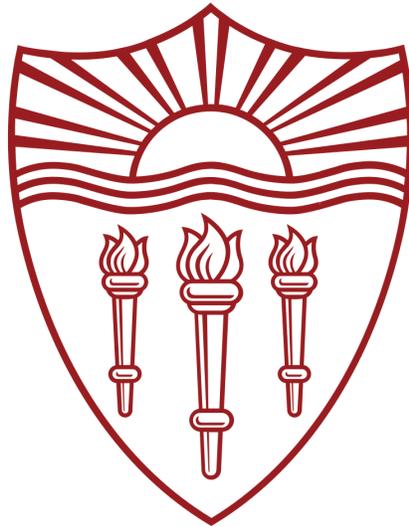


USC Research Gateway/McNair Scholars Program  
Summer Institute Research Symposium  
Office of Undergraduate Programs



University of Southern California  
June 30, 2015

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June 30, 2015

Dear Members of the USC Community & Guests:

With great pleasure, we welcome you to the 2015 USC Research Gateway/McNair Scholars Summer Institute Symposium. The Symposium is designed to provide Scholars with the unique opportunity to present their summer research projects before an academic audience. Each project represents the Scholars' individual work under the advisement and mentorship of faculty and graduate students.

While working on individual projects, the Scholars' excitement, curiosity, and diligence was at an all time high. We expect that they will continue their research explorations and further expand their projects. Please join us in celebrating their early contributions to scholarly research.

Thank you for attending today's Symposium. We hope you enjoy meeting the Scholars and learning about their research interests and graduate school objectives.

Sincerely,

Dr. Richard Andalon  
Director, USC Gateway/McNair Scholars Program  
Associate Dean, USC Graduate School

David-James Gonzales, Ph.D. Candidate in History  
Academic Coordinator & Program Instructor  
USC Gateway/McNair Scholars Program

Mario Enriquez, M.P.A Candidate  
Administrative Coordinator & Program Advisor  
USC Gateway/McNair Scholars Program

## **Program Information**

The Research Gateway/McNair Scholars Program provides graduate school preparation, research training, professional development, and competitive scholarships to a select group of high-achieving undergraduates from first-generation, low-income, and underrepresented ethnic minority backgrounds. The program is administered by the USC Office of Undergraduate Programs, along with the support of various USC academic and student services departments.

At USC, staff and faculty work closely with participants throughout their undergraduate experiences. The program recruits students from all academic disciplines, including the arts and humanities, social sciences, natural sciences, engineering, public health, and business. The program tracks students' progress throughout their undergraduate years until the successful completion of advanced degrees. The goal is to increase the attainment of graduate-level degrees, specifically Ph.D.'s and other doctoral degrees. The program aims to diversify the student body at the graduate-level, the college faculty ranks, and the professions.

The program services include: research training, presenting research via posters and symposiums; publishing academic work; graduate school preparation; professional development; and advising and mentoring. The students in the program work closely with professional staff, graduate students, and faculty advisors. The program also exposes students to a host of cultural and extracurricular experiences.

**2014—2015 Program Advisors & Instructors**

Dr. Jungmiwha Bullock,  
Diversity Consultant  
Lead Program Instructor

Umayyah Cable  
Ph.D. Candidate in American Studies & Ethnicity  
Program Instructor

David-James Gonzales,  
Ph.D. Candidate in History  
Program Instructor

Angelica Delgado Rendon  
Ph.D. Candidate in Health Behavior/Public Health  
Program Instructor

Siddharth Muthu Krishnan  
Ph.D. Candidate in Physics  
Program Instructor

Note: The students' faculty advisors and mentors are noted under the student presentation schedule and abstracts (refer to pages 8—33).

## USC Research Gateway/McNair Scholars Program

- In 2014, USC McNair Scholars were admitted to over 20 graduate programs, including 10 at the doctoral level and 14 at the masters-level.
- From 2009-2014, at least 100 USC McNair Scholars presented their projects at major research conferences across California and the U.S.
- Between 2009 and 2014, the USC McNair Scholars Program awarded nearly \$600,000 in Student Aid by way of Supplemental Research Stipends, Scholarships, and Grants.
- Since 1996, nearly 400 USC undergraduates have participated in the McNair Scholars Program. Annually, approximately 50 students participate in the program as undergraduates, with around 25 graduating seniors.
- Nearly 75% of former USC McNair Scholars have graduate school experiences: they are currently enrolled in graduate-level programs or have acquired a graduate-level degree. To date, approximately 50 participants are currently pursuing some form of postgraduate education. Participants have earned approximately 150 masters-level degrees and just over 50 doctoral-level degrees.
- Postgraduate disciplines pursued by USC McNair Alumni span nearly every academic discipline and professional field. Masters degrees acquired by program alumni include the M.A., M.S., M.Ed., M.B.A., M.S.W., M.P.P., and M.F.T., and Doctoral degrees include the Ph.D., Ed.D., J.D., M.D., Pharm.D., D.P.T., and O.T.D.

USC Research Gateway/McNair Scholars Program  
Summer Institute Research Symposium

**Agenda**

Continental Breakfast

8:30am—8:55am

Welcome & Introductory Remarks

*Dr. George J. Sanchez, Professor of History & American Studies & Ethnicity; Vice Dean, Diversity & Strategic Initiatives, Dornsife College of Letters, Arts, & Sciences*

9:00am—9:10am

Social Science & Education

9:15am—10:15am

Break

10:15am—10:25am

Science, Technology, Engineering, & Math

10:30am—12:15pm

Lunch

12:15pm—1pm

American Studies and Ethnicity

1:05pm—2:35pm

Break

2:35pm—2:45pm

Public Health & Policy

2:50pm—3:50pm

Conclusion of Program

3:50pm—4:00pm

**Social Science and Education**  
**SGM 123 ~ 9:15am—10:15am**  
**Moderator:** David-James Gonzales  
Ph.D. Candidate in History

Anthony Garciano, Law, History & Culture  
Faculty Advisor: Rhacel Parreñas, Ph.D., Department of Sociology  
Title: Climbing the Proverbial Ladder: The Intergenerational Mobility of Filipino Americans

Natalie Reyes, Law, History & Culture  
Faculty Advisor: George Sanchez, Ph.D., Departments of History & American Studies and Ethnicity  
Title: A New Movement: Identifying as Latino and First Generation College Students at the University of Southern California

Adrian Trinidad, Sociology  
Faculty Advisor: Veronica Terriquez, Ph.D., Department of Sociology  
Title: The Role of The Counselor: Predictors of Transferring from California Community Colleges to 4-year Institutions

B. Iris Verduzco, Law, History & Culture  
Faculty Advisor: George Sanchez, Ph.D., Departments of History & American Studies and Ethnicity  
Title: Latin@ Womyn in the Environmental Justice Movement in Los Angeles

**Science, Technology, Engineering & Math**

**SGM 123 ~ 10:30am—12:15am**

**Moderator:** Siddharth Muthu Krishnan

Ph.D. Candidate in Physics

Braulio Fernandez, Neuroscience

Faculty Advisor: Xiaojiang Chen, Ph.D., Department of Chemistry

Title: Determining the Crystal Structure of Phosphotyrosine Interaction Domain Containing 1 via Truncations Valued from Comparative Analysis of Homologous Structures

Natalie Nguyen, Mechanical Engineering

Faculty Advisor: Veronica Eliasson, Ph.D., Viterbi School of Engineering

Title: Quantifying neural network strain caused by stress waves from dynamic loading using HAMr (Highly Automated Mechanical Impactor) and the shadow moiré method

Diana Ramos, Biomedical Engineering

Faculty Advisor: David Z. D'Argenio, Ph.D., Department of Biomedical Engineering

Title: Integrated Model for Denosumab: Pharmacodynamics in Postmenopausal Women

**Science, Technology, Engineering & Math**

**SGM 123 ~ 10:30am—12:15am**

**Moderator:** Siddharth Muthu Krishnan  
Ph.D. Candidate in Physics

Kevin N. Lopez, Chemical Biology

Faculty Advisor: Joseph R. Landolph, Jr., Ph.D., Keck  
School of Medicine

Title: In Vitro Studies on Chromium (VI) and the Onset of  
Cancer: Cytotoxicity and Morphological Transformation of  
C3H10T $\frac{1}{2}$  Embryo Mouse Cells Enhanced by Synergism be-  
tween Ascorbate and Chromium (VI)

Eugenio Rivera, Electrical Engineering

Faculty Advisor: Federico Spedalieri, Ph.D., Department of  
Electrical Engineering

Title: NP-Hard Graph Partitioning: D-WAVE Implementation

Danielle Thomas, Civil Engineering

Faculty Advisor: Kelly Sanders, Ph.D., Department of Civil  
and Environmental Engineering

Title: Assessing the Environmental and Cost Tradeoffs of  
Solar Panels at the University of Southern California

**American Studies & Ethnicity**

**SGM 123 ~ 1:05pm—2:35pm**

**Moderator:** Umayyah Cable

Ph.D. Candidate in American Studies & Ethnicity

Azmera Hammouri-Davis, American Studies & Ethnicity  
Faculty Adviser: Sarah Gualiteri, Ph.D., Departments of History & American Studies & Ethnicity  
Title: Is This Even You? Examining the Construction of Arab and Black Identity

Adriana Cabrales, Psychology  
Faculty Adviser: Sonya Negriff, Ph.D., School of Social Work  
Title: Traditional Gender Roles in Homosexual Relationships on Television: An Analysis on the Television Show Modern Family

Michael Kyei Boateng, Cognitive Science; Minor: Music Industry  
Faculty Adviser: Joanna Demers, Ph.D., Thornton School of Music  
Title: Who's Song Is It?

**American Studies & Ethnicity**  
**SGM 123 ~ 1:05pm—2:35pm**

**Moderator:** Umayyah Cable

Ph.D. Candidate in American Studies & Ethnicity

Trista Marie Benitez, Political Science; Minors: Health Care Studies and Business Law

Faculty Advisor: Estela Mara Bensimon, Ph.D., School of Education

Title: Worth the Cost? Experiences of Nursing Graduates at a Southern California For-Profit College

Alexandra Baker, Psychology

Faculty Advisor: William Breland, Ph.D., Department of Psychology

Title: Deconstructing Public Harassment: Determining Anonymity as a Predictor of Likelihood to Street Harass.

Moira Turner, Cultural Anthropology

Faculty Advisor: Diana Williams, Ph.D., Department of History

Title: What it means to be a father: White Benevolence and the Battle for Inheritance in the 19th Century

**Public Health & Policy**

**SGM 123 ~ 2:50pm—3:50pm**

**Moderator:** Angelica Delgado Rendon

Ph.D. Candidate in Health Behavior/Public Health

Sarvia S. Aquino, Health Promotions & Disease Prevention  
Faculty Advisor: Tess Boley Cruz, Ph.D., Keck School of  
Medicine

Title: Creativity and Mental Health in Latino Communities:  
An Extended Literature Review of Interventions that Use  
Music

Claudia E. Catalan, Narrative Studies

Faculty Advisor: Tess Boley Cruz, Ph.D., Department of Pre-  
ventative Medicine

Title: Colorful People, Colorful Fruit? American Minority  
Group's Cultural Identity Through Food

Zari Morales, Health and Humanity; Minors: Spanish and  
Occupational Science

Faculty Advisor: Catherine Crowley, OTD, OTR/L, Depart-  
ment of Occupational Science & Therapy

Title: Fostering Creative Minds: How Educational Settings  
Support Creativity in Children With Autism Spectrum Disor-  
ders

Viviana Padilla, Psychology

Faculty Advisor: Tessa Milman, OTD, OTR/L, Department of  
Occupational Science and Therapy

Title: College is for Everyone: Factors which Promote Higher  
Education in Individuals with Autism

**Sarvia S. Aquino**, Bachelor of Science in Health Promotion and Disease Prevention

**Faculty Advisor:** Tess Boley Cruz, Ph.D., Keck School of Medicine

**Title:** Creativity and Mental Health in Latino Communities: An Extended Literature Review of Interventions that Use Music

**Abstract:** Latinos are the nation's largest minority, and one of its fastest growing as it is stated by the Pew Research Center. Latinos are expected to make up nearly one-fourth of the population by 2050. It would be safe to assume there would be many resources available and help tailored for the nation's largest minority but it's actually the opposite. There is a huge health disparity in the US, where Latinos are at high risk for many chronic diseases and mental illnesses but 33% of Hispanics are uninsured, compared to 16% percent of all Americans (US Census 2008). Therefore, the goal of this literature review is to provide an understanding of the Latino culture, its barriers and how interventions that use music may be possible treatments for mental illness in the Latino community. The research will explore themes through out the literature. This includes: Benefits for constituents, Benefits for certain types of groups (regarding gender, age and ethnicity), Structures of the intervention and its impact on participant response, Different types of art and how it was used in the intervention, and Condition the intervention works for (e.g. Self Efficacy, Self Evaluation). The literature will give insight to how effective music is as strategy to reach low-socioeconomic Latinos who experience mental illness.

**Alexandra Baker**, Bachelor of Arts in Psychology

**Faculty Advisor:** William Breland, Ph.D., Department of Psychology

**Title:** Deconstructing Public Harassment: Determining Anonymity as a Predictor of Likelihood to Street Harass.

**Abstract:** Street harassment is prevalent in all countries and cultures. People who encounter unwanted sexual attention while in the public sphere experience shakiness, sweating, chest pains, sleep disturbance and emotional responses such as rage, depression, guilt, disconnection, hyperawareness, and feeling violated. Despite the high prevalence, very little is known about what causes street harassment. This study examines to what extent anonymity predicts likelihood to street harass. It was hypothesized that street harassment would be more prevalent in high-anonymity conditions than in low-anonymity conditions. Surveys were distributed containing 20 vignettes. Participants rated how anonymous they felt in the social situations described. The 3 most anonymous and the 3 least anonymous were selected and used for the next study. In the second study, respondents rated how likely they were to harass in three high-anonymity conditions and three low-anonymity conditions. Most participants were unlikely to harass in any condition. Contrary to the hypothesis, participants who did harass were as likely to do so in high and low-anonymity situations. Anonymity seems to not predict likelihood to street harass.

**Trista Marie Benitez**, Bachelor of Arts in Political Science;  
Minors: Health Care Studies and Business Law

**Faculty Advisor:** Estela Mara Bensimon, Ph.D., School of  
Education

**Title:** Worth the Cost? Experiences of Nursing Graduates at  
a Southern California For-Profit College

**Abstract:** Under federal allegations of predatory recruiting and discouraging graduate outcomes, numerous for-profit colleges have terminated operations. In light of these developments, higher education scholars have debated public benefits to for-profit higher education. On one hand, unselective enrollment standards ensure open-access to students underserved by community colleges. On the other hand, above-average tuition and default rates caution against enrollment. Contextualized in an entry-level nursing program, this pilot study examined factors for enrollment and graduate outcomes at American Career College, a Southern Californian for-profit college. A textual analysis of selected Yelp! Reviews and 5 interviews with recent graduates found student enrollment decisions to be minimally researched and highly deferential to recruiter messages. Upon program completion, graduates reported discouraging placement in smaller care facilities, as opposed to expected employment in acute care hospitals. The context of nursing enriched this investigation, for healthcare employment signals stability for emerging adults and older career-changers. Although a for-profit college offers flexibility and accelerated entry the nursing profession, participants reported pressure to invest in future training to capture expected outcomes. This study ultimately highlights susceptibility to enter an accelerated program, despite its high costs and insufficient preparation for a career in contemporary nursing.

**Michael Kyei Boateng**, Bachelor of Arts in Cognitive Science; Minor: Music Industry

**Faculty Advisor:** Joanna Demers, Ph.D., Thornton School of Music

**Title:** Who's Song Is It?

**Abstract:** The music you listen to has rights—these rights are embodied within the lyrics, melody and recording of a song. This ownership of rights is established as intellectual property—the intangible property that includes books, scripts, films, and music. This study discusses how intellectual property concerning sampling, remixes, derivatives, and moral rights fits within the U.S territory in the current music industry. The significance of this study is to demonstrate the need for Congress to promote the arts and advancement of science, while still protecting an artist/musicians rights. A qualitative methodological approach is used by performing two case studies on the following recordings: “Blurred Lines” by Robin Thicke and “Big Pimpin” by Jay Z, by analyzing text that specifically discuss the lawsuit cases and the precedent and results that can be established. The importance of this paper is to show that music is not a simple fixed service, but one that has the ability to connect to a greater audience on a psychological level that is intimate and personal. The findings have revealed the difficulty of protecting an artist rights, as well as promoting the progress of creativity for the public. The case studies used demonstrate the current law systems difficulty in handling music copyright in the age of rising sampling. In the current music industry, the rate of technological advancement and consistent transition of creativity demonstrate the fluidity of intellectual property uses from sampling, derivatives, and remixes in the market and the need to discuss moral rights.

**Adriana Cabrales**, Bachelor of Arts in Psychology

**Faculty Advisor:** Sonya Negriff, Ph.D., School of Social Work

**Title:** Traditional Gender Roles in Homosexual Relationships on Television: An Analysis on the Television Show Modern Family

**Abstract:** Previous works have touched upon the progress, or lack of progress, seen in the portrayal of gender roles, such as that of the woman, in modern-day television. There are studies that have examined the impact media and television shows can have on underrepresented communities, and how some of those underrepresented communities are portrayed on television. Although it has been 30 years since the emergence of gay couples in popular media, the representation of gender roles is still limited. This study focused on how gender roles among gay couples were portrayed in Modern Family, a popular television show. I focused on the couple Cameron and Mitchell, who are featured in the series in which traditional gender roles were referred to in regards to their sexual identity, as well as other themes relating to portrayal of gay couples. Six episodes were randomly chosen from each of the six seasons to be coded, totaling to 36 coded episodes. Overarching themes, which include being excessively emotional, not being athletic, and imposing traditional gender roles, were found throughout the seasons and were identified through the coding process.

**Claudia E. Catalan**, Bachelor of Arts in Narrative Studies

**Faculty Advisor:** Tess Boley Cruz, Ph.D., Department of Preventative Medicine

**Title:** Colorful People, Colorful Fruit? American Minority Group's Cultural Identity Through Food

**Abstract:** Recent research studies exist relating cultural factors of identities, such as race or ethnicity, to mental health issues, in American minority groups, which extend from depression or anxiety, to body image or eating disorders. To better understand health behavior amongst these minority groups, researchers are investigating novelty aspects of cultural identities, such as food. This study explores the direct relationship between cultural beliefs and symbols in ethnic or minority American groups, to food choice, in the format of a literature review. Data was collected using databases related to several fields of studies – communications, psychology, and sociology. Based upon preliminary findings, race and desires of an ethnic or minority American group has the highest impact on food selection and/or food behavior. Moving forward, further examination will be conducted through quantitative and qualitative research, to find: how do these food choices affect individual self-perception, non-food related values and personal relationships? The continued research and findings seek to uncover innovative educational and/or therapeutic methods to improve public mental health.

**Braulio Fernandez**, Bachelor of Science in Neuroscience  
**Faculty Advisor:** Xiaojiang Chen, Ph.D., Department of Chemistry

**Title:** Determining the Crystal Structure of Phosphotyrosine Interaction Domain Containing 1 via Truncations Valued from Comparative Analysis of Homologous Structures

**Abstract:** Glioblastomas and medulloblastomas are two of the most malignant brain tumors in adults and children, respectively. The Phosphotyrosine Interaction Domain Containing 1 (PID1) protein has emerged in the past couple of years as a potential candidate for novel forms of treatment. PID1 has been linked to providing an inhibitory function in pediatric and adult brain tumors. It has been found that PID1 expression in medulloblastoma and glioblastoma cell lines inhibit colony formation by 68% compared to when it's absent, thus explaining the higher PID1 mRNA levels found in healthy, recovering brain tumor patients than those in poor health. Additionally, the presence of higher PID1 levels in the brain was found to be correlated to more successful chemotherapy treatments after surgery. The biological mechanism of PID1's activity is still unknown and thus limits the application of PID1 for possible treatment. Finding the PID1 crystal structure via x-ray crystallography can give insight into its molecular function. PID1 is not conducive to forming a lattice structure so genetic truncations must be made in an effort to promote crystal formation. The modifications made are a product of the alignment between the PID1 genome and a similarly structured protein genome with a solved crystal structure.

**Anthony Garciano**, Bachelor of Arts in Law, History and Culture

**Faculty Advisor:** Rhacel Parreñas, Ph.D., Department of Sociology

**Title:** Climbing the Proverbial Ladder: The Intergenerational Mobility of Filipino Americans

**Abstract:** Asian Americans compose roughly five percent of the entire United States population; however, they are often discriminated against in American Society. It was only in the 1950s that Asians could become naturalized citizens with the McCarran-Walter act of 1952; moreover, immigration finally opened up to more Asian countries with the Immigration Act of 1965. Be it through the model minority myth—the idea that Asian-Americans achieve a higher degree of success compared to other minorities—or lack of research on Asian Americans, many things contribute to discrimination. To help change the Asian American stereotype, studying Filipino American communities will progress the discourse of the Asian American. The Filipino American perspective is especially pertinent—not only because Filipino Americans are the second largest Asian population in the United States—but also because of its neocolonial history with the United States. Furthermore, the Philippines' centuries worth of colonial rule (Spain, United States), has an effect on the negotiation of the Filipino American identity. More specifically, to study the negotiation of identity amongst Filipino Americans will help discover the level of intergenerational mobility amongst this group; thus, contributing to the discourse of the model minority myth.

**Azmera Hammouri-Davis**, Bachelor of Arts in American Studies & Ethnicity

**Faculty Advisor:** Sarah Gualiteri, Ph.D., Departments of History & American Studies & Ethnicity

**Title:** Is This Even You? Examining the Construction of Arab and Black Identity

**Abstract:** This project engages with a growing body of literature that compares the formation of identity across seemingly disparate cultures and ethno-racial groups. Focusing on college students of African or Arab descent, I provide a comparative analysis of how these groups construct and understand their identities amidst the pressures of social, political, and economic marginalization. My research examines the relationship between one's perceived identity and their actual ethnic makeup by examining the generational patterns of perception and identity as it relates to religion. This project also examines how African and Arab identities conflict, coincide, and blend together. Sally Howell and Andrew Shyroock discuss the "otherization" of Arab Americans in Detroit post 9/11 in their article "Cracking Down on Diaspora: Arab Detroit and America's 'War on Terror'" touching on the complexities of representations that contribute to Arab identity. This study is not interested in hard and fast hitting answers to Arab and Black identity, but rather what the constructions of these identities might add to larger global conversations of race, class, socio-economic status, and religion. Religion emerges as a key point of tension as well as unison between both of these communities, and proves to be a possible solution in ameliorating cross-cultural differences.

**Kevin N. Lopez**, Bachelor of Science in Chemical Biology  
**Faculty Advisor:** Joseph R. Landolph, Jr., Ph.D., Keck  
School of Medicine

**Title:** *In Vitro* Studies on Chromium (VI) and the Onset of Cancer: Cytotoxicity and Morphological Transformation of C3H10T $\frac{1}{2}$  Embryo Mouse Cells Enhanced by Synergism between Ascorbate and Chromium (VI)

**Abstract:** Chromium (VI) compounds are strong human carcinogens. Unfortunately, workers involved in the manufacturing of chromium-based pigments and in chromium electroplating are exposed to these chemical agents, causing high incidences of pulmonary fibrosis, perforation of the nasal septum, and lung cancer. However, it has been difficult to design appropriate *in vitro* assays that allow us to study the mechanism by which chromium (VI) is intracellularly converted into its mutagenic form, chromium (III). Since it is known that *in vitro* cell cultures have 1,000 times lower concentrations of ascorbate (vitamin C) than those present *in vivo*, we had hypothesized that supplementing our cell cultures with ascorbate would promote the reductive activation pathway that converts chromium (VI) into chromium (III) and thus enhancing both cytotoxicity and morphological transformation in our *in vitro* assays. Our preliminary results, so far, support the aforementioned hypothesis. A synergistic enhancement of both chromium (VI)-induced cytotoxicity and morphological transformation has been observed when C3H10T $\frac{1}{2}$  embryo mouse cell cultures were treated with both ascorbate and chromium (VI). These enhancements in cytotoxicity and morphological transformation seem to be dose-dependent on both ascorbate and chromium. These results imply that ascorbate could be an important reagent in the activation of chromium (VI).

**Zari Morales**, Bachelor of Arts in Health and Humanity; Minors: Spanish and Occupational Science

**Faculty Advisor:** Catherine Crowley, OTD, OTR/L, Department of Occupational Science & Therapy

**Title:** Fostering Creative Minds: How Educational Settings Support Creativity in Children With Autism Spectrum Disorders

**Abstract:** Autism spectrum disorders (ASDs), a group of neurodevelopmental disorders that are characterized by lack of social communication or interest and repetitive behaviors, are more prevalent with each passing year. As of 2014, 1 in 68 children across the United States are diagnosed with ASD. As a result of the growing number of children, I sought out to find which methods teachers implement in the classroom with children with ASD that promote their development and creativity, particularly classrooms in the Los Angeles area. I analyzed nine articles on ASD, available interventions, and creativity to acquire information. I surveyed and interviewed four teachers that work or have worked with children with ASD through the phone or in locations most convenient to them. Three major themes arose from the interviews, including the importance of routine and structure, exposure to different children and stimuli, and the difference between every child diagnosed with ASD. In my findings, I discovered that learning the school routine took much more precedence than engaging in creative activities. More research in the future, with a larger sample, is required to determine if this is the case with all classrooms and what can be done to incorporate creativity in the classroom.

**Natalie Nguyen**, Bachelor of Science in Mechanical Engineering

**Faculty Advisor:** Veronica Eliasson, Ph.D., Viterbi School of Engineering

**Title:** Quantifying neural network strain caused by stress waves from dynamic loading using HAMr (Highly Automated Mechanical Impactor) and the shadow moiré method

**Abstract:** Protective gear against brain injury can be improved with a better understanding of the biological and mechanical response of the brain under dynamic loading. A new mechanism, HAMr, is designed to perform repeated blunt impact forces on *in vitro* neural networks under controlled conditions. The neural networks from mice are prepared in a nutrient bath within a petri dish. HAMr enables us to investigate the role that the stress wave plays in causing brain injury by isolating the stress wave component of dynamic loading. In addition, the shadow moiré method is to be used in conjunction with HAMr to quantify brain injury by producing light and dark fringes that indicate the strain deformation of the neural networks. To observe these fringes, a high-speed camera is used to record the deformation during the impact event. The scope of this research entails testing and verifying the capabilities of the shadow moiré setup under these circumstances. Future work includes improving upon this setup to use in conjunction with HAMr to provide clear results that will allow us to better quantify brain injury caused by stress waves in neural networks.

**Viviana Padilla**, Bachelor of Arts in Psychology

**Faculty Advisor:** Tessa Milman, OTD, OTR/L, Department of Occupational Science and Therapy

**Title:** College is for Everyone: Factors which Promote Higher Education in Individuals with Autism

**Abstract:** The purpose of this study was to interview counselors and teachers who work with high school students diagnosed with Autism Spectrum Disorder. In doing so researchers sought to determine what characteristics in these student's academic lives during high school helped foster encouragement and preparation to pursue higher education after high school. A total of 5 participants (1 counselor and 4 teachers) were obtained through a snowball sample from the Los Angeles area. Interviews consisted of 10 questions and were conducted via phone or in a private setting which lasted no more than 45 minutes. The researcher later transcribed and coded interviews into three sections: students' knowledge about college, resources provided for students, and challenges students experienced. Findings showed counselors and teachers implemented college knowledge to these students' academic lives in 10<sup>th</sup> grade through an extensive detailed individual guidance system. This guidance system included teachers and counselors' breaking down college information into a comprehensible manner as well as an active participation of the student's postsecondary plans. Additional findings reveal this guidance extends even up until the students' enrollment in college classes; acting as liaison between student and college disability office until the student feels fully integrated to the college campus.

**Diana Ramos**, Bachelor of Science in Biomedical Engineering

**Faculty Advisor:** David Z. D'Argenio, Ph.D., Department of Biomedical Engineering

**Title:** Integrated Model for Denosumab: Pharmacodynamics in Postmenopausal Women

**Abstract:** This study aims to further explore Denosumab and its pharmacodynamics properties as a RANK ligand inhibitor for treatment of osteoporosis in postmenopausal women. An integrated bone homeostasis model is used as a basis for the interaction of Denosumab with its binding to RANK ligand for postmenopausal women. Values used for the simulations results were extracted from previous literature. A computational model was implemented for the model-based drug development that might improve the evaluation of osteoporosis therapies, leading to better treatment and prevention. A specific aim is to investigate the effects of disease progression with a regimen of different doses of Denosumab, due to the up-regulation of RANKL on changes in bone mineral density. The model is used to explore dose adjustments needed to compensate for the percent decrease in bone mineral density due to changes in RANKL.

**Natalie Reyes**, Bachelor of Arts in Law, History & Culture

**Faculty Advisor:** George Sanchez, Ph.D., Departments of History & American Studies and Ethnicity

**Title:** A New Movement: Identifying as Latino and First Generation College Students at the University of Southern California

**Abstract:** Many Latino students at the University of Southern California (USC) are first generation college students and lack the social capital many of their peers utilize to navigate the university setting. This study seeks to understand how first generation college students identifying as Latinos perceive USC's campus environment and how attending the university influences the way they define their ethnic identity and perception of higher education. Existing scholarship emphasizes how family values and community demographics influence students' sense of ethnic identification prior to attending college. Additional literature shows that in many cases, Latinos' immersion into the social environment of college campuses leads to a fluctuation in ethnic identification. At prestigious universities, like USC, first generation college students tend to feel disconnected from more affluent white peers. This study employs oral history interviews of first generation college students who self-identify as Latino to understand how they negotiate ethnic identity. Findings indicate identity formation impacts students' involvement in student organizations, influences diverse beliefs of the purpose of college education and affects family relationships. Due to feeling like a minority, attending USC leads many students to strengthen their sense of ethnic identity and to perceive their first generation college status as a privilege for creating a difference in their families.

**Eugenio Rivera**, Bachelor of Science in Electrical Engineering

**Faculty Advisor:** Federico Spedalieri, Ph.D., Department of Electrical Engineering

**Title:** NP-Hard Graph Partitioning: D-WAVE Implementation

**Abstract:** This study involved implementing the NP-Hard Graph Partitioning problem onto the D-WAVE Two (DW2) programmable quantum annealing processor, to search for quantum speedup and improvement in solutions over classical (non-quantum) heuristic algorithms. NP problems belong to the Non-deterministic in Polynomial Time set; suggesting they are computationally infeasible. NP-Hard problems are known to be at least as hard as any NP problem. The goal of Graph Partitioning is to divide a graph (or rather network) of nodes connected by a set of edges into two equally sized groups while minimizing the cut size, the interconnection between the two groups. Areas of applications for Graph Partitioning include social sciences (social networks) and economic (market modeling) computations as well as in communications and network design. The DW2's native problem is an Ising model, so in order to embed the problem onto the chip an Ising formulation of the problem is required. I studied the effect of varying the Ising formulation parameters and problem size in order to find improvement in performance. I found that the parameters did not affect performance in small graphs and that the DW2 outperformed my attempts at providing optimal solution. Furthermore, I discuss the limitations of such conclusions.

**Danielle Thomas**, Bachelor of Science in Civil Engineering  
**Faculty Advisor:** Kelly Sanders, Ph.D., Department of Civil and Environmental Engineering

**Title:** Assessing the Environmental and Cost Tradeoffs of Solar Panels at the University of Southern California

**Abstract:** This project analyzes the energy generation potential, as well as the economic and environmental tradeoffs of installing solar photovoltaics (PV) on the University Park Campus (UPC) at the University of Southern California (USC). Solar is an attractive source of electricity because it emits no greenhouse gases during operation, and its energy is sourced from the sun, which is a renewable resource. The energy generation potential at UPC was calculated based on modeling available rooftop space in order to calculate prospective system capacity. After assessing the installation costs and the monetary value of the potential solar energy generation, the economic analysis concluded that investing in solar PV panels would be cost-effective. Additionally, the environmental gains of generating electricity from a PV system, instead of purchasing it from the power grid, resulted in significant decreases in the carbon footprint of UPC. The results of this work serve as a model to evaluate the possible deployment of solar systems on various university campuses, communities, or any medium-sized entity.

**Adrian Trinidad**, Bachelor of Arts in Sociology

**Faculty Advisor:** Veronica Terriquez, Ph.D., Department of Sociology

**Title:** The Role of The Counselor: Predictors of Transferring from California Community Colleges to 4-year Institutions

**Abstract:** The expansion of California community colleges in the past century has increased access and participation in American higher education, especially among students with limited opportunities due to financial and academic challenges, or ethnic groups typically underrepresented in higher education. However, increased access and participation has not translated into success in terms of transfer, certificate, or degree completion rates. The counselor is critical to the transfer process by informing students on classes and a variety of resources on campus. Much of the current literature on academic and transfer counseling services has examined 4-year institutions and not community colleges. This research fills the gaps by explaining how students use these services, and whether or not counselors helped to mediate the transfer process. Using a mixed methods approach, this research analyzes data from the California Young Adult Study (CYAS, n=982) to identify predictors of transferring and uses interview findings to explain the social mechanisms of those factors. Since Latinas/os proved to be a particularly disadvantaged group in the CYAS data, interviews are focused on lived experiences of Latina/o transfer students. Findings indicate that a shift in institutional practice is insufficient for addressing how students' use of counseling services is mitigated by their socioeconomic background.

**Moira Turner**, Bachelor of Arts in Cultural Anthropology  
**Faculty Advisor:** Diana Williams, Ph.D., Department of History

**Title:** What it means to be a father: White Benevolence and the Battle for Inheritance in the 19th Century

**Abstract:** The experiences of interracial couples are no monolith but are typically hailed as a signifier for social change and progress. Many have purported their existence to be a movement towards a truly post racial society. However, when framing these relationships as one unit, the experience of the less dominant parties can be subverted and at times effectively erased, particularly those involved in White male and Black female race-gender couplings. My research attempts to explore this erasure to see how differences in power dynamics affect the partners and children in some interracial relationships. A case study approach was utilized and I investigated a Louisiana Supreme Court case involving the battle for inheritance, when a white father in his will withheld his property from two of his biracial children. I explore questions of fatherhood and the fictitious benevolent white patriarch in the framework of this case. Throughout my research I employed textual analysis, focusing my lens on words or phrases pertaining to either race or gender. Overarching themes of paternalism and white patriarchy surfaced, showing multiple examples of the father attempting to exert control over his children, further refuting the notion of the white benevolent patriarch.

**B. Iris Verduzco**, Bachelor of Arts in Law, History & Culture  
**Faculty Advisor:** George Sanchez, Ph.D., Departments of  
History & American Studies and Ethnicity

**Title:** Latin@ Womyn in the Environmental Justice Move-  
ment in Los Angeles

**Abstract:** Mothers of East Los Angeles, Santa Isabel formed in 1986 to address issues that womyn in Boyle Heights were concerned about, such as the safety of their children and families. Mothers of East Los Angeles, Santa Isabel began by tackling the issues of gang abatement and later environmental justice. Through the use of oral history interviews and participant observation, interpreted through the writings of Chican@ feminists, I analyze the motivations and strategies of Latin@ womyn between the ages of 16-26 who are active members of Communities for a Better Environment and East Yard Communities for Environmental Justice. Acknowledging the historical influence of environmental justice organizing, this study identifies the emergence of a generational shift in the motivations and strategies of Latin@ womyn in Southeast Los Angeles. The emergence of this new generation of Latin@ womyn and their organizing strategies demonstrates how the environmental justice movement may be strengthened through the recognition of intergenerational motives. In understanding the generational shift that has occurred in the environmental justice movement it can then be understood how the motivations and strategies of these young Latin@ womyn then transcend into taking these skills and applying them towards other social justice interests.