dynamics play out in both the classroom and playground, and their implications for both realms.

16 Marijuana Use and Coping with Stress in Perfectionists

Kelly Correa

Faculty Advisor: Veronica Galvan
Department of Psychological Sciences

Perfectionism is linked to a variety of the mental health problems affecting college students. Two types of perfectionism have been identified in the literature: adaptive and maladaptive. Studies have shown that both types have high personal standards. However, maladaptive perfectionists feel as if they do not live up to their own standards. Rice and Van Arsdale (2010) found that maladaptive perfectionists have higher stress levels and are more likely to use alcohol to cope than adaptive perfectionists and non-perfectionists. The present study surveyed undergraduates on their stress levels, substance use, motives for using marijuana, and perfectionistic tendencies. The researchers hypothesize that maladaptive perfectionists will have higher stress levels and will be more likely to use marijuana to cope with their stress than adaptive perfectionists and non-perfectionists.

17 Criminal Minds - The Evolution of Detective Fiction

Trevor Crowell

Faculty Advisor: Leonora Simonovis
Department of Languages and Literatures

The detective fiction genre was born in the mid 1800s as a result of the national increase in crime and the public's subsequent fascination. I have chosen to use "Twenty rules for writing detective stories", by S.S. Van Dine, to more or less define the genre. Next I have compared the television show Criminal Minds to Van Dine's list and to early works by Edgar Allen Poe and Sir Arthur Conan Doyle. I propose that Criminal Minds is the modern evolution of the genre because it follows most of Van Dine's rules while maintaining the importance of logic found in early detective fiction. This television series brings the genre into the 21st century by reflecting the increased role of women in society and by incorporating appropriate use of technology.

18 Effects of Organic and Nutrient Loading on Growth and Coverage of *Ulva lactuca* and its Impacts on Benthic Communities in Bahia Magdalena, Baja California

Emily Cullen

Faculty Advisor: Michel Boudrias
Department of Marine Science and Environmental Studies

In Bahia Magdalena (Baja California Sur), an effluent pipe carrying organic waste from the CalMex Cannery discharges large volumes of dissolved and particulate matter along the shore. This effluent contains high concentrations of nitrate and phosphate promoting rapid growth by the macroalgae *Ulva lactuca*. At two beach sites closest to the outflow, no *Ulva* growth was observed, suggesting toxic levels of input or reduced light levels. At two sites further downstream (600 & 800 m south), elevated concentrations of dissolved nutrients were positively correlated to increased spatial coverage of *Ulva* (up to 100%) after less than one week. Comparisons of copepod/nematode ratios between bare sediment and sediment covered by thick *Ulva* mats indicate that the mats observably impact benthic meiofauna community structure. Rapid *Ulva* growth and short-term response of benthic community provide insights on the long-term productivity of the Bay in relation to prolonged pollution from the outflow pipe.

19 The Making of a Devil: The Demonization of Wolves in Medieval Literature

Kimberly Cunningham

Faculty Advisor: Stefan Vander Elst

Department of English

This paper concerns the origin of lupine demonization in medieval literature as related to Biblical, Germanic, and Greco-Roman texts. Although these texts neither moralized nor demonized the nature of the wolf, Medieval Christians re-appropriated the ideas of their predecessors in order to cast dispersion upon lupine nature. Despite a lack of biblical justification, Medieval Christians utilized the anthropocentric morality of Christianity in order to moralize lupine action and nature. Medieval Christians also often found the nature of the wolf hard to classify due to the paradox of the Roman Lupa, who possessed both a Germano-Roman capacity for destruction while simultaneously representing a nurturing mother. Finally, lupine association with pagan deities led Medieval Christians to revile the wolf as an animal antithetical to the very nature of Christianity, resulting in medieval literary depictions of the wolf as an avatar of vice and ultimately as a symbol of the Devil.

20 Production of Light Absorbing Compound tetrahydroxy-1,4-benzoquinone via Glyoxal and Sodium Dioxide

Eric Czer

Faculty Advisor: David De Haan

Department of Chemistry and Biochemistry

Some compounds in atmospheric water droplets prevent incoming visible light from entering the atmosphere due to their light absorbing capabilities. One such compound, tetrahydroxy-1,4-benzoquinone (THBQ), has a highly conjugated π -electron system that makes it appear dark red in solution and crystallize into a deep black. This molecule is of particular importance because it has been thought that injecting sulfur dioxide (SO_2) into the atmosphere would be one way to help cool the planet if other methods of stopping global warming fail. However, as previous studies have shown, glyoxal and SO_2 at neutral pH react to form THBQ. Here, we sought to use liquid chromatography and fluorescence detection to quantify the production of THBQ as a function of pH and concentration, as produced by the glyoxal + SO_2 reaction. THBQ was separated from the reactants using reversed-phase elution on a nitrile column.

21 Super Spots

Georgia David, Travis Weger, Lauren Lewis, Emily Winslow, Jack Smith

Faculty Advisor: Mary Brinson

Department of Communication Studies

Examines television advertisements through the retention rate of the viewer. Through quantitative methods, we research the rates of which individuals remember Super Bowl commercials over the period of four months. We survey members every month, going more in depth on what they remember, what caused them to remember, and did they seek out the commercial on their own. Using the theory of reasoned action, we pose if social norms have a role to play in retention rates among participants. The research question imposed that do television commercial advertisements that deviate from social norms cause higher level of recall from viewers.

22 Mexico Presidential Debates 2012

Denise Davila

Faculty Advisor: Noelle Norton

Department of Political Science and International Relations

On March 7th 2012, the Mexico Business Center at the San Diego Regional Chamber of Commerce is proud to present the Mexico Presidential Debates of 2012. This extremely important event will highlight each of Mexico's presidential candidate's political propositions regarding the war on drugs, immigration policy, border infrastructure, the economy and other major issues dividing the United States and Mexico. This will give many people in California and its border the opportunity to see which presidential candidate offers the best strategies to better US-Mexico relations. I feel honored to be given such an important undertaking on my first day of work. I look forward to working and getting a lot of public policy experience from this internship. Opportunities like these, in which I will be able to acquaint and network with important international and statewide political figures, are key to pursuing my long-term goals.

23 Long-term Interannual Variability in Benthic Meiofauna along a Pollution Gradient in Bahia Magdalena, Mexico

Alison Dressel

Faculty Advisor: Michel Boudrais

Department of Marine Science and Environmental Studies

This project examines long-term interannual variability of benthic meiofauna abundance, dominance, and diversity affected by organic pollution from a fish cannery in Bahia Magdalena, Baja California Sur, Mexico. Over the past decade, samples were collected annually at five locations ranging from heavily polluted to pristine. Six replicates were taken at each site in 50 cc cores and organisms were enumerated to lowest taxa. Results generally indicated a shift in abundance of copepods between polluted and contaminated sites. Sites with intermediate pollution contained the highest number of organisms, while the most impacted sites contained the lowest. These results are consistent with intermediate disturbance hypothesis, in which increased abundance and diversity coincide with increased nutrient input until conditions reach a threshold of anoxia, where they decline rapidly. Analysis of the long-term data set also highlighted episodic events, such as the 2009 hurricane, that impacted benthic meiofauna community and structure differently

24 Office of State Senator Juan Vargas

Carlos Duarte

Faculty Advisor: Gary Gray

Department of Political Science and International Relations

This presentation will cover my reasons for pursuing this particular internship at the office of State Senator Juan Vargas. The main focus of the presentation will be on my responsibilities in the office and out of the office. Additionally it will cover general information regarding the structure and function of state and local government. The final part of the presentation will discuss the benefits of the internship and opportunities made available as a result.

25 Communism, Fascism, Democracy: How American Catholics Chose Sides during the Spanish Civil War

Lisa Duffy

Faculty Advisor: Thomas Barton

Department of History

My research is centered upon the mixture of responses to the Spanish Civil War, which really pitted for the first time the three major political ideologies of the day. As the Catholic Church was an international organization, the position that the Spanish Church took in regard to the war had a major impact on how other countries viewed the war and affected their willingness to support or fight for one side or another. Articles and letters to the editor from prominent U.S. Catholic periodicals are used to determine the broad range of perspectives of Catholics in America. Pictures, Spanish propaganda posters and excerpts from the periodicals will be displayed on the poster in order to convey the realities of the war and its impact on the international community.

26 Digital Olympics

Kyle Earley, Jessica Tieszen, Katie Olsen, Jacquelyn Kimmel, Alex Ching

Faculty Advisor: Mary Brinson

Department of Communication Studies

This summer, London will host thousands of the world's best athletes who competitively congregate to put their skills up against each other in the 2012 Olympic Games. With the rapid outburst of technology and specifically the popularity of the smartphone and other forms of digital technology, media organizations have coined this event the "Digital Olympics." The term "Digital Olympics" refers to the abundance of new technology that will be used to cover the Games, as well as the various outlets that will be used to disseminate information. Utilizing principles of the Uses and Gratifications Theory, this study will analyze the 2012 "Digital Olympics." Specifically, we will investigate the desires and needs that college students would like to gratify via digital technology during the games. This study will further investigate people's satisfaction with their past Olympic experiences, and how digital technology could improve their experience in 2012.

27 Hospital Cosmetology

Luke Edwards

Faculty Advisor: Daniel Lopez-Perez

Department of Art, Architecture + Art History

The traditional hospital design mechanisms call for an outwardly-increasing structure that is limited in verticality. A large brick-like fortress is erected in its lot, and sometimes mimicking satellite buildings emerge as a result of insufficient services within the original spatial limitations. My thesis will prove that there is a way that creates functional variety and typological vertical repetition through a condensed shape, which then allows for the operational functions to take place in a way that renders the current "hospital-sprawling" design useless.

28 Aldehyde-Amine Reactions that Match the Fluorescent Properties of Atmospheric Brown Carbon

Brenna Espelien

Faculty Advisor: David De Haan

Department of Chemistry and Biochemistry

Recent work has shown that the 'brown carbon,' or HULIS (humic-like substance), extracted from atmospheric aerosol is highly fluorescent. However, the source of this fluorescent material is unknown. We used fluorescence spectroscopy to characterize the products of aldehyde – amine and aldehyde – ammonium sulfate reactions in order to assess their similarities to HULIS. The aldehydes and amines tested are commonly found in clouds and aerosol. The reactions of these compounds create brown-colored, highly fluorescent products. It was found that, in general, the products formed are more similar to atmospheric fulvic acids than humic acids in terms of fluorescence. The reactions of methylglyoxal and glycolaldehyde with the amines most rapidly formed products that exactly matched the peak excitation and emission wavelengths observed for atmospheric fulvic acids. The methylglyoxal reaction products had the most intense fluorescence. We suggest that these reactions are plausible sources of atmospheric HULIS.

29 Bullet Proof Binder

Richard Estrada, Ghassan Abuzinadah, Caitlin Lambert

Faculty Advisor: Ming Huang

Department of Engineering

Currently, three-ring binders are not performing optimally. They bend and tear easily, and do not maintain their structural integrity under the daily demands of the average student. The dimensions and structural design of binders are not ideal. As the width of the binder increases, its strength decreases, due to the increase in weight and capacity that the current design does not account for. Furthermore, to fulfill their purpose of organizing and containing papers, they require the use of other products and is not a self-contained product. The purpose of this project is to develop a design for a binder with increased durability and usability using the principles of Six sigma. The voice of the customer will be determined and used to compile a set of user requirements for the design. The technical requirements will also be determined and several designs will be developed. Once a design is chosen, a prototype will be constructed and evaluated.

30 Enhancing MySDMobile Experience

Christian Fetters, Tariq Abanumay, Aisha Alshuaib

Faculty Advisor: Leonard Perry

Department of Engineering

The University of San Diego currently has an app (MySDMobile) that can be downloaded from iTunes. The app includes functions that help students get their way around campus, however, ever since the app's launch, students noticed that the app lacks some features. For example students cannot customize their preferences and this shortcoming is visible in the calendar. The app currently lacks some of the functionality available on the MySanDiego webpage. The project objective is to improve the MySDMobile app using the Design for Six Sigma technique by applying the DMAIC methodology. We will be preforming a voice of the costumer by sending out surveys to better understand the students' needs and therefore translate them into requirements for the app. Improvement will be in the form of providing students with the necessary tools that will enhance and simplify their educational experience by easily finding desired information as well customizing the app.

31 Prolonged Cold Ischemic Times and Less Donor-Recipient Histocompatibility Accelerate Graft Vascular Disease

Shea Gallagher

Faculty Advisor: Marjorie Patrick

Department of Biology

Graft Vascular Disease (GVD) is currently the leading cause of late allograft failure in cardiac transplant recipients. The aim of this study was to assess the effects of cold ischemic preservation time (CIPT) and degree of donor-recipient histocompatibility on GVD using a rat heterotopic cardiac transplantation model. ACI-Lewis, Lewis-F344, and Lewis-Lewis donor-recipient rat strain combinations were subjected to variable durations of CIPT (0, 4, and 24 hours) prior to transplantation. Longer CIPT and less donor-recipient histocompatibility were associated with more advanced GVD in a rat heterotopic transplantation model, especially when there were multiple MHC mismatches as in ACI-Lewis allografts, but also occurred when there were differences in multiple non-MHC antigens as in the Lewis-F344 allografts. There was a lesser effect of longer cold ischemic time on GVD in the Lewis-Lewis syngeneic (isograft) group, suggesting that greater histocompatibility can mitigate the adverse effects of longer ischemic times.

32 Crisis in the Golden State: An Analysis of the IL Sheridan Prison Model as a Feasible Approach for CA Corrections

Eylee Garcia

Faculty Advisor: Erik Fritsvold
Department of Sociology

The California correctional system faces challenges of unprecedented size and scope. In 2011, the Supreme Court ruled that CA is in violation of the Eight Amendment's prohibition of cruel and unusual punishment due to overcrowding in its state prisons, which were almost 175% over design capacity. Furthermore, California's recidivism rate reveals that about 65% of released inmates return to prison with three years of release, despite the state's annual per-capita prisoner cost of \$45,000. As a result of these continuing trends, California seeks new approaches to reduce recidivism rates and overcrowding. One possible model is the Sheridan Correctional Center, a multi-faceted rehabilitation and reentry program, which has had positive results in reducing recidivism rates among program participants in the state of Illinois. This research explores whether this successful, evidence-based model employed by Illinois can serve similar functions in California corrections.

33 Straight But Not Narrow: Heterosexual Allies in the Gay Rights Movement

Annette Garcilazo

Faculty Advisor: Judith Liu
Department of Sociology

What is the role of heterosexual allies in the U.S. gay rights movement? The role of heterosexual allies in the gay rights movement is worth investigating to understand the importance of alliances in addressing issues of structural and social barriers to equality and justice. Becoming an ally to the gay community requires an understanding of power differentials based on sexual orientation because being an ally poses challenges based on the nature of power and privilege, such as accusations of patronization and entitlement. The gay rights movement is dedicated to reducing heterosexual power and privilege in the United States. By allowing allies to get involved and share their power and privilege with the gay community, power differentials based on sexual orientation will be reduced.

34 Growth and Shrinkage of Antarctic Krill, *Euphausia superba*

Emily Gardner

Faculty Advisor: Ronald Kaufmann
Department of Marine Science and Environmental Studies

Icebergs have been identified as hot spots for biological activity in the Southern Ocean, with elevated primary production. One species that occurs in large numbers near icebergs is the Antarctic Krill, *Euphausia superba*. Based on laboratory studies, starved *E. superba* are able to shrink after molting, a rare ability in crustaceans. This study examines whether *E. superba* are shrinking in the wild. To address this question, *E. superba* were collected between 2005 and 2009 during spring, summer, and winter, at five different distances from icebergs. The food supply for krill should be lower during the winter and at greater distances from the enhanced productivity associated with icebergs. Krill from various seasons and distances were examined for evidence of shrinkage. Initial results show that Antarctic Krill collected at distances with elevated concentrations of phytoplankton show evidence of reduced shrinkage compared to krill collected in areas with lower phytoplankton concentrations.

35 Parenting Styles and Heavy Drinking among Incoming College Freshmen

Tiana Hayden

Faculty Advisor: Michael Ichiyama

Department of Psychological Sciences

This study examined the effects of parenting styles on heavy drinking behavior among incoming university freshmen. Parenting styles examined were Authoritative (high control, high support), Authoritarian (high control, low support), Permissive (low control, high support), and Uninvolved (low control, low support) styles. 544 freshmen women and 319 men completed on-line alcohol use surveys during the summer and subsequent fall semester. A 2x4 (gender by parenting style group) ANOVA was computed at both data points. Results showed that across gender and data points, the Uninvolved parenting style was significantly associated with higher levels of heavy drinking, whereas the Authoritarian style was linked to the lowest levels of heavy drinking. For females, both Authoritarian and Authoritative parenting styles showed significantly lower levels of heavy drinking. For males, only the Authoritarian parenting style showed significant reductions in heavy drinking. Findings have potential implications for early prevention programming for incoming university freshmen.

36 Voices of Latinas in the Roman Catholic Church

Sunny Hernandez

Faculty Advisor: Evelyn Kirkley

Department of Theology and Religious Studies

There has been little research done on practicing Roman Catholic Latinas about how they perceive themselves. Through examining their lived experiences, one is able to better understand their identity and role as a Latina within the Roman Catholic Church. This will be done through one structured interview and seven qualitative informal semi-structured interviews of Latinas, between the ages of twenty-one and thirty-six, who serve in the church. Additionally, this research project will examine Latina identity, their experiences in the church, as well as cultural and social perceptions of themselves. This research found that Latina women have different opinions/ideals about their cultural and social location because of their various religiously affiliated life experiences.

37 Rule of Law in the Border Region: Interning at the Trans-Border Institute's Justice in Mexico Project

Dylan Heyden

Faculty Advisor: Gary Gray

Department of Political Science and International Relations

As an intern at the Trans-Border Institute's Justice in Mexico Project, all of my work is associated with rule of law in the border region. I consistently write in our blog to keep the public up to date with events happening on both sides of the border, and also translate Mexican news sources to provide a different perspective on various issues. Interns are also responsible for performing personnel duties at events hosted by the institute. Events seek to connect politicians, academics, legislators, and activists, whose work deals with the border region, to the University of San Diego, and the greater San Diego community. As an intern, I have had the opportunity to meet, speak and collaborate with prominent members of the trans-border community, and have developed a unique and in-depth understanding of U.S.-Mexico relations.

38 A Tale of Two Katharines

Christine Horsman

Faculty Advisor: Eric Pierson

Department of Communication Studies

A Tale of Two Katharines demonstrates that despite all the advances in women's rights, the role of women in films may actually be devolving women's place in society. In analyzing the films of Katharine Hepburn and Katherine Heigl, my thesis illustrates how far we have fallen in showing women as strong, contributing members of society. Through the analysis of films and other textual sources examining the role of women, it is shown that in fact society has regressed in its depiction of the working woman. By illuminating these findings, hopefully the characters in current movies may grow beyond the damaging stereotypes and the characters can be shown as strong members of the workforce. Due to the accessibility of film, these modern films can have damaging real life implications that need to be actively combated.

39 ChpT, CtrA, and Cyd2 Regulate the Switch between Swarm Cell and Cyst Cell Morphologies in *R. centenum*

Alma Fe Houghton, Jenny Smith

Faculty Advisor: Terry Bird

Department of Biology

Rhodospirillum centenum is a gram-negative purple photosynthetic α -proteobacteria that can adapt its morphology to different environments. On a solid surface, *R. centenum* lives as motile swarm cells or metabolically dormant cysts. We are studying signal transduction factors that control transition between these two cell types. Results showed that mutation of the *ctrA*, *chpT*, and *cyd2* genes did not affect growth rates. However, these mutants showed defects in motility or encystment; *cyd2* deletion mutants cannot encyst while *chpT* and *ctrA* deletion mutants have increased encystment and reduced motility. Furthermore, overexpression of *chpT* causes wild type to greatly produce more cysts. Collectively our data suggest that ChpT, CtrA and Cyd2 regulate whether cells differentiate into motile swarmer cells or dormant cysts.

40 Gender in Politics

Avery Johnson, Alli Swift, Lauren Bushman, Nicole Balgeminio

Faculty Advisor: Mary Brinson

Department of Communication Studies

Historically, media representations of males and females within the political field have been quite varied. Generally, their portrayals have reflected long established societal gender stereotypes. This study examines whether or not if the male and female candidates in the 2008 primary and general presidential elections were portrayed differently by the news media. We will conduct a content analysis in order to examine the ways in which the candidates were portrayed based on gender stereotypes, specifically focusing on Obama, Biden, McCain, Palin, and Clinton. The content analysis will include examining news media clips as well as newspaper articles surrounding the 2008 elections and their respective portrayals of the various candidates running in both the primary and general election. In our content analysis, we will be studying the ways in which each candidate was portrayed and if they fell into categories of gender stereotypes.

41 Parasocial Relationships Between Fans and Athletes: Do They Affect Empathy and Forgiveness after a Scandal?

Kristin Jones, Hannah Ward, Stephanie Jegat, Ashlee Tsukushi, Lawrence Hughes

Faculty Advisor: Mary Brinson

Department of Communication Studies

A parasocial relationship refers to a one-sided relationship, usually between a famous person and his/her fan. The parasocial relationships between professional athletes and their fans are influenced daily through mass and social media - such as television interviews, facebook, and twitter. These relationships help build stronger loyalty from fans, and this study attempts to uncover whether or not parasocial relationships with fans will help a celebrity recover from a scandal. Specifically, this study examines whether a parasocial relationship between a fan and athlete affects the empathy and forgiveness levels exhibited toward the athlete after a scandal. The study will incorporate a cross-sectional survey design among college-age men and women at the University of San Diego.

42 Leading by Example: Examining the Effect of the International Criminal Tribunal for the Former Yugoslavia on the Rule of Law in Bosnia and Herzegovia

Kelli Killion

Faculty Advisor: Michael Pfau

Department of Political Science and International Relations

With my research, I will seek to answer the question: Does an international organization affect national behavior? Kathryn Sikkink's theory of "agentic" construvism will serve as my overarching theory that an international organization can affect the actions of actors within a nation. I am looking at different aspects that contribute to a rule of law like the number and type of criminal arrests within Bosnia and Herzegovina during the ICTY, judicial infrastructure and institutions built, public opinion towards law, and also whether the elites during the war are still in power. This project is recent and relevant in that the ICTY's Completion Strategy is in effect. In international relations, there is a debate about whether ad hoc tribunals are effective institutions in aiding with post-conflict reconciliation.

43 The Impact of Parental Divorce on the Attitudes and Preferences of Young Adults

Katherine Kupfer

Faculty Advisor: Anne Koenig

Department of Psychological Sciences

This study attempts to determine the impact of being raised by a divorced parent on the attitudes and preferences of young adults. Attitudes and expectations toward marriage, divorce, and cohabitation as well as expectations for their future gender roles and mate preferences will be evaluated. The strength of these attitudes and expectations will also be assessed in order to address whether the actual attitudes or simply their strength differs between children of divorced parents versus children raised with both parents living at home. It is hypothesized that young adults raised by divorced parents will have more positive attitudes toward divorce, as shown by past research, but may still value marriage. Given that young adults impacted by parental divorce may think more about issues surrounding marriage, they are also expected to have stronger opinions about mate preferences and gender roles within relationships, regardless of the content of their attitudes.

44 Green Composites for Marine Applications

Caitlin Lambert

Faculty Advisor: Truc Ngo

Department of Engineering

Currently, composite materials developed for marine applications are prepared using resins that do not degrade once they are discarded. While the mechanical properties of these composites are highly effective, they are unrecyclable and are not biodegradable. The objective of the project is to develop a biodegradable composite with comparable mechanical properties. The experimental and traditional composites are prepared using the hand lay-up method and then composted in a controlled experiment to determine the rate of biodegradation. The samples are prepared with traditional resins and fabrics, like epoxy, polyester, and fiberglass, and also with experimental resins and fabrics, such as linseed oil-based resin, hemp, bamboo, and cotton. A secondary reinforcing phase (linseed oil or pine oil) is also added to the composite matrix to improve the material's durability. Thickness uniformity and mechanical properties of the developed materials, such as surface hardness and tensile strength, are characterized and compared to the traditional ones.

45 Cultivation of Body Images

Madison Levine, Chris Gray, Regina Bernal, Marina Nunokawa

Faculty Advisor: Mary Brinson

Department of Communication Studies

Television, movies, and magazines constantly bombard the world with unrealistic norms of what the human body should look like. This study aims to support the idea that exposure to the media over a period of time causes college students to internalize negative feelings about their own body. Using the lens of cultivation theory, researchers of this study predict that heavy media users will have a more distorted view of body image than light media users. In order to support these predictions, the study examines the impact of media use on college students' perceptions of body image. By incorporating an online cross-sectional survey design, researchers examine the relationship between heavy media users' perceptions of an ideal body compared to light media users.

46 Molding Public Opinion: The Role of the Media in China

Michael Lu

Faculty Advisor: Yi Sun

Department of History

The research project, conducted during a three-week period in Beijing, China, examines the role of the media in influencing the Chinese perception of the United States and Sino-American relations. The research process involved not only dissecting newspaper articles centered on the Chinese opinion of US.-China relations but also interviewing a number of prominent journalists and professors of journalism, including those working on Worker's Daily, China Business Times, the only privately-funded newspaper in China, and the Dean of International Relations at Beijing University. My research findings have debunked several prior convictions I had conceived about journalism in China, especially those pertaining to the content and the tight control the government over both traditional and the emerging social media outlets. The research, based on primary sources, has led me to conclude that the media landscape in China is ever-changing and becoming more conscious about social issues than ever before and is not nearly as orchestrated by the government as many believe.

47 Improve and Standardize Work Flow through L&T Machine Shop

Elissa Magracia, Caitlin Lambert, Michael LaBlanc, De Lin

Faculty Advisor: Rick Olson
Department of Engineering

L&T Precision is a machining and sheet metal fabrication company that works with contracts in the aerospace, space, defense, and commercial industries. Their current machine shop operations suffer from a lack of standardization within their material handling and job set-up processes. The objective of this project is to create a set of standard operating procedures that will improve the work flow and reduce set-up times for jobs within the machining department. This will reduce the work in progress (WIP) on the floor and decrease the total amount of material handling for each operation.

48 The Future of Nuclear Energy in Germany

Kaela McCabe

Faculty Advisor: Randy Willoughby
Department of Political Science and International Relations

In the wake of Fukushima, the future of nuclear power has been altered immensely. Germany has announced it will phase out its nuclear power plants by 2022, making it the biggest industrial power to make such a move. My research looks at the next steps in this new path including the task of phasing out the existing plants and tapping into alternative energy resources. Germany has been a proponent of renewable energy sources, and this move away from nuclear power will allow that sector to grow immensely. I will also be looking at what influences within German politics resulted in a phasing out of nuclear power and how this could be detrimental to the industrial base of the economy.

49 Shrinking Misconceptions: A Cross-Cultural Investigation and Demystification of the Shuar Shrunken Head (Tsantsa) Tradition/Mitigation of Stereotype

Cheyenne McCarthy

Faculty Advisor: Alana Cordy-Collins
Department of Anthropology

The Shuar, a tribal culture located in the Upper Amazon, are infamously known for shrinking heads of their dead enemies. This tradition is often interpreted with bias and negativity. Tsantsas are sacred talismans that Shuar men make to protect themselves from the vengeful spirits of their enemies, trapped within. Tsantsas have deep meaning: they maintain the delicate balance between physical and spirit worlds, reinforce Shuar religious ideology, and bestow power upon their makers. The shrinking process involves methodical preparation and is followed by feasting and celebration. This project aims to foster awareness and understanding of the Shuar by presenting an unbiased glimpse into their unique practice of making tsantsas. I seek to convey the history and significance of tsantsas, and the process by which they are produced, in order to educate people and dispel misconceptions. As an extension, by exemplifying this society, I hope to promote global cultural awareness.

50 Photo-Shop and its Effect on Self Esteem

Elizabeth McDonough, Katrina Fallinger, Victoria Pappas, Paige Stables, Pippa Grint

Faculty Advisor: Mary Brinson

Department of Communication Studies

Through the advancements of technology, photo images can be manipulated to portray many falsities. Magazines consistently use photo-shop to display unrealistic images of the female body, including ultra skinny bodies with perfectly proportional curves and flawless complexions. Social comparison theory states that people look to the images portrayed by others to be obtainable and realistic, and subsequently, make comparisons among themselves, others and the idealized images. By seeing distorted images of artificial body types, one makes comparisons giving them unrealistic expectations for their own body. This study will explore how putting a photo shop disclaimer on distorted body images will be less likely to decrease participants self esteem after seeing "magazine perfect" bodies. We will incorporate an experimental design to test subjects self esteem of their bodies after seeing photo-shopped models, and after seeing photo-shopped models with a disclaimer saying that the image has been altered.

51 Atmospheric Brown Carbon Formation from Glycolaldehyde

Katherine Millage

Faculty Advisor: David De Haan

Department of Chemistry and Biochemistry

Humic-like substances (HULIS), or 'brown carbon', are organic light absorbing compounds often found in atmospheric aerosol. The exact reactions responsible for the formation of brown carbon are unknown, however many carbonyl compounds create brown products when mixed with ammonium sulfate or primary amines. NMR spectroscopy and ES-MS were used in this experiment to identify the products formed from reactions of glycolaldehyde with amine compounds. NMR kinetic measurements were also used to measure the rates of product formation as a function of pH.

52 U.S. Mission to International Organizations in Vienna, Austria

Elizabeth Mills

Faculty Advisor: Gary Gray

Department of Political Science and International Relations

The United States has embassies and missions in nearly every country on the globe. While some locations hold greater purposes than others, all are responsible for instilling the United States' foreign policy abroad while building international friendships. During Summer 2011, I had a first-hand experience of just this while interning for the U.S. Mission to International Organizations in Vienna, Austria. The mission is one of three U.S. offices in Vienna, representing the U.S. at the United Nations' Vienna office (which is home to the IAEA, UN Office on Drug and Crime, as well as the UN Industrial Development Organization). The internship gave me the opportunity to experience multi-lateral diplomacy first hand, as well as gave me a better understanding of how the U.S. operates abroad. I learned not only how much work goes into a single day at the mission, but also how difficult communication Washington, D.C.'s agenda can be.

53 The Office: A Look at the Structure Change in the Genre of Sitcom

Annalisa Minetto

Faculty Advisor: David Sullivan

Department of Communication Studies

The paper outlines the general formula and framework behind the television genre of the situation comedy. In using genre criticism it will then take a deeper look into the evolution of not only the sitcom over the years, but how it has adhered and changed with the modern times of this particular century. A great example of this transformation is NBC's hit television show, *The Office*. This particular sitcom has been adapted from its original British version to fit in with Americans' sense humor as well as popular culture and the society as a whole. This paper will explain the various ways the show was able to do this through making the genre of the sitcom something of its own, an original.

54 Connecting Disconnections

Katherine Moran

Faculty Advisor: Can Bilsel

Department of Art, Architecture + Art History

As a part of my senior thesis, I am researching and analyzing Carmel Valley, a suburban development in San Diego County. This suburban neighborhood is a typical design of the past twenty years. Privacy is a result of the transportation inconveniences. For my thesis I am constructing a system of bridges that will reconnect this hilltop suburb with its surroundings, while also creating connections within itself. I will produce a number of sketches, diagrams, drawings, digital representations, and models depicting my design.

55 Perversion of Preservation

Devon Morris

Faculty Advisor: Daniel Lopez-Perez

Department of Art, Architecture + Art History

An analysis of UNESCO's World Heritage sites with their relationship between tourism, history, and the urban fabric of the city.

56 Cultural Differences in the Parenting of Young Children: An Observational Study of Low-Income Mexican-Americans and European Americans

Meghan Naaf

Faculty Advisor: Kristen McCabe

Department of Psychological Sciences

Few studies have compared Mexican American (MA) and European American (EA) parenting behaviors. While a number of studies suggest that MA parents subscribe to the authoritarian parenting style, characterized by low warmth and high demandingness, the majority of these studies are self report or lack a comparison group of EAs. The current study addresses this gap in the available research by comparing an observational measure of parenting collected from a sample of 58 MA and 69 EA families. Results indicate that MA parents use less praise, more direct commands and more criticisms with their young children, consistent with the authoritarian parenting style. In contrast, EAs used more praise and indirect commands.

These dissimilarities in parenting may lead to differing responses to the interventions used in Behavioral Parent Training (BPT) interventions, and suggest that BPT programs may need to be modified to accommodate differing parenting styles.

57 Zoo Inspector for iPad

Michael Nichols

Faculty Advisor: Simon Koo

Department of Computer Science

This project is a collaborative effort on behalf of the San Diego Zoo and the University of San Diego to develop an iPad app to help exceed the national requirements for animal habitats and enclosures. The objective is to provide a simple and efficient way to fill out and submit inspection forms to the proper administrators. This will minimize any additional administrative effort that would normally be involved in a paper based system. The app also allows for the ability to easily append information to a form, such as images, specific location information, and additional free form notes. The app has been designed to integrate into the current work flow. It is suggested that the San Diego Zoo invest in their mobile strategy, such as wireless infrastructure, security, and content management, in order to realize the full potential of the system.

58 A Clustering Based Approach to Network Intrusion Detection

Nicholas Nobles, Ryan Yandel

Faculty Advisor: Eric Jiang

Department of Computer Science

With the rapid growth of online connectivity, sophisticated network intrusion detection techniques are absolutely crucial to maintaining privacy and security. Network connections have data associated with them that can be used to model the legitimate and intrusive behaviors. In this project, we apply clustering techniques to detect intrusive network events that deviate sufficiently from the expected legitimate behavior. Presumably, the network data that reflect legitimate connections share some common attributes which also applies to the data with intrusions. Thus, clustering can produce clusters or groups of data instances that contain either mostly valid connections or mostly intrusive connections. Our clustering based intrusion detection approach builds a boundary, based on a given set of network connection data, between legitimate and intrusive activities, and can be used to monitor and analyze new network data and determine the legitimacy of the associated connections.

59 Modeling the Propensity to Default on Micro-Loans in Mali, Africa

Julia Norgaard

Faculty Advisor: Stephen Conroy

School of Business Administration, Economics

Microfinance is focused on sustainable poverty alleviation by providing the poor with financial services. By providing the poor with a simple banking structure, they are able to get small loans to start their own businesses. For this research, complete data set of a microfinance institution in Mali, Africa's loan portfolios was used for analysis. Using an ordinary least squares regression, the impact of a variety of different factors surrounding individual loans was calculated. The purpose of this research is to determine which factors contribute the most towards high loan repayment rates. It was hypothesized that numerous personal and social factors pertaining to the borrowers themselves would have a substantial impact on the outcome

of loan repayment percentage. However, through the regression, it was determined that the numeric stipulations of each individual loan had a much greater impact on total loan repayment percentage for this specific microfinance institution in Mali, Africa.

60 Valle de Las Palmas

Kyle Ober

Faculty Advisor: Can Bilsel

Department of Art, Architecture + Art History

Human migration towards the city has reached an unprecedented scale. 50% of the world's population is now contained within cities. The challenge to facilitate and sustain this urban sprawl has become as pertinent as ever. Tijuana is a city experiencing this exponential growth. Within the next 20 years, the population will double, creating an immense demand for land area and infrastructure. The Mexican government, in collaboration with public and private corporate entities, has formulated plans responding to this trend. Their policy for low income housing development, the most basic and essential need for new inhabitants, however has not met expectations. What better models can be produced to create new systems of housing that are both cost efficient and dignifying?

61 Semester Project for Product Development & Design Using Six Sigma: Improve the Functionality of an Existing Headphone Storage Device

Paul Price, Mackenzie Sparks, Michael LaBlanc

Faculty Advisor: Leonard Perry

Department of Engineering

Since the creation of the mobile audio player, the transport and storage of headphones has been an ongoing problem. Headphones without a storage device become tangled and often break. Typical storage devices are large, expensive, and/or aesthetically unpleasing. Owners of headphones either have to regularly replace broken headphones or deal with the inconvenience of current storage alternatives. The effects of these issues are pertinent on USD's campus, where students often do not treat possessions with care. Our goal is to design a product that increases the usability and durability of a pair of headphones through the use of a smaller, cheaper, and more attractive storage device.

62 Multi-Family: The New American Dream or Short-Term Trend

Frank Rich

Faculty Advisor: John Demas

School of Business Administration, Real Estate

The purpose of my project is to research and analyze the recent trend towards investments in the multi-housing sector of the real estate market, and why that sector has been fairing so well compared to others. My research will cover the background and workings of the multi-housing sector and the amount of growth it has undertaken since the "Great Recession". My findings will hopefully help identify whether or not this trend will have a lasting effect on how the average American family views home ownership versus renting or provide input on the viability of this trend over the next few years.

63 Iridium-Catalyzed C–H Borylation of Benzylic Amines

Marissa Ringgold, Jessica Capaldi

Faculty Advisor: Timothy Clark

Department of Chemistry and Biochemistry

The carbon-boron bond is versatile in organic synthesis and allows complex organic substrates to be accessed for a variety of different purposes in pharmaceutical and industrial chemistry. This project aims to develop the iridium-catalyzed C–H borylation of benzylic amines, which replaces a C-H bond with a C-B bond. The C-H bond adjacent to the amine is typically not the most reactive site, but our catalyst system favors reaction at this C-H bond by using the amine to direct the catalyst to that specific hydrogen. Both thermal and microwave reaction conditions can be used to mediate the reaction, providing minor differences in conversion and selectivity, but microwave radiation significantly lowers the reaction time without significant loss of yield or selectivity. The focus of this poster will be on the development of these reaction conditions and on the role of the amine in selectively directing the reaction adjacent to the amine.

64 Washington, D.C. Congressional Internship

Sabrina Rodriguez

Faculty Advisor: Gary Gray

Department of Political Science and International Relations

This past summer I interned in Washington, D.C. in Representative Sam Graves' office of the 6th District of Missouri. I worked as an office intern which consisted of tedious work such as sorting mail, answering constituent phone calls, responding to constituent mail, guiding Capitol tours, and running errands for our office staffers. I quickly received more responsibility in which I arranged and planned trips to D.C. and assisted further in constituent services. I helped make appointments and agendas for our staffers as well as Representative Graves. I gained a lot of legislative experience as I attended legislative briefings for our legislative assistants and helped assist them in drafting bills. I researched different pieces of legislation using sources such as the Congressional library in order to respond to constituent mail. I also received the opportunity to regularly explore the Capitol and other locations in D.C. to greater my experience.

65 China's Growing Middle Class and its Negative Effect on the Shark Population

Matthew Rogers

Faculty Advisor: Andrew Narwold

School of Business Administration, Economics

This project will examine economic growth variables such as GDP growth, GDP per capita growth, unemployment, growth of urban areas, etc. and see how the growth in each of the sectors leads to a greater number of sharks being harvested for their fins, thus killing the shark. The result I expect to see is an increase in any of the economic factors will result in a greater number of sharks being killed. I also expect to see a growth in GDP per capita has the greatest single effect of the discrimination of the shark population.

66 Eva Peron: Creating the Myth and her Proto-Feminist Role

Jose Rosales-Chavez

Faculty Advisor: Alejandro Meter

Department of Languages and Literatures

This project analyses the significant influence Eva Peron, or Evita, had in the creation of a feminine identity among women in Argentina, and how her actions opened the road for women's participation in the political and social discourse of the nation. Although Eva portrayed herself as submissive to her husband and publicly supported the "angel in the house" model, her open participation in the social and political spheres suggests that she claimed to adopt such model as a strategic move that diminished opposition from the male dominated society. Once in the public sphere, Eva became actively involved in social and political works; her actions made women suffrage a reality. Tragically, Evita died of cancer at a young age, but her influence on the Argentinean society would be indelible. Soon after her death, the myth of Evita, the mother of the nation and the sister of Argentinean women was born.

67 Summerbridge San Diego Internship

Emily Rote

Faculty Advisor: Gary Grey

Department of Political Science and International Relations

This past summer I had the privilege of working as a teacher at Summerbridge San Diego, a tuition-free summer school that works to bridge the achievement gap and accelerate students to succeed academically. My role was to support the students academically, socially, and emotionally in order to prepare them for the next grade level. During my experience at Summerbridge, I witnessed educational inequality firsthand, solidifying my passion for educating and working with low-income students. This internship highlighted the social injustices within the American educational system, these injustices outraged and saddened me, but simultaneously inspired me to make a difference. My experience interning at Summerbridge made me thankful for the educational opportunities I have been afforded, and instilled in me a desire to give back. Through this experience I learned so much and I realized that I could no longer be a spectator in the fight against these injustices.

68 The X Project

Danielle Sather

Faculty Advisor: Monica Stufft

Department of Theatre Arts and Performance Studies

My project examines theatre based prison outreach programs that offer inmates tools to understand one's feelings, the opportunity to be part of an ensemble as well as the ability to view one's self as having the capacity to change one's life for the better. In particular, I look closely at The Medea Project: Theatre for Incarcerated Women, Girl Time and Act V. Each program varies in significant ways. For instance, Medea Project founder Rhodessa Jones teaches the women about a myth or particular story; the participants then use that material to generate short stories, songs, and poems that serve as the foundation of a full-length play performed in the community. Girl Time projects are focused on playwriting while Act V emphasizes character development. My project evaluates the various methods in order to identify the best practices for theatre based prison outreach programs.

69 Storm Water Runoff

Anna Schonleber

Faculty Advisor: Beth O'Shea

Department of Marine Science and Environmental Studies

Storm water is defined as "storm water runoff, snow melt runoff, and surface runoff and drainage" by the National Pollutant Discharge Elimination System (NPDES). In other words, storm water can transport metals and other contaminants to coastal waters. In San Diego, studies done previously suggest that high concentrations of dissolved zinc and copper were discharging into San Diego bay. This study investigates those metals along with lead along a natural pathway, soil drainage pathway along Mt. Soledad, as well as a urban pathway along the streets of La Jolla. These soil samples were taken from road gutters, cement drains, and sediment drainage channels. These samples were analyzed for bioavailable metals to indicate potential metal release from soil particles found along two storm water paths. During two storm events, rainwater was obtained from the same locations and analyzed for metals in the dissolved phase. This analysis of both the sediment and the rainwater encountered in the storm water pathway to the coastal environment adjacent to La Jolla and Mt Soledad provides preliminary information on both natural and urban metal mobility with relationship to storm events. This paper will then explore various treatment options and will suggest which treatment option will be best for the residence of La Jolla if metal levels exceed the ambient levels of these metttles.

70 NMR Rate Measurements of Glyoxal and Methylglyoxal Reacting with Amine and Ammonium Sulfate

Nazin Sedehi

Faculty Advisor: David De Haan

Department of Chemistry and Biochemistry

The reactions of glyoxal and methylglyoxal with ammonium salts and amines have been proposed as significant sources of atmospheric organic aerosol. Using these chemicals involved with aerosol production and sequential ¹H-NMR scans, reaction rates were analyzed as a function of pH and temperature. Glyoxal and methylglyoxal were combined with methylamine, glycine, arginine, or ammonium sulfate and an internal standard, acetonitrile, along with deuterated acetic acid for pH control. Initial reaction rates were extracted from the data and used to calculate rate constants and activation energies. All reactions increased in rate as temperature and pH increased, and methylglyoxal reactions were observed to be significantly faster than corresponding glyoxal reactions.

71 Case Study: San Francisco 49ers' Santa Clara Stadium Proposal

Paul Slack

Faculty Advisor: Daniel Bruton
School of Business Administration

My research question mainly focuses on the process and details of the San Francisco 49ers' proposal to build a brand-new stadium in Santa Clara. Being a complicated process that involves communication between the team, the city and its people, the NFL, and all the other corporations involved, I will provide great detail on what kind of cooperation it takes to build a new stadium. Also, I will try to show the economic and social implications of building a new stadium and bringing the 49ers' home from San Francisco to Santa Clara. The main method used to collect data and information will be online research focused on news articles, logistical publications, and city records that go back to 2006, which is when discussion of a stadium in Santa Clara first began. I will also conduct personal interviews with 49er fans and non-49er fans that live in the Bay Area to see how the new stadium will affect them, if at all.

72 Best Teaching Practices in Elementary Mathematics

Danielle Smith

Faculty Advisor: Katherine Sciorba
Department of English

I am presenting my thesis for the Honors Senior Seminar Course, and my research focuses on the best practice teaching strategies and techniques for teaching mathematics at the elementary level. I had the opportunity to test these theories in a second grade classroom, and I applied the teaching strategies to a set of lessons on multiplication. The class had little prior knowledge of multiplication so all of the material that they learned was new information. Through the use of differentiated instruction, vocabulary enrichment, manipulatives, and partner talk, I was able to meet the students' needs. I collected data to represent how the students responded to the teaching practices, and I analyzed my findings to draw greater conclusions on the most effective teaching practices in elementary mathematics.

73 Quantification of Pollution in Magdalena Bay by Analysis of Tissue-Specific Heavy Metal Bioaccumulation of the Blue Crab (*Callinectes bellicosus*)

Shane Smith

Faculty Advisor: Michel Boudrias
Department of Marine Science and Environmental Studies

Magdalena Bay is host to the town of Puerto San Carlos and is located on the west coast of Baja California Sur, Mexico. Puerto San Carlos is host to a fish cannery, thermoelectric plant, and large-vessel port. The cannery and power plant both emit wastes and the high ship traffic only adds to the contamination of the bay with organic pollutants and heavy metals such as Manganese, Cadmium, and Lead. The accumulation of pollutants in the marine organisms of the bay is a potential danger to the people of Puerto San Carlos because of their consumption of organisms including clams, crabs, and scallops. We will present our findings of the amount of heavy metal accumulation in Magdalena Bay's *Callinectes bellicosus* and the tissues in which specific metals are found in an attempt to quantify the pollution in Magdalena Bay and better understand how *Callinectes bellicosus* absorbs heavy metals.

74 Strategic Plan: Mission Valley 2030

Anna Spencer

Faculty Advisor: Can Bilsel

Department of Art, Architecture + Art History

“Strategic Plan: Mission Valley 2030” is an urban design project developed to address a multitude of issues associated with the mass development of Mission Valley beginning in the 1950s. Prior to development, Mission Valley existed as an agricultural area resting alongside the San Diego River, naturally subject to occasional flooding. Today, Mission Valley is covered in concrete, disrupting the natural ecological processes of the area, leading to a variety of environmental issues as well as safety concerns. “Strategic Plan: Mission Valley 2030” proposes a new vision for the valley, in which innovative design tactics allow for the natural ecology to be restored, while maintaining an equal amount of space for development.

75 Interning with an Assemblyman

Katherine Stranz

Faculty Advisor: Gary Gray

Department of Political Science and International Relations

Being an internship at Assemblyman Brian Jones office has been an eye opening experience. Politics is often seen as a glamorous affair, with speeches, suits and stardom. I have quickly that this is a very stereotypical view of politics. As an intern for an assemblyman who is very closely connected to the people, I have witnessed democracy at its finest. From answering emails to constituents of District 77, to sending over 700 letters responding to concerned constituents about the potential fee imposed by SDG&E on solar panel users, and even printing off scholastic certificates for honor role students at Grossmont High School, I have witnessed firsthand a true democratic leader at work. I have learned that a real politician is not in the spotlight, but is interacting one on one with his constituents. I would love to be able to share some of this insight through a presentation.

76 Structural Impact of a Fluorescent Dideoxynucleoside on DNA

Raymond Sullivan, Hannah Sadler

Faculty Advisor: Debbie Tahmassebi

Department of Chemistry and Biochemistry

The incorporation of a fluorophore into DNA provides the ability to study DNA structure and its interaction with other macromolecules. The novel fluorescent dideoxynucleoside, tCdd, was recently synthesized in our lab and incorporated into DNA. tCdd was shown to be stabilizing in the context of duplex DNA when paired against the natural guanine. The solution structure of a DNA decamer duplex containing tCdd was determined using Nuclear Magnetic Resonance spectroscopy followed by molecular dynamics calculations. Synthesis, DNA structural information and preliminary data regarding the binding of tCdd-containing DNA with other macromolecules will be presented.

77 Che Guevara's Impact on Argentina's National Identity in Modern Times

Maya Sullivan

Faculty Advisor: Alejandro Meter

Department of Languages and Literatures

The legacy of Ernesto Che Guevara lives on not only in the popular T-shirts which bear his face but more importantly in the revolutionary sentiment he inspires throughout Latin America and his country of birth, Argentina. Through its controversial history of the past decade, with the rise and fall of its dictatorship and the 2001 economic collapse, Argentina has struggled to define its national identity. Stuck somewhere between its foundation in European culture and its location in Latin America, Argentina's nationality and history have been changed by Che's myth and revolutionary symbolism. Posthumously Che and his ideology entered the collective memory of Latin America, inspiring guerrilla movements throughout. In post-dictatorial Argentina where the economic collapse has ushered in a wave of Latin Americanization, Che's legacy is still relevant and vital in the recuperation and reinterpretation of Argentina and its national identity.

78 Sexual Selection in Morphology of Male Genitalia in Two Seed Beetle Species of the Genus *Acanthoscelides*

Jessica Sully

Faculty Advisor: Geoffrey Morse

Department of Biology

Sexual selection can be a potent driver of speciation. In seed beetles (Coleoptera: Bruchidae), secondary sexual characters include spines on legs and male genitalia. Two recently diverged species, *Acanthoscelides aureolus* and *A. pullus*, have similar ecological associations, but males exhibit differences in sexual traits. *A. pullus* has large, numerous leg spines that vary across populations. *A. aureolus* has very few spines. If this is due to differences in sexual selection, I hypothesize that the male genitalia of *A. pullus* will show variation throughout its range, while *A. aureolus* will have little variation. I am testing this hypothesis by examining the male genitalia of many individuals and examining their microscopic structure. I am then using morphometric quantification of the structures to examine levels of variation in these traits, correlation with hindleg armature, and correlation with the population genetic structure to determine if sexual selection is driving the speciation of these beetles.

79 Civil Religion in America

Brianna Trifletti

Faculty Advisor: Florence Gillman

Department of Theology and Religious Studies

Civil religion is a foundational force in a country that helps shape the history and character of that nation. In the United States, civil religion has developed over the years to become the crux of what it means to be an American. It is the agent by which America evolved from a set of thirteen colonies and came together to form the United States of America. Civil religion in America had an extreme impact since, at its conception, the nation had no central ethnicity, religion, or cultural foundation. Through civil religion, America has developed a distinctive creed, code, cultus that affects the country even in its contemporary moment. Together the America code, cultus, and creed are the framework of American civil religion. My research seeks to understand this framework and the phenomenon of civil religion as an influential force in America.

80 Effects of Location of Stimuli on Attention

Rosa Vessal, McKenzie Tolan, Vanessa Johnson

Faculty Advisor: Veronica Galván

Department of Psychological Sciences

Stoet (2010) found women were more distracted by objects in their peripheral vision than men. We hypothesize women will respond quicker and more accurately to objects in their peripheral vision than men. We tested gender differences in attention to objects in a computerized attention task. The attention task consisted of a 3 by 3 grid with stimuli of different shapes and colors. Our study had two conditions to examine if participants would be conditioned to anticipate the stimuli in the center: either 50% or 80% of the stimuli were in central vision. From analyzing our current data, we have found people respond slower to peripheral stimuli, especially when peripheral stimuli are rare. If we have similar results when data collection is finished, we will conclude that men and women do not perform differently to peripheral stimuli, and that the results of Stoet (2010) are caused by other factors than hypothesized.

81 Can You High-Five Your Way to Success? An Investigation into the Theory of Embodied Cognition

Damien Vira, Olivia Uhart, Andrew Vesci, Michael Harris

Faculty Advisor: Nadav Goldschmied

Department of Psychological Sciences

Recent research (Hertenstein, Holmes, McCullough, & Keltner, 2009; Sherman, Gangi, & White, 2009) on embodied cognition has emphasized the notion that all aspects of cognition are shaped by aspects of the body. In this study we examined whether success is viewed as a construct that can be transferred from one person to another through touch. Participants were randomly assigned to watch a confederate either fail or succeed in a basketball-shooting contest. Following, in an ostensibly chance encounter, the participant was either high-fived by the confederate or not before undertaking the same task. We hypothesized that the participants who watched a confederate succeeding and were also touched would go on to predict greater success for themselves following. We did not find support for our hypothesis. The findings and limitations are discussed in the context of status and acquaintance.

82 Synthesis, Characterization, and Film-Forming Properties of Lignin Core-Hyperbranched Polyglycerol Materials

Amanda Walker, Kristiana Lehn

Faculty Advisor: Peter Iovine

Department of Chemistry and Biochemistry

Organosolv lignin was used as a macromolecular initiator for the anionic polymerization of glycidol. The resulting amphiphilic lignin core hyperbranched polyglycerols were characterized by a series of techniques including NMR, gel permeation chromatography, differential scanning calorimetry, and thermal gravimetric analysis. The polyglycerol corona was cross-linked using both diisocyanate chemistry and reversible Diels-Alder chemistry. Thin films of these water insoluble cross-linked materials were studied and the results of will be presented.

83 Modernization with Chinese Characteristics: Deciphering China's Middle Class

Hannah Wolf

Faculty Advisor: Yi Sun

Department of History

Since the onset of political and economic reforms in 1978, China has seen a burgeoning middle class. Western political science theories suggest that the emergence of a middle class signifies the growing economic might of a country and a trajectory towards a democratic government. Meissner (1999) argues in *New Intellectual Currents* that the Chinese middle class has diverged from this typical trajectory. This research investigates the cooperation of socialist practices and a capitalist market economy. Through the careful analysis of primary sources, statistics and secondary literature, the research findings indicate that the middle class in China will not propel the country into a western democratic form of government. Instead, the Chinese middle class is motivated to maintain the current governmental policies in order to preserve the status quo and maintain their economic profit and social status.

84 Understanding Solidarity in a Practical Global Context

James Wykowski

Faculty Advisor: Emily Reimer-Barry

Department of Theology and Religious Studies

We see the Catholic Social Teaching principle of “solidarity” mentioned in various texts and parts of the Catholic tradition. For the purposes of my research, I define solidarity as a concern for the flourishing of all humankind, paying special attention to a global interdependence. During my study abroad experience with the Institute for Shipboard Education's Semester at Sea program in the Fall of 2011 I examined solidarity in many of our ports. I visited countries where the Catholic Church is continually involved in social service work. Through reflections on ethnographic interviews conducted or attempted in Vietnam, South Africa and India I examined the ways in which the idea of solidarity functions across different cultures and social issues facing these locations.

85 Spatial Investigation of the Microcirculation in a Capillary Bundle from Rat Spinotrapezius Muscle Tissue

Lauren Yamamura

Faculty Advisor: Frank Jacobitz

Department of Engineering

Previous investigations of the microcirculation in rat spinotrapezius muscle have focused on global distributions of important quantities such as pressure, flow rate, and hematocrit in the blood vessel network. The focus of this project is the development of a software tool to perform a spatial analysis of these results and to provide local information about the flow properties. Two matrices are constructed: The first matrix holds the locations of vessel intersections. This matrix is used to create a second matrix containing the locations of all blood vessels. The second matrix is then used to produce result matrices holding the values of flow properties at the locations at which they are observed in the vessel network. The various important quantities are then graphed using a color mapping. The resulting images show, for example, the pressure drop in the network as blood flows from transverse arterioles, through capillaries, and to collecting venules.



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