ELEVENTH ANNUAL
UNDERGRADUATE
RESEARCH SYMPOSIUM

ARTS SHOWCASE
Friday, March 22nd
4:30 PM – 7:30 PM
Burns Fine Arts Center

SYMPOSIUM
Saturday, March 23rd
8:30 AM – 4:30 PM
University Hall

for more information, please visit our website
www.lmu.edu/symposium
March 23, 2019

“Tell me and I’ll forget; show me and I may remember; involve me and I’ll understand.”

- Chinese proverb

Dear LMU Students, Faculty, Staff, and Guests,

Welcome to the Eleventh Annual Undergraduate Research Symposium! This event has become a campus-wide tradition celebrating the very best in faculty-mentored undergraduate research and creative projects at LMU. It reflects Loyola Marymount’s unwavering commitment to academic excellence both inside and outside of the classroom.

This year we are pleased to feature the work of over 330 students from all five undergraduate colleges and schools. The diverse sessions will be intellectually stimulating for all. Among the presentations on Saturday are 137 posters, 65 papers in 20 oral sessions, and 4 panels. In the morning and afternoon sessions, students wrestle with complex issues, including the effect of political news sources on college students’ reading comprehension, steps of a water oxidation mechanism to obtain hydrogen from water, conflict management through dance, and revisions to the Resonating Arm Exerciser, which aids stroke patients in recovery. They explore issues of domestic and foreign policy, theories on problem solving, communication and machine learning, explorations of gender and identity formation, influences and challenges of women in various workplaces and disparities in food access in communities of color in Los Angeles. Among the sessions are discussions ranging from virtual reality filmmaking to innovations in technology to the relationship between leveraging decisions in equity REITS and returns. The three poster sessions offer topics ranging from all manner of the sciences and engineering, business, the social sciences, and the arts.

On Friday, we devote an evening to the arts (music, dance, theatre and the visual arts), taking place in the arts spaces of the Burns Fine Arts Center. The formal presentations, as well as the art-making in the studios, are grounded in opportunities for students to explore the human experience through work that is intellectual, creative, and critical. This year, we would also like to honor College of Communication and Fine Arts Associate Dean, Judy Scalin, who is retiring at the end of this year. Dean Scalin has spearheaded the Arts Showcase, and her hard work and vision have been essential to creating the vibrant, dynamic event that the Arts Showcase is today. While her warmth and dedication to both students and colleagues will be greatly missed, we congratulate her on her retirement and look forward to hearing about her future adventures.

The Undergraduate Research Symposium provides an excellent opportunity for students, faculty, staff, parents, and members of the LMU community to actively engage with students who have been immersed in thought-provoking questions and challenging global issues. In an increasingly complex world, it is important for students to take learning to a deeper and more integrated level. The work showcased today is evidence of this learning process.

Congratulations to this year’s presenters and to all the students and faculty participating in the 2019 LMU Undergraduate Research Symposium!

Sincerely,

Kathleen Weaver, Ph.D.
Associate Provost for Research and Professional Development

Elizabeth Wimberly-Young, M.F.A.
Associate Director
Undergraduate Research & Creative Experience
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Poster Sessions  
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<tr>
<td>4:30-5:00pm</td>
<td><strong>BUFFET RECEPTION &amp; GALLERY OPENING</strong></td>
<td>Dunning Courtyard</td>
<td>Thomas P. Kelly Student Art Gallery</td>
</tr>
<tr>
<td>4:30-5:00pm</td>
<td>Gallery open for viewing of Graphic Design Senior Show</td>
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<td>Ongoing buffet</td>
</tr>
<tr>
<td>5:00-5:45pm</td>
<td><strong>GRAPHIC DESIGN PRESENTATIONS</strong></td>
<td>Thomas P. Kelly Student Art Gallery</td>
<td>Daniel Akavi</td>
</tr>
<tr>
<td>5:00-5:45pm</td>
<td>Inside the Anxious Mind</td>
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<td>Senior</td>
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<tr>
<td>5:00-5:45pm</td>
<td>Daniel Akavi</td>
<td></td>
<td>Studio Arts: Graphic Design</td>
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<tr>
<td>5:00-5:45pm</td>
<td>MENTOR: Samir Naimi</td>
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<td>Studio Arts: Graphic Design</td>
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<tr>
<td>5:00-5:45pm</td>
<td>Parker Charles</td>
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<td>How Do You Learn?</td>
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<td>5:00-5:45pm</td>
<td>Parker Charles</td>
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<td>Senior</td>
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<td>5:00-5:45pm</td>
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<td>Studio Arts: Graphic Design</td>
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<td>MENTOR: Samir Naimi</td>
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<td>Studio Arts: Graphic Design</td>
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<td>5:00-5:45pm</td>
<td>Samantha Jordan</td>
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<td>Like A Woman</td>
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<td>5:00-5:45pm</td>
<td>Samantha Jordan</td>
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<td>MENTOR: Samir Naimi</td>
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<td>Studio Arts: Graphic Design</td>
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<td>5:00-5:45pm</td>
<td>Julian Kehle</td>
<td></td>
<td>Every Data Point Counts: Political</td>
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<td>5:00-5:45pm</td>
<td>Julian Kehle</td>
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<td>Elections in the Age of Digital</td>
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<td>5:00-5:45pm</td>
<td>Julian Kehle</td>
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<td>Analytics</td>
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<td>5:00-5:45pm</td>
<td>MENTOR: Samir Naimi</td>
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<td>Studio Arts: Graphic Design</td>
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<tr>
<td>5:00-5:45pm</td>
<td>Kelli Nagasawa</td>
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<td>Only What You Can Carry</td>
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<td>5:00-5:45pm</td>
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<td>MENTOR: Samir Naimi</td>
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<td>Studio Arts: Graphic Design</td>
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## Schedule of Events

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<thead>
<tr>
<th>Time</th>
<th>Name</th>
<th>Title</th>
<th>Category</th>
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<tbody>
<tr>
<td>5:00-5:45pm</td>
<td>Brandon Nam</td>
<td>Why We Buy: Fashion and Tribalism in the Age of Social Media</td>
<td>Studio Arts: Graphic Design</td>
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<td></td>
<td>Tess Reid</td>
<td>Species Speak</td>
<td>Studio Arts: Graphic Design</td>
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<td></td>
<td>Yue Wang</td>
<td>归属 Belonging: Enhance Cross-Cultural Understanding</td>
<td>Studio Arts: Graphic Design</td>
</tr>
</tbody>
</table>

### ENTR’ACTE

**DUNNING COURTYARD**  
**THOMAS P. KELLY STUDENT ART GALLERY**

<table>
<thead>
<tr>
<th>Time</th>
<th>Name</th>
<th>Title</th>
<th>Category</th>
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<tbody>
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<td>5:45-6:30pm</td>
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<td>Gallery open for viewing of Graphic Design Senior Show</td>
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<td>Ongoing buffet</td>
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### MUSIC AND DANCE PRESENTATIONS

**MURPHY RECITAL HALL**

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<thead>
<tr>
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<th>Title</th>
<th>Category</th>
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</thead>
<tbody>
<tr>
<td>4:45-5:00pm</td>
<td>Veronica Rose Tan</td>
<td>“The Butterfly Lovers Violin Concerto:” Music for the People</td>
<td>Psychology</td>
</tr>
<tr>
<td>5:00-5:15pm</td>
<td>Brynn Bodair</td>
<td>Cultivating Compassion: Humanizing Legal Rhetoric through Dance Performance</td>
<td>Political Science and Dance</td>
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</table>
ARTS SHOWCASE  
Friday, March 22, 2019  
Schedule of Events

<table>
<thead>
<tr>
<th>Time</th>
<th>Name</th>
<th>Major</th>
<th>Event Description</th>
<th>Mentor</th>
</tr>
</thead>
<tbody>
<tr>
<td>5:15-5:30pm</td>
<td>Gillian Ebersole</td>
<td>Senior Dance and English</td>
<td>Exploring Equality and Femininity through the Choreographic Process</td>
<td>Teresa Heiland</td>
</tr>
<tr>
<td>5:30-5:45pm</td>
<td>Kiera Breaugh</td>
<td>Junior Dance</td>
<td>Barely Black: A Reflection of My Biracial Experience Through Dance and Spoken Word</td>
<td>Rosalynde LeBlanc Loo</td>
</tr>
<tr>
<td>5:45-6:00pm</td>
<td>Madaline Riley</td>
<td>Senior Studio Arts – Fine Arts Individualized Studies</td>
<td>Mockingbird: A Conversation Freestyler-to-Freestyler</td>
<td>Teresa Heiland</td>
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</tbody>
</table>

THEATRE ARTS AND SPOKEN WORD PRESENTATIONS

<table>
<thead>
<tr>
<th>Time</th>
<th>Name</th>
<th>Major</th>
<th>Event Description</th>
<th>Mentor</th>
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</thead>
<tbody>
<tr>
<td>4:45-5:00pm</td>
<td>Marisa Whitmore</td>
<td>Senior Theatre Arts</td>
<td>Sound and Mood: The Sound Design of “That Face”</td>
<td>Rob Hillig</td>
</tr>
<tr>
<td>5:00-5:15pm</td>
<td>Harold L Lloyd</td>
<td>Senior Theatre Arts</td>
<td>Art as Activism Part I: “Face to Face” – Damion’s Story</td>
<td>Judith Royer, CSJ</td>
</tr>
<tr>
<td>5:15-5:30pm</td>
<td>Katherine Bianco</td>
<td>Senior Theatre Arts</td>
<td>Making “Bright Half Life” Whole</td>
<td>Dana Resnick</td>
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</tbody>
</table>
## ARTS SHOWCASE
### Friday, March 22, 2019
### Schedule of Events

<table>
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<tr>
<th>Time</th>
<th>Event Description</th>
<th>Mentors</th>
</tr>
</thead>
<tbody>
<tr>
<td>5:30-5:45pm</td>
<td>Art as Activism Part II: “The Shu” - Rick’s and Ricky’s Stories</td>
<td>Judith Royer, CSJ; Theatre Arts</td>
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<td></td>
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<td><em>Leon Wiebers, Theatre Arts and Dance</em></td>
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<td></td>
<td>Andrea Odinov, Theatre Arts</td>
</tr>
<tr>
<td>5:45-6:00pm</td>
<td>From Sketches to Garments: Costume Designing Polly Stenham’s “That Face”</td>
<td>Leon Wiebers, Theatre Arts and Dance</td>
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<tr>
<td></td>
<td></td>
<td>Andrea Odinov, Theatre Arts</td>
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<tr>
<td>6:00-6:20pm</td>
<td>Modern Perspectives on Gay Crises</td>
<td>Leon Wiebers, Theatre Arts and Dance</td>
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<tr>
<td></td>
<td>The Examination of Fear as a Perpetual Roadblock</td>
<td><em>Esmeralda Bruce-Romo, Latinos &amp; AIDS</em></td>
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<tr>
<td></td>
<td></td>
<td>Kyle Saavedra, Gay Men as Sexual Beings in AIDS, Communication Studies</td>
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</table>

**Kayan Taraporevala**
Senior
*Theatre Arts and English*

**Nicholas Dart**
Senior
*Theatre Arts*

**Timothy Toole**
Junior
*Theatre Arts*

**Lisa Lawrence**
Sophomore
*Theatre Arts*

**Cameo Brown**
Freshman
*Psychology*

**Esmeralda Bruce-Romo**
Freshman
*(Chicana/o & Latina/o Studies)*

**Kyle Saavedra**
Sophomore
*Communication Studies*
UNDERGRADUATE RESEARCH SYMPOSIUM
Saturday, March 23, 2019
Schedule of Events

8:30am – 12:30pm  REGISTRATION
University Hall – 1st Floor

8:30am – 9:45am   ORAL SESSION I
1st Floor

9:50am – 11:05am  ORAL SESSION II
1st Floor

10:30am – 12:00pm POSTER SESSION I
2nd Floor Hallways

11:10am – 12:25pm ORAL SESSION III
3rd Floor

12:30pm – 1:45pm  ORAL SESSION IV
1st Floor

1:30pm – 3:00pm   POSTER SESSION II
Atrium and 1st Floor Hallway

1:50pm – 3:05pm   ORAL SESSION V
1st and 3rd Floors

3:00pm – 4:30pm   POSTER SESSION III
Atrium and 1st Floor Hallway

3:10pm – 4:25pm   ORAL SESSION VI
1st Floor

REFRESHMENTS SERVED THROUGHOUT THE DAY
## ROOM 1218
### Educational Strategies: Where Have We Been and Where are We Going?
*Moderated by Mark Houlemarde*

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<th>Topic</th>
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<tbody>
<tr>
<td><strong>Sarah Donahue</strong></td>
<td>The Benefits of Bilingual Education on Non-Native Primary School Students in the United States</td>
<td>Sarah Donahue, Damon Hines</td>
</tr>
<tr>
<td><strong>Courtnee Collins</strong></td>
<td>The Socratic Method is more Beneficial than Lecturing</td>
<td>Joshua Kulmac Butler</td>
</tr>
<tr>
<td><strong>Deja Webber</strong></td>
<td>The Role of Black Women in Education and Activism Throughout American History</td>
<td>Sean Dempsey</td>
</tr>
<tr>
<td><strong>Thomas Duncan</strong></td>
<td>Lawsuits, White Supremacists, and Segregation Academies: The Legal Battle to Preserve Whites Only Schools in post-Brown v. Board Mississippi</td>
<td>Cara Anzilotti</td>
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</tbody>
</table>

## ROOM 1222
### The Pursuit of Happiness
*Moderated by Erin Stackle*

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<tr>
<td><strong>Joe Coleman</strong></td>
<td>Virtue of What?</td>
<td>Erin Stackle</td>
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<tr>
<td><strong>Sam Burton</strong></td>
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<tr>
<td><strong>Joe Coleman</strong></td>
<td>Practical Navigation of Virtue</td>
<td>Erin Stackle</td>
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<td><strong>Daniel Siciliano</strong></td>
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<tr>
<td><strong>Samantha Burton</strong></td>
<td>Wine and Conversation in the Museum Setting</td>
<td>Erin Stackle</td>
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<tr>
<td><strong>Classics &amp; Archaeology; Screenwriting</strong></td>
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## ORAL SESSION I
8:30AM-9:45AM

### ROOM 1226
**Magnets, Black Holes & Chaos**  
*Moderated by Jonas Mureika*

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<th>Mentors</th>
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<tbody>
<tr>
<td>Nicholas Lozano</td>
<td>An Exploration of Electromagnetic Interactions</td>
<td>John Bulman</td>
</tr>
<tr>
<td>Mia Calhoun</td>
<td>The Double Pendulum: A User-Friendly, Numerical Mode</td>
<td>Jeffery Phillips</td>
</tr>
<tr>
<td>Heather Mentzer</td>
<td>Thermodynamics of Charged Generalized Uncertainty Principle Black Holes</td>
<td>Jonas Mureika</td>
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</tbody>
</table>

### ROOM 1401
**The Impact of Politics**  
*Moderated by Sean Dempsey*

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<tr>
<td>Sam Cassidy</td>
<td>The Effects of Political News Source on Reading Comprehension</td>
<td>Lauren Moreno</td>
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<tr>
<td>Madelyn Starr</td>
<td>The Problem of Dirty Hands: An Examination of Kamala Harris's Problematic Past</td>
<td>Andrew Dilts</td>
</tr>
<tr>
<td>William Lighthart</td>
<td>Have Women Achieved Commensurate Representation?: Gender Quota Effectiveness in the Cases of Singapore, South Korea, and Taiwan</td>
<td>Kerstin Fisk</td>
</tr>
<tr>
<td>Marie Quintana</td>
<td>Evangelicals and Abortion: A Tool for Political Power and a Reaction to the Rights Revolution</td>
<td>Sean Dempsey</td>
</tr>
</tbody>
</table>
| ROOM 1402 | Film and Music in the 21st Century  
*Moderated by Maire Ford* |
|-----------|-------------------------------------------------------------|
| Andrew York  
*Film and Television Production* | Virtual Reality Filmmaking: Storytelling Through Immersive Motion  
*MENTORS: Sue Scheibler  
SFTV* |
| Joshua Spaugh  
*CMST* | Podcasts and the Liking of Classical Music  
*MENTORS: Allison Noyces Soeller  
CMST* |
| Briana King  
*Entrepreneurship* | Childish Gambino’s "This is America": Popular Media and The Black Experience  
*MENTORS: Christopher Finlay  
Communications* |
| Veronica Rose Tan  
*Psychology* | A Survey on Emotion and Music Listening Habits  
*MENTORS: Maire Ford  
Psychology* |

| ROOM 1403 | Representations & Realities  
*Moderated by Nicolas Rosenthal* |
|-----------|---------------------------------|
| Samantha Burton  
*Classics & Archaeology; Screenwriting* | Orpheus and Women on 5th and 4th century BCE Athenian Vases  
*MENTORS: Matthew Dillon  
CLAR* |
| Allyson Trakas  
*Communications* | Buffalo Bill, Sitting Bull, and the Myth of the American West  
*MENTORS: Nicolas Rosenthal  
History* |
| Mariana Ramirez  
*Chicano Studies* | No Title Provided (Food in LA)  
*MENTORS: Eliza Rodriguez y Gibson  
Chicana/o Latina/o Studies* |
## ORAL SESSION II

### ROOM 1404

**By Land or Sea**  
*Moderated by Wendy Binder*

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Topic</th>
<th>Mentors</th>
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<tbody>
<tr>
<td>Jiayan Li</td>
<td>Computational Comparison of Water Oxidation in Mononuclear Manganese Catalysts</td>
<td>Emily Jarvis, chemistry</td>
</tr>
<tr>
<td>Jacquelyn Galvez</td>
<td>Morphological Asymmetry as an Indicator of Stress in N. lepida and O. torridus, Morphological Changes in Response to Pollution in Inyo County</td>
<td>Wendy Binder, Biology</td>
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<tr>
<td>Michelle Liaolo</td>
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<td>Catherine Dauw</td>
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<td>Michelle Laiolo</td>
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<tr>
<td>Nicholas Vanstrum</td>
<td>Malibu Shoreline Project Related Review</td>
<td>Melodie Grubbs, Santa Monica Bay</td>
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<td>Cristina Tirado, Environmental Policy</td>
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### ROOM 1000

**Queer Representations: Disease, Aging, and Identity**  
*Moderated by Mairead Sullivan*

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Topic</th>
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<tbody>
<tr>
<td>Ken Cavanaugh</td>
<td>Queer Failure and &quot;Successful Aging&quot;</td>
<td>Anna Maria Muraco, Sociology</td>
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<tr>
<td>Col Cavanaugh</td>
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<tr>
<td>Blake Colton</td>
<td>The Framing of a Disease: A Critical Look at Representations of HIV-Infection from the 1980s to Present Day</td>
<td>Sina Kramer, Women’s and Gender Studies</td>
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## ORAL SESSION III

### ROOM 3218

**Health, Wellbeing, and Psychological Considerations for Adults and Children**  
*Moderated by Joshua Kulmac Butler*

**Michaela Cahill**  
*Political Science*  
How to Earn Marshmallows: Examining Factors Predictive of Gratification Delay in Children  
MENTORS: Joshua Kulmac Butler  
Philosophy

**Stephanie Milbrodt**  
Correlation of Childhood Maltreatment and Adult Attachment Pattern  
MENTORS: Joshua Kulmac Butler  
Philosophy

**Dillon Rinauro**  
*Biochemistry*  
**Kate Menefee**  
*Biochemistry*  
Human Islet Amyloid Polypeptide (IAPP) Aggregation is Inhibited in the Presence of IAPP of Alternate Species  
MENTORS: David Moffet  
Biochemistry

### ROOM 3222

**Women in the Workplace**

**Saba Kinfe**  
*African American Studies*  
Black Women in Comedy  
MENTORS: Jenniffer Williams  
African American Studies

**Alexandra Meek**  
*Sociology*  
Gender and Underground Hip Hop: Female Artists and how they Challenge the Industry  
MENTORS: Stephanie Limoncelli  
Sociology

**Camryn Barker**  
*Peace & Justice Studies*  
Gender, Neoliberalism, and the International Division of Reproductive Labor  
MENTORS: Tahereh Aghdasifar  
Women’s and Gender Studies
| Room 3226 | Stories of Immigration and What they Tell Us  
*Moderated by Anna Muraco* |
|----------------|-----------------------------------------------|
| Melody Forsythe  
*Communications*  
Julia Kirkland  
*Communications*  
Maria Leon  
*Communications*  
Rachel Sedgwick  
*Communications* | A Media Content Analysis: The Framing of Immigration in the Mollie Tibbetts Story  
MENTORS:  
Judy Battaglia  
*Communications* |
| Kira Jatoft  
*Sociology & Spanish* | Study of Older Latino Immigrants  
MENTORS:  
Anna Muraco  
*Sociology* |
| ROOM 3230 | Mapping Elements in Urban Ecology  
**Moderated by Brianne Gilbert** |
|---|---|
| **Samantha Zinn**  
*Sociology*  
**Shane Williams**  
*Sociology* | Discovering the Growing Angeleno Vote by Mail Population  
**MENTORS:**  
Brianne Gilbert  
*Center for the Study of Los Angeles* |
| **Shane Williams**  
*Sociology*  
**Samantha Zinn**  
*Sociology* | Analyzing Socio-economic Gaps Through Geographic Information Systems  
**MENTORS:**  
Brianne Gilbert  
*Urban Studies* |
| **Aurora Crum**  
*Urban Studies* | Mapping Modern Reasons for California Wildfire Increase  
**MENTORS:**  
Brianne Gilbert  
*GIS Research* |
| **Jaclyn Findlay**  
*Biology* | The Migration Routes of LA County Endangered Species  
**MENTORS:**  
Brianne Gilbert  
*Political Science and Urban and Environmental Studies* |
| **Julia Pradel**  
*Sociology* | Greenspace and the Community Along the Los Angeles River  
**MENTORS:**  
Brianne Gilbert  
*Political Science and Urban and Environmental Studies* |
| **Davaughn Wong**  
*Urban Studies*  
**Ryan Burke**  
*Urban Studies*  
**Emily Sinsky**  
*International Relations* | Transportation Behavior and Land Use Regulation  
**MENTORS:**  
Brianne Gilbert  
*Urban Studies* |
| **Ryan Burke**  
*Urban Studies*  
**DaVaughn Wong**  
*Urban Studies*  
**Emily Sinsky**  
*International Relations* | Equitable Biking Infrastructure in Los Angeles County  
**MENTORS:**  
Peter Hoffman  
*Urban Studies*  
Brianne Gilbert  
*Urban Studies* |
| **Emily Sinsky**  
*International Relations* | Food Insecurity in Regions Degraded by Climate Change  
**MENTORS:**  
Brianne Gilbert |
### ROOM 1858  
**Art of Witness & Exploration**  
*Moderated by Sarah Maclay*

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Topic</th>
<th>Mentors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brynn Bodair</td>
<td>Moving to Reduce Conflict: Understanding How Dance May be Used to Calm the Strained Relations between Those Involved in the Palestinian-Israeli Conflict</td>
<td>Teresa Heiland Dance</td>
</tr>
<tr>
<td>Madelyn Starr</td>
<td>Pablo Neruda: A Political Poet for the People /Pablo Neruda: Un poeta político para la gente común</td>
<td>Alicia Partnoy Modern Languages (Spanish)</td>
</tr>
<tr>
<td>Patricia Lynch</td>
<td>Une Promenade Pluvieuse à Paris</td>
<td>Sarah Maclay English (poetry) Juan Mah y Busch English and Chicano Studies</td>
</tr>
</tbody>
</table>

### ROOM 1866  
**Explorations of Gender & Identity**  
*Moderated by Janelle DolRayne*

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Topic</th>
<th>Mentors</th>
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<tbody>
<tr>
<td>Milena Beliso</td>
<td>Disrupting the Narrative: Intersections of Feminine Writing and Experimental Fiction</td>
<td>Paul Harris English</td>
</tr>
<tr>
<td>Taylor Knudson</td>
<td>An Examination of Fat Femme Identity</td>
<td>Eliza Rodriguez y Gibson Chicana/o Studies</td>
</tr>
<tr>
<td>Cameo Brown</td>
<td>The Examination of Fear as a Perpetual Roadblock</td>
<td>Leon Wiebers Theatre</td>
</tr>
</tbody>
</table>
| ROOM 1405 | Genes & Proteins  
**Moderated by Deepa Dabir** |
|-----------------|--------------------------------|
| **Mikayla Sweitzer**  
*Biochemistry* | **Characterization of a Novel Mitochondrial Protein**  
MENTORS: Deepa Dabir  
*Biology* |
| **Lauren Kelly**  
*Biology* | **Modeling of Gene Regulatory Network Dynamics Predicts which Regulatory Relationships are Important for Controlling the Cold Shock Response in Saccharomyces cerevisiae**  
MENTORS: Kam Dahlquist  
*Biology*  
Ben Fitzpatrick  
*Mathematics* |
| **Mihir Samdarshi**  
*Biology* | **New Layouts, Data Types, and Architecture for GRNsight 3: A Web Application for Visualizing Gene Regulatory Networks**  
MENTORS: Kam Dahlquist  
*Biology*  
John David Dionisio  
*Computer Science* |

<table>
<thead>
<tr>
<th>ROOM 1000</th>
<th>Social Justice in Action</th>
</tr>
</thead>
</table>
| **Nicholas Dart**  
*Theater*  
**Timothy Toole**  
*Theater* | **Social Justice in Action: Service and Engaged Learning Experiences**  
MENTORS: Judith Royer  
*Theatre*  
MaryAnne Huepper |
| **Harold Lloyd**  
*Theater*  
**Nicholas Dart**  
*Theater*  
**Timothy Toole**  
*Theater* | **Art as Activism Part 1: Spoken Word**  
MENTORS: Judith Royer  
*Theatre (CSJ Center)*  
MaryAnne Huepper  
*CSJ Center* |
| **Janhavi More**  
*Psychology*  
**Jenee Potts**  
*Marketing*  
**Jeffrey Maxwell**  
*Marketing*  
**Jarrell**  
*Marketing* | **Social Justice in Action: Service and Engaged Learning Experiences Panel**  
MENTORS: Judith Royer  
*Theatre*  
MaryAnn Huepper  
*CSJU* |
### ROOM 3218

**Through Lens & Pen: Gender and Sexuality in Film and Books**  
*Moderated by Tracy Tiemeier*

<table>
<thead>
<tr>
<th>Presenter/Panelist</th>
<th>Topic</th>
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</thead>
<tbody>
<tr>
<td>Matthew Gaydos</td>
<td>Ran: How Kurosawa Wrote Back to and Revised Shakespeare for Cinema</td>
</tr>
<tr>
<td>Rachel Knight</td>
<td>What can a Dionysian perspective of Harry Potter tell us about masculinity?</td>
</tr>
<tr>
<td>Kyle Saavedra</td>
<td>Gay Men as Sexual Beings in AIDS Cinema</td>
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</table>

**Mentors:**

- Barbara Rico  
  *English*
- Tracy Tiemeier  
  *Theological Studies*

### ROOM 3222

**Bias, Assault, and Historical Transgressions**  
*Moderated by Elizabeth Drummond*

<table>
<thead>
<tr>
<th>Presenter/Panelist</th>
<th>Topic</th>
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<tbody>
<tr>
<td>Kathleen Leslie</td>
<td>Correlations Between High Risk Masculine Groups and Sexual Assault Towards Females on a College Campus</td>
</tr>
<tr>
<td>Thomas Duncan</td>
<td>Confronting the Past: How Universities Remember Their Connections to Slavery</td>
</tr>
<tr>
<td>Michelle Chernikova</td>
<td>The Flawed Science Behind Implicit Bias Trainings</td>
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</tbody>
</table>

**Mentors:**

- Damon Hines  
  *Communications*
- Elizabeth Drummond  
  *History*
- Joshua Kulmac Butler  
  *Philosophy*
## ORAL SESSION V
1:50PM-3:05PM

### ROOM 3226
For the $ Moderated by Paul Harris

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Title</th>
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<tbody>
<tr>
<td>Alex Stamas, Economics &amp; Finance</td>
<td>Finding the Optimal Point of Leveraging in Real Estate Investment Trusts (REITs)</td>
<td>MENTORS: Trevor Zink, Business, Thomas Herndon, Economics</td>
</tr>
<tr>
<td>Zachary Bishkin, Finance</td>
<td>Evaluating Morningstar Wide Moat Stocks through the Business Cycle</td>
<td>MENTORS: Joshua Spizman, Finance</td>
</tr>
<tr>
<td>Maliek Reed, Finance &amp; Economics</td>
<td>Economic Stability through Education of Personal Finance</td>
<td>MENTORS: Scott Delanty, Accounting</td>
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### ROOM 3230
Crime, Punishment, and Gender: Examining Gender Violence and the Carceral State
Moderated by Mairead Sullivan

<table>
<thead>
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<th>Speaker</th>
<th>Title</th>
<th>Mentors</th>
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<tbody>
<tr>
<td>Samantha Larmon, Women &amp; Gender Studies</td>
<td>Measuring Progress in News Media Representations of Sexual Assault</td>
<td>MENTORS: Mairead Sullivan, Women's and Gender Studies</td>
</tr>
<tr>
<td>Molly Learner, Sociology</td>
<td>The Riches of Rape: An Examination of the Profitability of Sexual Violence and Incarceration</td>
<td>MENTORS: Mairead Sullivan, Women and Gender Studies</td>
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<tr>
<td>Naomi Williams, Political Science</td>
<td>The Coloniality of Gender in the Criminalization of Transgender Individuals in the United States Prison System</td>
<td>MENTORS: Mairead Sullivan, Women and Gender Studies, Andrew Dilts, Political Science</td>
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### ROOM 1218

**Free Will**  
*Moderated by Anna Harrison*

<table>
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<th>Speaker</th>
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<tbody>
<tr>
<td><strong>Veronica Backer-Peral</strong></td>
<td>Christ and his Role in Augustine’s Confessions</td>
<td>Anna Harrison</td>
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<tr>
<td><strong>Film &amp; Television Production</strong></td>
<td></td>
<td>Theological Studies</td>
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<tr>
<td><strong>Kai Henthorn-Iwane</strong></td>
<td>Neuroscience and Free Will</td>
<td>Joshua Kulmac-Butler</td>
</tr>
<tr>
<td><strong>Studio Art</strong></td>
<td></td>
<td>Philosophy</td>
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<tr>
<td><strong>Camryn Barker</strong></td>
<td>Augustine and the Paradox of the Human Will</td>
<td>Anna Harrison</td>
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<tr>
<td><strong>Peace and Justice Studies</strong></td>
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### ROOM 1000

**Communication & Problem Solving**  
*Moderated by David Hardy*

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Topic</th>
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<tbody>
<tr>
<td><strong>Daniel Pascoe</strong></td>
<td>Analyzing Problem Solving Capabilities Between Novices and Experts in Physics</td>
<td>Jeffrey Phillips</td>
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<td><strong>Physics</strong></td>
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<tr>
<td><strong>Mary Schell</strong></td>
<td>Validating the Multicultural Neuropsychological Scale</td>
<td>David Hardy</td>
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<td><strong>Erick Caranza</strong></td>
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<td>Alberto Fernandez</td>
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<td><strong>Sean Lapeyre</strong></td>
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<td><strong>Courtney Ferrin</strong></td>
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<tr>
<td><strong>Chukwuemeka Azinge</strong></td>
<td>Applications of Empirical Counterfactuals for Online Recommender Systems</td>
<td>Andrew Forney</td>
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<tr>
<td><strong>Computer Science</strong></td>
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<tr>
<td><strong>Amanda Moore</strong></td>
<td>A New Decade of the Undergraduate Research Symposium Visual Identity</td>
<td>Saeri Dobson</td>
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<tr>
<td><strong>Studio Arts</strong></td>
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<td>Graphic Arts</td>
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<tr>
<td><strong>Devin Fernandez</strong></td>
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<tr>
<td><strong>Studio Arts</strong></td>
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## ORAL SESSION VI

### ROOM 1222
**War & Violence**
*Moderated by Kerstin Fisk*

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Title</th>
<th>Mentors</th>
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<tbody>
<tr>
<td>Hyung Jun You</td>
<td>The Rohingya Genocide: Preventable and Punishable</td>
<td>Kerstin Fisk (Political Science)</td>
</tr>
<tr>
<td>Ellen McGraw</td>
<td>Sacred War</td>
<td>Kerstin Fisk (Political Science)</td>
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### ROOM 1226
**Innovations in Technology**
*Moderated by Brendan Smith*

<table>
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<tr>
<th>Speaker</th>
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<tbody>
<tr>
<td>Grant Nagai</td>
<td>Autosave: Rethinking the Archive with Derrida and Deleuze</td>
<td>Brad Stone (Philosophy)</td>
</tr>
<tr>
<td>Muyuan Li</td>
<td>Sentiment Analysis of Yelp Businesses Based on Reviews Using Natural Language Processing</td>
<td>Robbie Nakatsu (AIMS)</td>
</tr>
<tr>
<td>Jared Ramirez</td>
<td>Redesign of the Resonating Arm Exerciser for Intuitive use by Clinicians and Patients</td>
<td>Brendan Smith (Seaver College of Science and Engineering)</td>
</tr>
<tr>
<td>Milyon Mesfin</td>
<td>Redesign of the Resonating Arm Exerciser for Intuitive use by Clinicians and Patients</td>
<td>Brendan Smith (Seaver College of Science and Engineering)</td>
</tr>
<tr>
<td>Willow Brown</td>
<td>Redesign of the Resonating Arm Exerciser for Intuitive use by Clinicians and Patients</td>
<td>Brendan Smith (Seaver College of Science and Engineering)</td>
</tr>
<tr>
<td>Ahmad Khalifeh</td>
<td>Investigating Computationally the Red Shift of Organic Polymers for Performance Enhancements for Solar Energy and Electronics</td>
<td>Emily Jarvis (Chemistry)</td>
</tr>
<tr>
<td>Thomas Kelly</td>
<td>Investigating Computationally the Red Shift of Organic Polymers for Performance Enhancements for Solar Energy and Electronics</td>
<td>Emily Jarvis (Chemistry)</td>
</tr>
<tr>
<td>Emmett Barnes</td>
<td>Investigating Computationally the Red Shift of Organic Polymers for Performance Enhancements for Solar Energy and Electronics</td>
<td>Emily Jarvis (Chemistry)</td>
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</table>
# POSTER SESSION I

## 10:30AM-12:00PM
## 2ND FLOOR HALLWAYS

## GRAPHIC DESIGN

<table>
<thead>
<tr>
<th>Name</th>
<th>Project Title</th>
<th>Mentor Information</th>
</tr>
</thead>
</table>
| Yue Wang              | Belonging              | Mentor: Samir Naimi  
                       | Graphic Design                                           | Studio Art                                               |
| Mariam Alnahedh       | Connect                | Mentor: Samir Naimi  
                       | Graphic Design                                           | Graphic Design                                           |
| Anthony Avaylen       | dada                   | Mentor: Garland Kirkpatrick  
                       | Graphic Arts                                             | CFA                                                      |
| Julian Kehle          | Every Data Point Counts | Mentor: Samir Naimi  
                       | STAR - Graphic Design                                     | Graphic Design                                           |
| Anthony Lopez         | Impact Athletic        | Mentor: Samir Naimi  
                       | Studio Arts                                              | CFA                                                      |
| Samantha Jordan       | Like a Woman           | Mentor: Samir Naimi  
                       | STAR GRAPH                                               | Graphic Design                                           |
| Kelli Nagasawa        | Lost                   | Mentor: Samir Naimi  
                       | Graphic Design                                           | Graphic Design                                           |
| Aurora Occelli        | Sorry, Honey           | Mentor: Samir Naimi  
                       | STAR - Graphic Design                                     | College of Communication and Fine Art                   |
| Tess Reid             | Species Speak          | Mentor: Samir Naimi  
                       | Graphic Design                                           | Graphic Design                                           |
| Daniel Akavi          | The Absurdity of Anxiety | Mentor: Samir Naimi  
                       | Graphic Design                                           | Studio Arts                                               |
| Parker Charles        | How Do You Learn?      | Mentor: Samir Naimi  
                       | Studio Arts- Graphic Design                               | Graphic Design                                           |
| Aison King            | The Unreal Exporter Toolset: A Pipeline for Quicker Animation Rendering. | Mentor: Shane Acker  
<pre><code>                   | Animation                                                | Animation                                                |
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<table>
<thead>
<tr>
<th>Name</th>
<th>Field</th>
<th>Title</th>
<th>Mentor</th>
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</thead>
<tbody>
<tr>
<td>Jay Froebe</td>
<td>Film &amp; Pols</td>
<td>A Cold Case; Is there a correlation between climate and public policy?</td>
<td>Jennifer Ramos</td>
</tr>
<tr>
<td>Camila Rivera</td>
<td>Political Science</td>
<td>Angelenos' Voter Familiarity with Future transition to Vote Centers</td>
<td>Brianne Gilbert</td>
</tr>
<tr>
<td>Ariel Pruyser</td>
<td>Psychology</td>
<td></td>
<td>StudyLA</td>
</tr>
<tr>
<td>Andrew Brown</td>
<td>Finance</td>
<td>Economic Optimism in LA</td>
<td>Brianne Gilbert</td>
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<td>Sebastian Arceo</td>
<td>International Relations</td>
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<tr>
<td>Samuel Baron</td>
<td>Political Science</td>
<td>Evolution or Expediency? An analysis of Hillary Clinton's public position taking</td>
<td>Michael Genovese</td>
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<tr>
<td>John Andrikos</td>
<td>International Relations</td>
<td>Expecting the Unexpected: Angelenos' Perceptions of Disaster Preparedness and Emergency Services</td>
<td>Brianne Gilbert</td>
</tr>
<tr>
<td>Devin Kellett</td>
<td>Political Science</td>
<td>Fear in Western Europe: Why Voters Support Nationalism</td>
<td>Michael Genovese</td>
</tr>
<tr>
<td>Guangpeng Ren</td>
<td>Mathematics</td>
<td>How could we forecast housing price in Los Angeles?</td>
<td>Brianne Gilbert</td>
</tr>
<tr>
<td>Brooke Duplantier</td>
<td>Political Science</td>
<td>ICE Raids and the Restaurant Industry</td>
<td>Jodi Finkel</td>
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<tr>
<td>Angelica Ortega</td>
<td>Political Science</td>
<td>Intersectional Identity Politics as a Tool for Successful Social Movements</td>
<td>Andrew Dilts</td>
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<tr>
<td>Senay Emmanuel</td>
<td>Political Science</td>
<td>Lessons in Peacekeeping Failure: Comparing UNMISS and UNOSOM Missions in East Africa</td>
<td>Kerstin Fisk</td>
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<tr>
<td>Olivia Round</td>
<td>Political Science</td>
<td>New Zealand and the UN Declaration on the Rights of Indigenous Peoples</td>
<td>Jodi Finkel</td>
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<tr>
<td>Name</td>
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<td>Nayar Islam</td>
<td>Political Science</td>
<td>NGO Neutrality: How Levels of Political Involvement Impact the Ability to Provide Aid to Vulnerable Populations</td>
<td>Kerstin Fisk</td>
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<tr>
<td>Siobhan Collins</td>
<td>Political Science and Philosophy</td>
<td>Profit-Seeking Institutions: A Genealogy of Metal Detectors in Public Schools</td>
<td>Brad Stone</td>
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<td>Alden Lundy</td>
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<td>Red in a Sea of Blue: An Analysis of Conservative Thinkers in Los Angeles</td>
<td>Brianne Gilbert</td>
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<td>Jayna Ortiz</td>
<td>Political Science</td>
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<td>Alfredo Hernandez</td>
<td>Political Science</td>
<td>Shaming Citizens: An Exploration on the Permissibility and Conduct of Justifiable Shaming Practices</td>
<td>John Parrish</td>
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<td>Kienan Taweil</td>
<td>Political Science</td>
<td>Sunni-Shia Fundamentalism and the Resurgence of Sectarianism in the Middle East</td>
<td>Feryal Cherif</td>
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<td>Luis Lopez</td>
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<td>The Effect of Travel Time on Voter Satisfaction</td>
<td>Brianne Gilbert</td>
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<tr>
<td>Claudia Moran</td>
<td>Chicana/o and Latina/o Studies</td>
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<td>Titania Davis</td>
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<td>Christina Chu</td>
<td>Communication Studies</td>
<td>The Effects of Law Enforcement Assessments of Alleged Child Neglect and/or Abuse</td>
<td>Kyra Pearson</td>
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<td>Vinkya Hunter</td>
<td>Communication Studies</td>
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<td>Ashley Naliwajko</td>
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<tr>
<td>Carlos Mesa Baron</td>
<td>International Relations</td>
<td>The Miracle of Medellin’s Social Urbanism</td>
<td>Gene Park</td>
</tr>
<tr>
<td>Veronica Backer-Peral</td>
<td>Film and Television Production</td>
<td>The Story of Time: A History of the Middle East</td>
<td>Ali Olomi</td>
</tr>
<tr>
<td>Alexis Hadjarpour</td>
<td>Political Science</td>
<td>Vertical Farming: Towers to Sustainability</td>
<td>Tahereh Aghdasifar</td>
</tr>
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</table>

**Mentor:**
- Political Science
- Philosophy
- Sociology
- Communication Studies
- International Relations
- Film and Television Production
- Women and Gender Studies
<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Mentor</th>
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<tbody>
<tr>
<td>Sabrina McQuade</td>
<td>Changes in Heart Rate Variability and EEG Waveforms are Associated with Increases in Cognitive Demand During a Working Memory Task</td>
<td>Judith Foy</td>
</tr>
<tr>
<td>Lakyn Keams</td>
<td>Developing Cloud-Based Machine Learning Tools to Analyze the Frequency of Alcohol in Social Media Posts</td>
<td>Michael Foy</td>
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<tr>
<td>Sonia Lee</td>
<td>Foreign Accent Perception and Speech Production</td>
<td>Kayoko Okada</td>
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<tr>
<td>Camila De Pierola</td>
<td>Investigating the Association Between Amphetamine Use and Psychotic Symptoms: A Mini Meta-Analysis</td>
<td>Nora Muphy</td>
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<tr>
<td>Reanna Khimani</td>
<td>Performance of Two Spanish-speaking Samples and an English-speaking Sample on the Cordoba Naming Test Spin! The Effects of Exercise on Speech Perception</td>
<td>David Hardy</td>
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<td>Michael West</td>
<td>Subword Unconscious Processing Occurs Early in the Learning of Novel Category Exemplars</td>
<td>Richard Abrams</td>
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<td>Renee Borges</td>
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<td>Joseph LaBrie</td>
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<td>Karya Ozmen</td>
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<td>Alexandra Horvath</td>
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<td>Julianna Dunivin</td>
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<td>Savannah Medina</td>
<td>Domestic Violence: Policy and Resources for Undocumented Women</td>
<td>Eliza Rodriguez y Gibson Chicana/o and Latina/o Studies Sylvia Zamora Sociology</td>
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<td>Annabelle Chardonnet</td>
<td>A Mini Meta-Analysis: Social Media Usage and Offline Political Participation</td>
<td>Nora Murphy Psychology</td>
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<td>An Exploration of Volunteer Training at Richstone Family Center</td>
<td>Susan McDaniel Communication Studies</td>
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<td>An Investigation of Personal Financial Literacy Education</td>
<td>Joshua Spizman Finance</td>
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<td>Alexandra OHara</td>
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<td>Vanessa Ibarra</td>
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<td>Margaret Gallagher</td>
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<td>Tatiana Estrada</td>
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<td>The Generational Affect of Parental Legal Status on Education</td>
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<td>Laina Washington</td>
<td>English and Sociology</td>
<td>Underrepresented Students' Experiences of Racial Microaggressions at</td>
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<td>Nicole Ann Villa</td>
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<td>Understanding Course Selection Decision Making of Undergraduate STEM Students</td>
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<td>Samuel Johnston</td>
<td>History</td>
<td>Virtual Communities: Contextualizing Mixed Race Community Organization and Development</td>
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# Poster Session II

1:30PM-3:00PM  
Atrium and 1st Floor Hallway

## Engineering – Computer Science

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<th>Name</th>
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<tr>
<td>Andrew Narag</td>
<td>Mechanical Engineering</td>
<td>3D Steerable Active Brachytherapy Needle with Three Nitinol Actuators</td>
<td>Mahsa Ebrahim Mechanical Engineering</td>
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<td>Buddha Elkenani</td>
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<td>Theresa Siri</td>
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<td>An Experimental Study of the Heat Transfer Regimes of a Gas Propelled Droplet Impacting onto a Heated Surface</td>
<td>Mahsa Ebrahim Mechanical Engineering</td>
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<td>Joshua Amurao</td>
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<tr>
<td>Pedro Sales</td>
<td>Electrical Engineering</td>
<td>Bispinner UAV Stabilization</td>
<td>Gustavo Vejarano Electrical Engineering and Computer Science</td>
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<td>Alejandro Zapata Acosta</td>
<td>Computer Science</td>
<td>Causal Inference in Procedural Dungeon Generation</td>
<td>Andrew Forney Computer Science</td>
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<td>Michael Rea</td>
<td>Mechanical Engineering</td>
<td>Early Development of Scale-able Rehabilitation System</td>
<td>Brendan Smith Mechanical Engineering</td>
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<td>Ariana Albiar</td>
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<td>Roberto Ventura</td>
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<td>Formation Algorithms for Collaborative Drones</td>
<td>Gustavo Vejarano Electrical Engineering</td>
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<td>Christian Tiong-Smith</td>
<td>Mechanical Engineering</td>
<td>Improving Student Persistence in STEM</td>
<td>Natalie Schaal Mechanical Engineering</td>
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<td>Nathan Santos</td>
<td>Mechanical Engineering</td>
<td>Improving the Mechanical Properties of Magnesium Alloy AZ31B through Heat Treatment and Cold Rolling</td>
<td>Omar Es-Said Mechanical Engineering Natalie Schaal Mechanical Engineering</td>
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<td>John Manganiello</td>
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<td>Robert Wood</td>
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### POSTER SESSION II

1:30PM-3:00PM  
ATRIUM AND 1ST FLOOR HALLWAY

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<tr>
<td>Junheng Li</td>
<td>Mechanical Engineering</td>
<td>Investigation of the Time-Dependence of Intershock Properties and Potential Consequences for Earthquake Forecasting</td>
<td>Natalie Schaal Mechanical Engineering</td>
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<td>Road Crack Detection Using The Deep Learning Approach</td>
<td>Lei Huang                Electrical Engineering</td>
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<td>The Necessity of Motion Feedback for Driver Rehabilitation</td>
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<td>Mary Laurance</td>
<td>Mechanical Engineering</td>
<td>Wind Tunnel Simulation of Design Aerodynamic Wind Loads on the Surfaces of a Model Building with a Flat Roof: Near-Uniform Flow Conditions</td>
<td>Michael Manoogian Civil Engineering Emin Issakhanian Mechanical Engineering</td>
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| Mary Laurance   | Mechanical Engineering     | Wind Tunnel Simulation of Design Aerodynamic Wind Loads on the Surfaces of a Model Building with a Flat Roof: Obstructed Flow Conditions | Michael Manoogian  
Civil Engineering  
Emin Issakhanian  
Mechanical Engineering |
| Erin Crowell    | Civil Engineering           |                                                                              |                                              |
| Salma Kamal     | Civil Engineering           |                                                                              |                                              |
| Andrei Pineda   | Civil Engineering           |                                                                              |                                              |
| Haley Fletcher  | Computer Science            | Hatch-a-Match: A Genetic Matching Algorithm for Bigs and Littles             | Dondi Dionisio  
Computer Science |
## ENVIRONMENTAL SCIENCE

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<th>Name</th>
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<tr>
<td><strong>Dominic Baechler</strong></td>
<td>Biology</td>
<td>A Temporal Analysis of Coyote Populations in Long Beach, CA</td>
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<td><strong>Reilly Grzywacz</strong></td>
<td>Environmental Studies</td>
<td>Analyzing Public Opinion of the Silver Lake Reservoir</td>
<td>Mentor: Emily Simso LMU Center for Urban Resilience Michele Romolini LMU Center for Urban Resilience</td>
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<td><strong>Kimberly Dobbs</strong></td>
<td>Environmental Science</td>
<td>Characterization of Sandy Beaches in Santa Monica Bay</td>
<td>Mentor: John Dorsey Civil Engineering and Environmental Science</td>
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<td><strong>Avery Dillon</strong></td>
<td>Biology and International Relations</td>
<td>Climate change and Health in European Countries</td>
<td>Mentor: Cristina Tirado Environmental Sciences</td>
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<td><strong>Kesterlyn Wilson</strong></td>
<td>Biology</td>
<td>Ecological Green to Economical Green: Current and Future Value of Ecosystem Services Provided by Los Angeles' Ascott Hills Park</td>
<td>Mentor: Demian Willette Biology</td>
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<td><strong>Sydney Lee</strong></td>
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<td>Examining the effects of short term exposure of microplastics on Daphnia magna</td>
<td>Mentor: Demian Willette Biology and Ecology</td>
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<td><strong>Jaclyn Findlay</strong></td>
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<td>Long Beach Coyote Management Plan</td>
<td>Mentor: Eric Strauss Biology and LMU CURes Peter J. Auger LMU CURes</td>
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<td><strong>Stacy Lam</strong></td>
<td>Biology</td>
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<td><strong>Hanna Weyland</strong></td>
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<td>Method Development for the Analysis of Microplastics on Sandy Beaches</td>
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<td><strong>Cameron Rehmani Seraji</strong></td>
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| POSTER SESSION II | 1:30PM-3:00PM  
| ATRIUM AND 1ST FLOOR HALLWAY |

| Biology |
| Havana Campo |
| Biochemistry |
| Calvin Foss  
Physics |
| Surface Flow Measurements in the Ballona Wetlands Freshwater Marsh  
Mentor: Michele Romolini  
Director of Research for Center for Urban Resilience |

| HEALTH & HUMAN SCIENCES |

| Lauren Pritting  
Health and Human Sciences |
| A Case Study on Concussions at Altitude  
Mentor: Sarah Strand  
Health and Human Sciences |

| Joelle Shieh  
Health and Human Science  
Rebecca DePalma  
Health and Human Sciences  
Marie Smith  
Biology |
| An Examination of Knee Abduction and Patellofemoral Stress During Walking and Running  
Mentor: Jenevieve Roper  
Health and Human Science |

| Rowena Feng  
Health and Human Sciences |
| Body Fat Composition Among College Drinkers and Non-Drinkers  
Mentor: Hawley Almstedt  
Health and Human Sciences |

| Dana Eitan  
Health and Human Sciences |
| Comparison of Quadriceps-to-Hamstrings Ratios and Isokinetic Torque During Cutting  
Mentor: Jenevieve Roper  
Health and Human Sciences  
William McCormack  
Health and Human Sciences |

| Allison Sarbaum  
Health and Human Sciences |
| Comparison of Quadriceps-to-Hamstrings Ratios in Male Soccer Athletes During Drop Landings  
Mentor: Jenevieve Roper  
Health and Human Sciences  
William McCormack  
Health and Human Sciences |

| Hayley Hart  
Biology |
| Integration of Health and Agriculture in Climate Change National Commitments  
Mentor: Cristina Tirado |
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<tr>
<td>Avery Dillon</td>
<td>Health and Human Sciences</td>
<td>Investigating the Relationship Between Social Media Use and Reported Rates of Exercise</td>
<td>Zakkoyya Lewis-Trammell</td>
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<td>Relationship between Socialization and Weight Changes Using Wearable Fitness Devices</td>
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<td>Utilizing 3D Printing Technology and the Plasmodial Slime Mold Physarum polycephalum to Approximate Efficient Transit Networks of Los Angeles</td>
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<td>Chad Awtrey Mathematics</td>
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<td>Anna Bargagliotti Mathematics</td>
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**MATHEMATICS – PHYSICS**

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**Mentor:** Zakkoyya Lewis-Trammell  
**Mentor:** Anna Bargagliotti Mathematics
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<td>Larry Sprott</td>
<td>Measuring the Effects of Confidence and Prior Experience on Academic Success in Physics</td>
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<td>Simulations of Plasma Particles in Electromagnetic Fields</td>
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<td>Yuanji Huang</td>
<td>Solutions of Fractional Oscillator</td>
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### POSTER SESSION III

**3:00PM-4:30PM**  
**ATRIUM AND 1ST FLOOR HALLWAY**

## BIOLOGY

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<td>John Lopez</td>
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<td>Assessing Multiple-Paternity in Broods of the Trapdoor Spider Bothriocyrtum californicum</td>
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<td>Aira Wada</td>
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<td>Jessica Candela</td>
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<td>Biochemical variability of Rhizobium leguminosarum biovar viciae strains</td>
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<td>Molly Boselli</td>
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<td>Ava Lekander</td>
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<td>Characterization of ABC transporter mutants in Paraburkholderia tuberum</td>
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<td>Ashwarya Sharma</td>
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<td>Ontogenetic Distribution of Late Pleistocene Megafauna at Rancho La Brea</td>
<td>Wendy Binder Biology</td>
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<td>Tiffany Tang</td>
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<td>Operation Bird Smack: Studying the Incidence of Avian Window Collisions on Campus</td>
<td>Kristen Covino Biology</td>
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<td>Sofia Acosta</td>
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<td>Francesca Foltz</td>
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### Poster Session III

#### 3:00PM-4:30PM

**Atrium and 1st Floor Hallway**

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<tr>
<th>Student Name</th>
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<tr>
<td>Annie Heckman</td>
<td>Environmental Science</td>
<td>Overexpression of Type IV Pili in the Legume Endosymbiont, Sinorhizobium meliloti</td>
<td>Mentor: Nancy Fujishige Biology</td>
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<tr>
<td>Sol Lewites</td>
<td>Biology</td>
<td>Prey Species Identification from Urban Coyote Scat Samples using PCR Amplification and Enzyme Restriction</td>
<td>Mentor: Demian Willette Biology Eric Strauss Biology</td>
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<td>Desiree Gonzalez</td>
<td>Biology</td>
<td>Reduction of Phenolic Content in Theobroma Cacao cotyledons by Microbial Fermentation</td>
<td>Mentor: Nhu Nguyen UH-Manoa, Dept. of Tropical Plant &amp; Soil Sciences</td>
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<tr>
<td>Matthew Sheridan</td>
<td>Biology</td>
<td>Role of NodC genes in Paraburkholderia tuberum</td>
<td>Mentor: Michelle Lum Biology Department</td>
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<td>Grace Riggs</td>
<td>Biology</td>
<td>Symbiosis between Chamaecrista fasciculata and Nitrogen-Fixing Bacteria</td>
<td>Mentor: Nancy Fujishige Biology</td>
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<td>Talyssa Topacio</td>
<td>Biology</td>
<td>Synergistic Effects of Mixed Populations of Sinorhizobium meliloti and Bacillus simplex on Root Infection and Nodulation</td>
<td>Mentor: Nancy Fujishige Biology, Plant-Microbial Interactions</td>
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<td>Nicole Ann Villa</td>
<td>BS Biology</td>
<td>The Plant Growth Promoting Potential of Bacillus spp., Brevundimonas sp., Paenibacillus polymyxa, and Streptomyces sp.</td>
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<td>Giovanni Di Franco</td>
<td>Environmental Science</td>
<td>The Rich Taphonomic History of the Late Pleistocene from Rancho La Brea</td>
<td>Mentor: Wendy Binder Biology Joshua Cohen Biology</td>
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<td>Giovanni Di Franco</td>
<td>Environmental Science</td>
<td>The Use of Stable-Hydrogen Isotopes to Model the Migrational Patterns of Yellow Warblers (S. Petechia)</td>
<td>Mentor: Kristen Covino Biology</td>
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<td>Sabrina Soto</td>
<td>Biology</td>
<td>Utilizing Invasive Tumbleweed (Kali tragus) Brush Piles to Assess Habitat</td>
<td>Mentor: Demian Willette</td>
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<td>Nicholas Pilaud</td>
<td>Environmental Science</td>
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<td>Xiaoya Yuan</td>
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<td>Carolyn Egekeze</td>
<td>Biology</td>
<td>Determination of the Relationship Between Thermodynamic RNA Stem-Loop Stability and Frameshift Efficiency</td>
<td>Kathryn Mouzakis Chemistry</td>
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<td>Jared Lyons</td>
<td>Biochemistry</td>
<td>First Principles Investigation of the Defect Structure of Metal Oxide Nanopowders for Catalytic and Solar Energy Materials</td>
<td>Emily Jarvis Physical Chemistry</td>
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<td>Brynne Weed</td>
<td>Chemistry</td>
<td>Microseepage of Light Alkanes in Los Angeles' Long Beach Oil Field and Wilmington Oil Field</td>
<td>Lambert Doezema Chemistry and Biochemistry</td>
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<td>Mikaela Ribi</td>
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<td>John Richards</td>
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<td>Synthesis and Evaluation of Isatin and Indigo Derivatives for G-Quadruplex Stabilization</td>
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3D Steerable Active Brachytherapy Needle with Three Nitinol Actuators
Andrew Narag, Buddha Elkenani

A recent project regarding brachytherapy procedure was initiated with the objective of optimizing the killing of cancer cells in patients with prostate cancer. Brachytherapy involves directly targeting and killing groups of cancerous cells. However, there are many areas that prove difficult to reach with conventional, static needles without causing additional trauma to the prostate. Thus, a maneuverable dynamic needle featuring three-dimensional (3D) manipulation was conceptualized as an alternative, more effective needle. This 3D manipulation is achieved by utilizing electrical current to heat shape memory alloy (SMA) wires, causing deflection and high energy density actuation. An initial 4:1 scaled prototype of this maneuverable needle was tested to determine the feasibility of its implementation. Then, data collected using a coiled SMA wire for actuation resulted in a 38.8% increase in deflection efficiency over a straight wire. Another variation, a tri-directional prototype, demonstrated an average global deflection of 8.33 degrees. However, current iterations of the design show that re-initializing deflection takes too long. This project aims to develop an effective cooling mechanism needed to increase maneuverability efficiency as well as procedural productivity. Feasible mechanisms need to be researched, analyzed and designed, manufactured as prototypes, tested using custom test procedures, reanalyzed, and (if necessary) redesigned over the course of this academic year.

A Comparative Analysis of "Coming Out" Across Contexts
Col Cavanaugh

The meanings of coming out are diverse and complex. Since the 1960s, coming out has been understood as a right and responsibility; a starting point for radical political praxis; a compulsory confessional ritual; a community-based declaration of identity; a pedagogical tool; an act of self-acceptance; a colonial framework and narrative; and a road to assimilation, to name few. Despite its many forms, "coming out" is assumed to be a fixed and central feature of specific social experiences. However, who comes out and how changes over time and place. In this paper, I consider two accounts of coming out: one based in literary representations and another in psychological research on LGBTQ identity development. The first of these accounts comes from Robert McRuer's "Boys' Own Stories and New Spellings of My Name: Coming Out and Other Myths of Queer Positionality." This text is a reflection on the dangers and potentials of "the coming out story" for radical queer politics in the mid-1990s. The second is a qualitative photovoice study with 15 LGBTQ youths in a small urban center in Ontario during 2015. Through its research participants, this study formulates accounts of coming out which challenge normative understandings of the "good, out queer." I read these works together to illustrate two things: 1) that coming out is understood, enacted, and narrated in varied, strategic, and contested ways, and 2) that these processes shape and are shaped by the social, economic, and political contexts in which they occur.

A Dynamic Gene Page Feature for GRNsight: a Web Application for Visualizing Models of Gene Regulatory Networks
Alexia Filler, John Lopez

GRNsight is a web application and service for visualizing models of gene regulatory networks (GRNs). A gene regulatory network consists of genes, transcription factors, and the regulatory connections
between them which govern the level of expression of mRNA and protein from genes. GRNmap, a MATLAB program that performs parameter estimation and forward simulation of a differential equations model of a GRN, can mathematically model GRNs. Using a GRNmap output workbook, GRNsight automatically lays out the network graph through a force simulation or arranges the nodes in a grid. GRNsight uses pointed and blunt arrowheads on the edges and color-codes and adjusts edge thicknesses based on the sign (activation or repression) and magnitude of the GRNmap weight parameter. Nodes are colored based on experimental or simulated time course gene expression data found in the GRNmap workbook. We have also added a feature that gives users the option to export data to an GRNmap-formatted Excel workbook. Additionally, we implemented a dynamic gene information webpage. When a user right-clicks on a node in the graph, a pop-up webpage sends a series of data requests to the JASPAR, NCBI Gene, UniProt, Ensembl, and Saccharomyces Genome Databases. The webpage is populated with data returned regarding the gene's description, protein sequence, DNA binding motif frequency matrix and sequence logo, and Gene Ontology terms. This new feature enables users to access information about the genes to facilitate biological interpretation of the GRN data, and is available in GRNsight version 3.1.0 at http://dondi.github.io/GRNsight.

A Media Content Analysis: The Framing of Immigration in the Mollie Tibbetts Story
Melody Forsythe, Julia Kirkland, Maria Leon, Rachel Sedgwick

This paper is a media study focused on examining the media's role in reporting the 2018 death of Iowa student Mollie Tibbetts and the sudden politicized framing of immigration once the confessed murderer became known as a Mexican immigrant. Inspired by the highly charged political debate over immigration policy in the United States under the Trump Administration, we ask whether immigration is framed differently according to the media source and their affiliated political silo. We argue, the media's framing of immigration in the Mollie Tibbetts story highlights the dominated accepted codes of the liberal and conservative ideological silos of the democratic and republican parties' immigration policies, which are advanced by the media's agenda-setting. Using the research paradigm of critical studies, we examined the biased framing of media messages through the methodology of context analysis to code the negative or positive phrases, words and terms, used to describe a Mexican immigrant in broadcast news, newspapers, and social media platforms Twitter and Facebook where content is provided and posted by the public. The results confirmed media channels frame immigration stories to align with their political silos to influence policy agendas. Our findings support scholarly claims that President Trump strategically uses Twitter to frame issues first, and thereby, influences the agenda-setting of the media. This study advances the discourse on mass media biased framing, the Reception and Agenda-Setting theories, especially, in the context of immigration policy in the United States. The study illustrates the public's need to decode our news media sources.

A Mini Meta-Analysis: Social Media Usage and Offline Political Participation
Sharon Nat, Annabelle Chardonnet, Nicole Fakhimi

Does increased knowledge through social media increase political activism? To investigate this question, a mini meta-analysis was conducted on studies regarding social media usage and political participation. A meta-analysis is a statistical modeling technique involving previous research on a topic and analyzes overall effect sizes to find underlining trends. In the current study, social media usage was defined by the amount of time spent on social media networking sites (e.g., Facebook, Twitter, etc.). Offline political participation was defined as behaviors involving political action such as voting or attending a rally. We tested the hypothesis that more exposure to social media was correlated with more offline political participation. Using the PsycINFO database, scholarly articles on these topics were identified with the following keywords: social media sites, voting, political activism, voting behavior, political discussion,
and online political expression. Of the 13 articles collected, 5 met our inclusion criteria, which involved a total of 2,759 participants. Results of the meta-analysis showed no statistically significant correlation between social media usage and offline political participation, $r = .132$, $p \leq .10$. The results of this analysis suggest that social media use may not be related to political actions. Implications suggest that politicians and political advocates may need to use other avenues, other than social media, to encourage offline political involvement.

A New Decade of the Undergraduate Research Symposium Visual Identity
Amanda Moore, Devin Fernandez

“For the Eleventh Annual Undergraduate Research Symposium, we were tasked with moving the visual identity system into a new decade after the celebration of the tenth anniversary. When rebranding the Symposium, we kept in mind the different connotations of the number “11” and the way that this number could be manipulated to emphasize the message and purpose of the Symposium. Some of the visual metaphors that we explored included puzzle pieces, DNA, stairs, chess pieces, butterflies, reflection, and roads. After careful consideration of all options, we decided to go with the road metaphor in order to symbolize the multitude of different disciplines that are represented at this symposium. The wavy letter forms come together nicely to create an illusion of a long distance road, one in which everyone encounters when they embark on something new and challenging. After the logo was finalized, we selected a few typefaces that had good weight options and would provide some contrast to the serif style of the “11”. We ended up picking a typeface that was legible across multiple forms, matching the curves of the road-like logo and allowing the design of each piece to easily flow just as the visual metaphor of the logo suggests.”

A Survey on Emotion and Music Listening Habits
Veronica Rose Tan

It is common for individuals to use music as a form of coping. Research suggests that when one is in a negative mood, listening to happy music, compared to sad music, is a mode of positive emotion regulation and a form of healthy coping, typically resulting in boosted mood. However, little work has investigated individual difference factors that might predict who uses music more/less effectively in coping with a negative mood. Given that emotional intelligence is typically associated with adaptive coping behavior and lower depression and anxiety levels, I wanted to investigate whether those with higher levels of emotional intelligence might make wiser choices in terms of the music they listen to when in a negative mood and if they may experience better mood regulation as a result. I investigated whether those who are considered more emotionally intelligent are more likely to listen to happy music in order to cope with being in a negative mood. 124 participants completed an online survey that measured their emotional intelligence and music listening habits, both in general and with a recent, specific, negative scenario in mind. Perceived benefits from listening to their choice of music were also assessed. Data analysis is currently underway and will be completed before the Undergraduate Research Symposium. If those with higher emotional intelligence do have healthier music choices when coping with a negative mood, this provides support for one specific mechanism by which emotional intelligence may boost mental wellbeing.

An Examination of Fat Femme Identity
Taylor Knudson

The thesis of this project contends that valuable pedagogical potential exists in an examination of a fat femme social identity as an analytic for understanding interlocking structures of oppression. While this
particular lens may be utilized to interrogate several forms of subjugation, my research focuses primarily on the fat femme identity and its specific intersections with white supremacy, heteropatriarchy, and capitalism. Public, violent, and culturally ubiquitous hatred of the fat femme body in the Western world functions as a contemporary vehicle for these systems of oppression. I have studied and compiled the theoretical, historical, and biographical works of fat scholars and activists, in addition to authors of adjacent fields including feminism, critical race theory, and queer theory to comprehend the way the fat femme identity functions within systems of oppression. I have also contributed some of my own autobiographical knowledge to emphasize the personal and experiential intelligence necessary to depict the realities of such embodiment. This collection of knowledge and analysis of the fat femme identity's relationship to white supremacy, heteropatriarchy, capitalism, and other systematic forms of subjugation is essential in both comprehending and confronting the suffering and inequality they impose upon a variety of marginalized populations.

An Examination of Knee Abduction and Patellofemoral Stress During Walking and Running
Joelle Shieh, Rebecca DePalma, Marie Smith

Introduction: Obesity is a known risk factor in the development of knee osteoarthritis. Abnormal mechanics during activity may result in excessive knee abduction and patellofemoral pain (PFP), which can increase the risk of knee osteoarthritis. Additionally, PFP is associated with body mass index (BMI) and excessive patellofemoral stress. However, it is unclear whether there is an association between patellofemoral stress (PFS) and BMI. Purpose: The purpose of this study was to determine if PFS and knee abduction is associated with BMI. Methods: Four female participants (height= 1.68±0.06702 years, weight= 58.25±5.18 kg, age= 20.75±0.9574 kg) voluntarily performed 10 trials of walking and running while wearing reflective markers specifically placed on anatomical landmarks of the lower body. Measurements were taken through a 3-D motion analysis system to extract selected variables. The Pearson’s correlation coefficient was used to measure the relationship present between variables, with the alpha level set at 0.05. Results: There was no significant association found between BMI and knee abduction or PFS. Conclusions: It appears that BMI is not associated with knee abduction and PFS. However, more participants are needed to determine the true relationship between the variables. Future research needs to explore the effect of weight loss on patellofemoral stress in order to clearly define the relationship between PFS and BMI.

An Experimental Study of the Heat Transfer Regimes of a Gas Propelled Droplet Impacting onto a Heated Surface
Theresa Siri, Joshua Amurao

Spray cooling is known to be one of the most effective methods of cooling high heat flux electronics. In order to better understand the fundamental physics and heat absorption of spray cooling, single droplet impingement on a heated surface has gained numerous attention. The experimental work of the literature suffers from the study of the heat transfer at high impact velocities. In gas-assisted spray cooling, the droplets are accelerated to even higher kinetic energies by the propellant gas which will result in rapid and dramatic temperature drops in the surface upon the impact. Therefore, fast response thermal instruments are required to measure the instantaneous surface temperature and to study the heat transfer of the impact of a gas propelled droplet. It this work, intrinsic thermocouples were designed and fabricated to effectively capture the dramatic temperature drop in the surface immediately after the impact. High speed digital video camera was utilized to capture the hydrodynamics of the droplet spreading and receding phases and to observe the evaporation process. It was found that the surface temperature dropped more significantly as impact We number was increased. This was due to
the formation of a larger diameter and thinner liquid film on the heated surface. Consequently, the evaporation rate was found to increase as impact We number was enhanced.

An Exploration of Volunteer Training at Richstone Family Center
Ashley Naliwajko

Richstone Family Center is an agency for child abuse treatment and prevention in Los Angeles County, and their volunteers, most specifically at their after school program, are integral to assisting the staff in ensuring that the organization runs more smoothly. This research seeks to understand Richstone Family Center’s volunteer training process in order to find out if proper training is in place for both the volunteers and the staff to feel sufficiently prepared and supported. Through participant observation at the after school program, I gain an understanding of the current volunteer experience by observing both volunteers and staff to understand how the volunteers behave, what tasks the volunteers are asked to do, and how the staff behave. Through in-person and audio recorded interviews, I include questions about an individual’s volunteer experience and what an effective training process would look like that best supports their needs. The interviews with staff include questions about their needs as a staff member, how volunteers can better assist them, and what an effective volunteer training process would look like that best supports their needs. As the research is still ongoing, I plan to engage with the feedback and insights gained from the observations and interviews to develop a well-informed, effective training tool for Richstone Family Center to utilize that will help both the current and future volunteers and staff feel sufficiently prepared and supported to continue Richstone’s mission to treat and prevent child abuse.

An Investigation of Personal Financial Literacy Education
James Penner

A lack of financial literacy for many people in the United States is a prominent problem that has largely gone unaddressed, but one that can have devastating results as evidenced by the financial crisis of 2008. Currently 43% of student loan borrowers are not making payments and 33% of American adults have $0 saved for retirement. These alarming statistics amid a strong economic environment highlight the negative affects a lack of financial literacy can have. Higher education is geared towards providing students the tools to succeed in a future career and life, but the tools to form a basic understanding of personal finance principles is rarely provided. There is extensive research documenting the need for an improvement in financial literacy and many point to education as the key. Universities are poised in the perfect position to address this problem and provide a solution to benefit their student’s financial well being early in life where financial decisions have greater impact. This research investigates the effects of a business degree on financial literacy over the traditional course of study at a university through a questionnaire measuring personal finance knowledge and willingness to take a voluntary personal finance course. It seeks to bring attention to the financial literacy problem at hand and determine whether a specific personal finance course is the necessary solution. It also aims to highlight the need for increased personal finance education, specifically for students that do not receive a basic finance education in their core curriculum.

Analysis of undergraduate climate science understanding and information literacy
Jamie Klapp

This investigation analyzed undergraduate students' understanding of climate science, confidence in the material, and knowledge of source credibility. An online survey was given to students in four different courses at the beginning and end of fall and spring 2017 and 2018 semesters: General Chemistry,
LEAPIN First-Year Seminar, Earth Systems Science, and Environmental Chemistry. General Chemistry students represent incoming freshmen interested in science. Survey data indicated that they developed a better understanding of information literacy and critical thinking throughout the semester. The seminar is a course designed to introduce a small group of freshmen science majors to aspects of climate science and information literacy. Students in this course showed substantial growth in their understanding of general concepts. For example, while 65% of students in the 2018 cohort initially agreed that most scientists think global warming is happening, 100% agreed at the end of the semester. Furthermore, in 2017 and 2018, the number of students with strong trust in climate scientists increased by over 20%. Environmental Chemistry and Earth Systems Science students represent non-freshmen who are interested in the environment and have some prior exposure to climate change. The survey indicated that while they had a higher base-line understanding of global warming and stronger trust in climate scientists than incoming freshmen, they had similar misconceptions regarding basic climate science. Despite unchanging misconceptions, students in each population demonstrated notable shifts in their understanding of climate change and evaluation of source credibility, suggesting overall improvements in awareness and critical thinking throughout these courses.

Analyzing Problem Solving Capabilities Between Novices and Experts in Physics
Daniel Pascoe

The research presented in this thesis explores how novice and expert problem solvers self-monitor during the problem solving process. While physics educators and researchers place a great importance on one’s problem solving skills, there are currently no well organized or effective ways to evaluate students’ or experts’ skills in problem solving. This research intends to propose a solution by taking a deeper look into the thought process that novices and experts utilize while solving a challenging problem. The students and professors who participated in this research were recorded using Livescribe pens while they verbalized their thought process as they solved problems. The data was analyzed using the ACE-M framework and showed that students that employed monitoring more frequently tended to be more efficient and accurate problem solvers. In addition to significant differences in frequency, there were significant differences in the type of monitoring that each group employed. Using these results, researchers will be able to find ways to help teachers and professors implement teaching techniques to make their students better problem solvers.

Analyzing Public Opinion of the Silver Lake Reservoir
Reilly Grzywacz

Silver Lake, California is a diverse residential neighborhood located five miles northwest of downtown Los Angeles, with a population of around 32,890 people. Silver Lake was built around its local reservoir, the facilities of which provide habitat for wildlife, recreational opportunities, and aesthetic, social, and wellness benefits for visitors. Presumably, the reservoir also mitigates the urban heat island effect. Since the reservoir was recently refilled with water, the Silver Lake Neighborhood Council (SLNC) plans to update the reservoir management plan, informed by public input and assessment. A team of CURes researchers surveyed 249 citizens in person around the Silver Lake neighborhood to gather public opinion on the reservoir’s facilities, including possible improvements in water accessibility, educational opportunities, and infrastructure. This same survey was also voluntarily taken online by 1014 people. This study serves to analyze the results of the survey to conclude the main concerns of Silver Lake residents and visitors. A majority of the surveyed subjects proved to be informed about the environmental and ecological effects of the reservoir. The majority also showed certain interest and concern for public accessibility, increased traffic, and improved facilities. Acknowledgment of both societal and ecological benefits of the reservoir substantiates a diverse array of public recommendations. The collected
information is hoped to play a major role in the continued development of the reservoir management plan, the outcomes of which have potential to bolster the Silver Lake reservoir as a vital, dynamic green space serving both citizens and local flora and fauna.

**Angelenos Unwavering Support for Quality Education**  
Samantha Zinn

For the first time in 30 years, members of United Teachers Los Angeles (UTLA), the union for Los Angeles Unified School District (LAUSD) teachers and other non-administrative staff, went on strike for six days in January 2019. The strike impacted 30,000 union members as well as 485,000 students and their families and cost LAUSD over $150 million in lost attendance-based revenue. This project analyzes public support for the strike as well as changes in support before the strike and during the strike by examining the results of the 2019 Los Angeles Public Opinion Survey conducted by the Thomas and Dorothy Leavey Center for the Study of Los Angeles (StudyLA) at Loyola Marymount University (n=425 before the strike; n=516 during the strike). Using a Chi-square test of independence, the analysis compares support before and after the strike and by demographic breakdowns including race, household income, union membership, marital status, and respondents with children under the age of 18. Overall, a majority of Angelenos supported the strike: 77% before the strike; 79% during the strike. Support levels did not change significantly over time by any demographic, remaining high. For example, results show Black respondents had the highest levels of support while Asian respondents had the lowest levels both before and during the strike. All Angelenos, regardless of background and despite the burden of not having children in schools for an entire week, stood with UTLA. Thus, public opinion remains high and steady among Angelenos for civic issues they deeply care about.

**Angelenos’ Voter Familiarity with Future transition to Vote Centers**  
Camila Rivera, Ariel Pruyser

By March 2020, Los Angeles County will complete the transition from polling places to vote centers, a model that will provide voters more accessible voting options and further optimize the voting experience. This research aims to understand what aspects Los Angeles County voters value about their voting experience and whether or not they are familiar with the transition to the vote center model. Results from the 2018 Gubernatorial General Election Exit Poll of 1,500 at-poll voters conducted by the Thomas and Dorothy Leavey Center of the Study for Los Angeles (StudyLA) at Loyola Marymount University are analyzed by race, household income, and political ideology using a Chi-square test of independence to test for significance. The findings show that minority racial groups, lower-income groups, and liberals value having more choices about where to go vote, being able to vote earlier than Election Day, automatically receiving a Vote-By-Mail (VBM) ballot, and being able to drop off their ballot in a secure lock box as part of their voting experience. However, only 27% of voters are familiar with the transition from polling places to vote centers. These results can inform the decisions the Los Angeles County Registrar-Recorder/Clerk will make as it implements the vote center model, highlighting what aspects of the voter experience should remain the same. However, enhancements to the voter experience do not matter if voters are not knowledgeable about the new vote center model. This research highlights the need for more promotion and education about the process.

**Applications of Empirical Counterfactuals for Online Recommender Systems**  
Chukwuemeka Azinge

The Multi-Armed Bandit problem with Unobserved Confounders (MABUC) is a problem in machine learning that considers decision-making settings where unmeasured variables can influence both an
individual’s decisions as well as the quality of those decisions. Recent findings showed that unobserved confounders (UCs) pose a unique challenge to recommender algorithms based on standard randomization (i.e., experimental data); if UCs are naively averaged out, these algorithms may suggest actions that are suboptimal in a given context. In this work, we examine the utility of employing an individual’s intended action as a proxy for the state of the UCs, thus leading to a more informed recommendation. In particular, we examine performance of participants on a confounded decision-making task on Amazon’s Mechanical Turk in which users are asked to answer a series of word-association questions. In each question, users are presented with a cue word (e.g., “fork”), and then two answer choices (e.g., “knife” and “spoon”), one of which will be considered the correct response. However, an UC is present in the quiz such that the most commonly intended response (e.g., “knife”) is always incorrect. To aid participants in overcoming this confounding, we engineer an online reinforcement learning agent that, when given the user’s intended choice, recommends the response it believes will maximize their chances of being correct. We demonstrate that this agent is capable of repairing for confounding bias, with possible applications into real-world confounded decision tasks like treatment in medicine or judgment in law.

Art as Activism Part 1: Spoken Word
Harold Lloyd, Nicholas Dart, Timothy Toole

My research began with the question: How does traditional and oral storytelling help unchain Black bodies? Through bibliographic secondary resources such as Molefi Asante’s work on Afrocentricity, Dr. Tricia Rose’s research on the politics of abandonment and invisibility embedded in Hip-Hop, coupled with primary research in intimate and heartbreaking interviews with the men of The Francisco Homes, a transitional living program with men on parole from life sentences, my role in helping these men get free with their words, their stories, and their bodies became more of a transformative experience than “just” a class. My methodology included an interview with a Black “lifer” who was imprisoned for over twenty years as well as a transcription and transformation of the interview into spoken word. The Spoken Word piece, which was based on conversations with the lifer about Hip-Hop and the social construction of Blackness, was performed on December 9th, a preview for the storytellers themselves, and public performances on February 9th and 13th. For the Undergraduate Research Symposium, I will present several results of my research on how Black bodies have become agents of white supremacy and how our chains are still not broken, followed by a segment from the public performance titled “Face to Face.” My research/performance has taught me how to speak truth to power through vocal expression. I want Black folk and outside communities to know how storytelling creates a home where Black folk are subject and not object, and to reimagine a humane world.

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Art as Activism Part 2: Dramatizing Narratives
Nicholas Dart

My research began with a question: Does the American penal system rehabilitate or simply punish? Through bibliographic secondary resources, as well as conducting primary research interviews with several men from The Francisco Homes, which provides transitional living for men who are on parole from life sentences, I was able to further define my question as, "What is the effect of the American Penal system on the incarcerated?" My method was to conduct interviews with two "lifers," transcribe these interviews and dramatize their stories, resulting in several performances of the dramatized narratives: a preview for the story tellers on December 9th, and public performances on February 9th and 13th. Following a presentation on my research question concerning the effect of the penal system on the incarcerated, I will perform, with actor Tim Toole, a segment from my performance piece dealing with solitary confinement.

My research/performance experience challenged me to perform and empathize with real, living people rather than fictional characters and allowed me to see these hardened men moved to tears while hearing me tell their story. Through this experience I learned how activist-art, by transforming the viewer and the artist, has the power to change perspectives, tear down prejudices, and alter society for the better.

Assessing Multiple-Paternity in Broods of the Trapdoor Spider Bothriocyrtum californicum
Angela Abarquez, Aira Wada, Yuka McGrath, Marissa Cheng, Juliana Kodama, Reagan Denny, Joshua De Dios, Susanne Carpenter, Leonardo Garcia Cerecedo

Ramirez et al. (2013) found no evidence for inbreeding in B. californicum populations, despite the potential for adult males to mate with siblings and other relatives in their natal area. Since multiple mating by females is one way to avoid the costs of inbreeding, we are looking for evidence of multiple paternity in B. californicum broods. In 2012-2013, prior members of the LMU Spider Lab gathered six B. californicum broods and their mothers from Kenneth Hahn State Recreation (SRA). Brood size was 67-167. Having reactivated this project which was put on hold due to the move from Seaver Hall to the Life Sciences Bldg., we are now genotyping each set of mothers and 50 spiderlings per brood for variation at the phosphoglucomutase (PGM) locus. Of the five sets of mothers and broods that have been genotyped thus far, four broods showed significant deviations from a Mendelian genotype ratio, given the adult female involved and her presumed male partner under a hypothesis of single mating. This is evidence that field-collected B. californicum females frequently mate with multiple male partners. During the balance of 2019, we will genotype the 6th set of mother and brood, while continuing to search for additional sets of mothers and broods from Kenneth Hahn SRA, so as to expand our sample size for genetic analysis.

Augustine and the Paradox of the Human Will
Camryn Barker
In this paper, I offer an analysis of St. Augustine’s doctrine on the human will within the context of his Confessions. Through a close reading of the Confessions together with the scholarship on Augustine’s notion of the will of Marianne Djuth and Lester Strong, I argue Augustine understands the will as both free and unfree. I consider how Augustine’s characterization of the will presents a paradox that he supports through his teachings on disordered love, original sin, and habit. I begin by discussing Augustine’s conviction that the will is free. I argue Augustine believes human beings make their own choices in life and their capacity to choose is what makes their will free. I then consider how Augustine separates those that will the good from those that will evil, arguing Augustine believes those who will evil suffer from disordered love. I contrast disordered love with Augustine’s conception of a proper hierarchy of loves with God at the top. I then consider Augustine’s conviction that the human will is unfree because it is unable to will the good. I argue Augustine sees the will as one mind with conflicting desires that ultimately cannot resist the temptation to sin. In relation to his Confessions, I argue Augustine understands his inability to will the good as a consequence of original sin and the bondage of habit. I conclude Augustine believes the divided will is a part of human nature and only with God’s grace can the will’s opposing desires be tempered.

Aversion Tactics on American Crow, Corvus brachyrhynchos, Predation of Least Tern, Sternula antillarum, Eggs
Ian Wright, Oscar Repreza

The Center for Urban Resilience at Loyola Marymount University together with the U.S. National Parks Service are trying to explore possible tactics to avert tern predation. Least terns Sternula antillarum nest preferentially in low sand dunes with light vegetation. As a result of urban expansion and beach combing, least terns have lost their nesting habitat in most of Southern California and ultimately have been deemed as Federally Endangered. Increased predation from american crows Corvus brachyrhynchos on tern eggs poses another threat, disabling the terns from increasing population. At the least tern sanctioned habitat in Venice Beach, California, crows were briefly captured and banded. Both resident and transient crows occur at the site. A few of these groups retain territory including the tern habitat. They store food in the sand dunes of the site, coming back later to forage and eat. Aversion tactics will include pseudo tern nests with mildly electrocuted eggs, scare snap traps, predator kite flying, vocalization playbacks and spraying the crows with water guns. Reproductive output on the part of least terns will be measured to determine the effectiveness of aversion tactics.

Aztec Iconography in Cultivating Generational Chicana/o/x Cultural Nationalism
Xochitl Pasten

For my research project, I hope to answer the question: How does Aztec mythology used in Chicana/o/x art production inform the cultural consciousness of Chicanas/os and Latinas/os in their desire to self-define? This usage of Aztec myth and history occurs generationally as Chicanas/os and Latinas/os today continue to turn toward Indigenous history for self-definition through art production. Founded on a nationalist ideology that centered on reclaiming Indigenous heritage, leaders of the Chicano movement utilized the myth and history of the Aztecs to resist assimilation into the dominant Anglo culture by claiming the mythical homeland of Aztlan. Some contemporary Chicana/o/x artists continue to draw on the ideology of the Chicano Movement to create Aztec-centric works. Utilizing bibliographic research and close textual analysis of artworks that rely heavily on Aztec iconography, both the revived radical newspaper Regeneraciòn in the 1970s and a mural located in Lincoln Heights, this project will explore the themes and effects of these works on Chicanas/os and Latinas/os. Bibliographic research with Chicana/o-Latina/o Studies methodology will explicate the reliance on Aztec mythology for Latina/o/x identity and resistance to the dominant culture in the United States. By examining Aztec mythology and
being critical of the symbolism evident in the artworks, I plan to create analysis on how this mythology inspires cultural nationalism unification among Chicanas/os and Latinas/os in understanding their identity. This critical approach will explicate the reliance of generational homogenized use of Aztec iconography for a mestizo people living in the U.S.

Bacillus simplex's Role in Ameliorating Cadmium Toxicity in Melilotus alba
Anna Savage

Heavy metal contamination in urban and agricultural soils threaten human and crop health. These contaminants are the result of industrial processes and other anthropogenic activities. For instance, trace amounts of cadmium contaminate many traditionally cultivated soils as a byproduct of phosphorus fertilizers. Inoculating crops with plant growth-promoting bacteria is an agricultural practice of emerging importance. This approach encourages plant growth. This study examines Bacillus simplex's and Rhizobium sp.'s potential abilities to encourage plant growth in the presence of agriculturally relevant cadmium soil concentrations. Melilotus alba seeds were germinated on nutritionally complete media that was supplemented with no cadmium, low (0.36mg/kg) cadmium levels, medium (1.1mg/kg) cadmium levels, or high (1.7mg/kg) cadmium levels. Half of the plants at each cadmium concentration were inoculated with B. simplex, and in one trial, with Rhizobium sp. alone and in tandem with B. simplex. On a weekly basis post-inoculation, plants from each group were harvested, photographed, measured, and weighed. Data does not demonstrate a correlation between ascending cadmium concentration and plant mortality, nor a difference between inoculated and uninoculated plants. However, plants grown at medium and high cadmium concentrations present bent stems and smaller leaves. Currently, we are investigating B. simplex's ability to grow in cadmium-supplemented media, and its potential ability to sequester cadmium. Further research will examine whether M. alba's growth is stunted at higher cadmium concentrations, and if, and by what mechanism, B. simplex is able to ameliorate M. alba's susceptibility to cadmium toxicity.

Barely Black
Kiera Breaugh

This project is a dance I choreographed stemming from the feelings I have experienced from being biracial in a society that does not recognize being biracial as a legitimate identity. I am constantly forced to choose between black and white; I am too white for some people and too black for others. In some cases, white people will ignore or try to diminish the black part of my identity by telling me I am barely black. I recorded a poem I wrote that details things I have heard repeatedly throughout my lifetime, such as comments that I should wear my hair straight and that I am barely black. The audience will hear these comments as if they are being said to them, so they will be able to experience these comments from my point of view. I have curated an intellectual experience for the audience that allows them to have an understanding of how things that may seem commonplace to say to a biracial individual can actually be very unsettling and hurtful. My solo uses dance and spoken word to inflict deep reflection from the audience on the social norms of beauty (specifically regarding hair) and how they may affect a person of color, as well as how comments on a biracial person's "blackness" causes them to feel like their race is determined in the eyes of the people who look at them, rather than something they can determine for themselves.

Belonging
Yue Wang
Eight years ago, I moved to the United States from China. I didn’t realize how americanized I became until I went back to the place I call home. I was shocked by how disconnected I was to China and Chinese society; I felt a similar disconnect when coming to America. I know I’m not the only international student who feels this way. There are an estimated 1.18 million international students currently in the United States and they each have their own unique experiences abroad. Through their cross-cultural experiences, many international students create a hybridized identity that combines elements from their home culture and their host country. Some international students feel a sense of displacement when they live in a foreign country; other international students feel disconnected from their native culture because it becomes increasingly difficult for them to go home the longer they stay abroad. These experiences shape international student’s beliefs, values, and identities. I’m going to share these stories in an effort to better educate students who haven’t studied abroad about the struggles that those who have face on a daily basis. My thesis touches on how the experience of international students from regions of Asia influence their cultural identities and shape their stories of growth and struggle through image design, textile design and scents. These mediums are intimate to each student, and at the same time, the viewers can gain a better connection with the stories by incorporating their sight, touch and smell while viewing the exhibition.

Biochemical Variability of Rhizobium leguminosarum biovar viciae strains
Jessica Candela

Plant-growth promoting rhizobacteria are bacteria that support plant growth in various ways. Some fix atmospheric nitrogen into ammonia, a usable form for plants. Others produce plant enzymes such as cellulase, which help bacteria to break down cellulose, a polysaccharide bacteria use as a source of energy. Rhizobium leguminosarum is a symbiotic bacterium known to nodulate legumes. This experiment focuses on identifying differences between 16 Rhizobium leguminosarum strains that were initially isolated from legume nodules. Nodulation capability, host range, and biochemical properties were tested. Pisum sativum seeds were sterilized, allowed to germinate on water agar plates, and then transplanted to magenta jars containing ¼ Hoagland’s media lacking nitrogen and inoculated, in duplicate, with each of the strains studied. Nodulation was recorded. Biochemical assays including cellulase production, phosphate solubilization, and motility were done on each strain in triplicate. Variation was found between all strains tested. The majority of the strains nodulated pea, suggesting that they belong to R. leguminosarum biovar viciae. However, within these pea nodulators, there was notable variation in biochemical properties and motility. Strains showed a range in their ability to produce cellulase and solubilize phosphate as determined by the presence/absence and measurement of halos on biochemical media. In addition, not all strains were motile. Those that were showed a range of motility as reflected in differences in halo diameters on TY media with 0.25% agar. This shows that even within the same biovar of R. leguminosarum, there can be strain variation, which may influence their impact on plant growth.

Biogenic Volatile Organic Compound Content Trends in Local Native and Non-Native Plants
Molly Boselli

Biogenic Volatile Organic Compounds (BVOCs), such as monoterpenes (C10H16) and sesquiterpenes (C15H24), are naturally produced by plants and emitted into the atmosphere. These organic compounds assist in plant growth and defense and impact other organisms and the overall chemistry of the atmosphere. The research goal of this project is to quantify BVOCs present in three native (Baccharis pilularis, Heteromeles arbutifolia, Rhus integrifolia) and two non-native (Magnolia grandiflora, Laurustinus viburnum) plants from the vicinity of the Loyola Marymount University campus. Leaves from these plants
were collected approximately every month from July of 2014 to June of 2018 and freeze-dried. Terpenes were extracted from the leaf samples and analyzed using gas chromatography-mass spectrometry instrumentation. The resulting quantifications of terpenes were compared to local average temperature and rainfall, as well as leaf water content, indicating seasonal trends in BVOC concentrations. Although each plant species resulted in distinct terpene content, data shows that higher temperatures and less rainfall results in lower total terpene quantities, indicating a potential decrease in terpene production in drought conditions. Magnolia grandiflora, a non-native plant, overwhelmingly contained the highest concentration of terpenes overall.

**Bispinner UAV Stabilization**

Pedro Sales

Spinner UAVs are the result of an unconventional hover solution where angular velocity about the vertical axis of the UAV itself is used as a key part of stabilization. This opens the possibility of attaining flight using only two rotors, reducing mechanical and electrical complexity. UAVs that use only two rotors, known as bispinner UAVs, are also one of the failure modes of quadrotors, so developing a stabilization algorithm for this configuration is of interest to improve safety. This project develops a stabilization algorithm that aims to stabilize a bispinner UAV. It takes measurements from an inertial measurement unit, filters them to estimate attitude and finally calculates the needed rotor speeds to maintain stable flight. The current version runs as a module on the open-source PX4 UAV autopilot, which includes telemetry and other utilities. This module can then be integrated as part of the code base and be used as a failsafe in higher rotor count UAVs. The algorithm was tested using a computer simulation, where it was capable of maintaining stable hover while holding position. A physical two rotor UAV was also built, and initial stabilization tests performed. Physical tests were not immediately successful mainly due to attitude estimation errors. The project is expected to be completed by April 2019, pending work includes refining the stabilization algorithm and performing efficiency tests on the physical model.

**Body Fat Composition Among College Drinkers and Non-Drinkers**

Rowena Feng

The caloric content of alcoholic beverages has been theorized to increase body fat. Terms such as “beer belly” perpetuate the idea that drinking directly correlates to an increased percent body fat. Adiposity gained in different areas of the body have varying health implications and may increase risk of diabetes and cardiovascular disease. This study analyzed body composition and alcohol consumption among healthy college students. 89 male and 90 female students volunteered to be a part of this study. Dual energy x-ray absorptiometry was used to determine adipose composition in participants. The collected data was analyzed using SPSS v.24 to determine differences between groups. Male drinkers had an average android fat of 21.7±6.3% and a gynoid fat of 25.2±5.8%, while male non-drinkers had an average android fat of 20.4±5.8% and an average gynoid fat of 24.1±5.2%. Female drinkers had an average android fat of 30.5±6.6% and an average gynoid fat of 38.0±4.7%, while female non-drinkers had 28.2¬±6.9% and 36.8±4.6% average percent fat respectively. Male drinkers had an average visceral fat of 274.3±78.2 grams compared to 248.5±60.3 grams. Female drinkers had an average visceral fat of 219.3±102.6 grams and female non-drinkers had an average visceral fat of 180±72.6 grams. None of the differences between groups were statistically significant. Women generally exhibited a higher adiposity than men. In this study, drinkers and non-drinkers had similar body composition. It is possible that this Los Angeles population is more physically active than the typical American.
Causal Inference in Procedural Dungeon Generation
Alejandro Zapata Acosta

Procedural content generation (PCG) is a common technique used in modern games to randomly vary the creation of production-heavy assets used during development. One common application of PCG is to autonomously create diverse game environments from simple specifications. Previous PCG techniques have specified associational relationships between environmental features to vary their outputs, which are then difficult to modify post-production. Recent developments in causal inference have provided a richer toolset beyond simple associations that give greater control over a probabilistic model’s expressiveness. In this project we apply these tools to procedural dungeon generation, in which users may specify not only associational, but also causal and counterfactual generation criteria. The result is a framework called DunGen that allows for more finite control over the output both before and after generation, the result of which is a blueprint-style image displaying room layouts and adjacencies.

Changes in Heart Rate Variability and EEG Waveforms are Associated with Increases in Cognitive Demand During a Working Memory Task
Sabrina McQuade, Lakyn Kearns, Sonia LeeCamila De Pierola, Reanna Khimani

Encephalography (EEG) is a technique for recording underlying neural electrical activity of the brain from electrodes placed on the scalp. EEG waveforms are categorized according to a wide range of wave frequencies and amplitudes over time. In this study, we examined whether EEG waveforms displayed localized patterns of activity related to task difficulty in a test of working memory, confirmed by the measure of heart-rate variability (HRV). We recorded from 9 distinct scalp electrodes and two electrocardiogram electrodes in 30 undergraduate students (15 males, 15 females), and examined their EEG activity while they completed a standardized memory task consisting of three phases of increasing difficulty: baseline (resting quietly, eyes open), practice, and the memory test (two trials). Cognitive demand was confirmed by an ANOVA for the HRV measure which decreased significantly from baseline to practice to test, p = 0.001. EEG activity and power spectral densities (PSDs) were categorized for 4 separate frequency patterns: alpha, beta, gamma, and theta. 3 x 9 (Phase x Site) ANOVAs were conducted for each EEG waveband. Significant interactions were further explored with planned comparisons (Bonferroni). Our study revealed statistically significant results in which alpha PSD decreased, whereas beta, theta and gamma PSDs increased from baseline to memory task, as the tasks became more cognitively demanding. This study, the first to examine all of these EEG wavebands together with HRV in a working memory task, provides novel evidence for the role that these oscillatory brain processes play when cognitive demands increase.

Characterization of a Novel Mitochondrial Protein
Mikayla Sweitzer

Mitochondria are multifunctional organelles, key in maintaining cellular homeostasis. Their biogenesis relies on efficient protein import as most mitochondrial proteins are imported via protein import pathways after synthesis in the cytosol. The yeast MIA pathway specifically imports cysteine-rich proteins into the mitochondrial intermembrane space via a series of disulfide reactions that involves electron transfer, key components of which are Erv1 and Mia40. We have recently identified a new mitochondrial protein, Aim32, as an Erv1-interacting protein. The goal of this research project was to characterize Aim32 using varied biochemical and genetic approaches. Multiple protein sequence alignments along with secondary structure prediction tools reveal that Aim32 is likely a thioredoxin-like [2Fe-2S] ferredoxin protein. [2Fe-2S] ferredoxin proteins typically contain two iron ions that are coordinated by key cysteine
residues. To address this, we mutated key cysteine residues in Aim32, C213 and 222, and generated E. Coli strains expressing wild type, and mutant Aim32 protein to study its biochemical properties in vitro. We find that Aim32 indeed coordinates iron. Additionally, we have generated a deletion strain of AIM32 to assess its biological function in vivo. We find that deletion of AIM32 confers extreme sensitivity to hydroxyurea (HU)-induced DNA damage that is not rescued by an oxidant, N-acetyl-cysteine (NAC), suggestive of a role in stress response. We conclude that Aim32 is an iron-sulfur (Fe/S) containing protein that has a protective stress response against HU and may participate in electron transfer shuttling within the MIA pathway.

Characterization of ABC transporter mutants in Paraburkholderia tuberum
Ava Lekander, Lauren Kelly

ATP Binding Cassette proteins (ABC transporters) are one of four classes of membrane-bound transport proteins and are found in plants, prokaryotes, fungi, and animals. Bacterial ABC transporters can be either importers or exporters and are involved in nutrient uptake as well as secretion of toxins and antimicrobial agents. BamC and Mdlb are two proteins involved in the ABC transporter complex. BamC is a protein involved in the beta barrel complex located in the outer membrane and is part of a larger complex that includes the lipoproteins BamA-E. Mdlb is a multidrug resistance protein and ATP binding protein involved in transport as well. In prior experiments, two strains of Paraburkholderia tuberum with mutations in bamC and mdlB were identified through transposon mutagenesis. Excess exopolysaccharide (EPS) production was observed in the mutant strains and additionally, both mutants lacked the ability to promote nodulation of legume plants. Thus we conclude that these genes must be necessary for EPS production and nodulation of plants. In order to verify this, the functional copies of these genes need to be inserted back into the mutants to determine if the wild type phenotype is restored. Primers were designed and then a polymerase chain reaction (PCR) was conducted in order to amplify the the wild type bamC and mdlB genes. Gel electrophoresis was used to confirm successful amplification. These regions were cloned into a Tn7 based cloning vector. Future experiments will introduce the vector into the mutant genomes and determine whether the functional genes complement the defects. If so, this will confirm and be the first report of the role of bamC and mdlB in EPS production and nodulation.

Characterization of Sandy Beaches in Santa Monica Bay
Kimberly Dobbs

Understanding the interaction between management practices and ecological health of sandy beaches allows us to suggest better management practices to utilize ecosystem services that sandy beaches may provide, such as a barrier against storm surge and sea-level rise. Given the importance of beach ecosystems, a study was initiated in the Summer of 2018 to characterize the beaches of Santa Monica Bay. In preliminary stages, maps (in GIS shapefile format) were created showing the areas of vegetation, shore type, infrastructure, and areas groomed across Santa Monica Bay. Along the beaches were 1,077 structures (e.g. parking lots, bathrooms); about 135,700 m2 of vegetation occurred, mainly in back-beach areas. The study also investigated the effect of maintenance on ecology of sandy beaches, in particular grooming activities meant to remove trash and smooth the sand for recreational usage. Ecosystem health was evaluated by factors such as vegetation, wrack cover, percent organic matter, sand grain size, topography of the beach, and bird activity. A pilot study was done of three sites with different grooming regimes: Dockweiler (groomed daily), El Segundo north (intermittently groomed), and El Segundo south (not groomed). The surveys found higher percent cover of native vegetation, wrack, and percent organic matter in the sand on the ungroomed beach. The availability of nutrient content on the ungroomed beach can support larger populations of invertebrates and shore birds.
Preliminary results suggest that nature-based solutions to sea-level rise and storm surge may be possible with improved management practices of sandy beaches.

Charcot-Marie-Tooth Neuropathy Causing Mutations in Histidine tRNA Synthetase Increase Stress Granule Number
Michael Armas, Brad Callas, Blake Colton

Charcot-Marie-Tooth neuropathy (CMT) is one of the most commonly inherited forms of neuropathy in humans. CMT has recently been hypothesized to have a connection to the formation of stress granules, assemblies of RNA and proteins which form under stress conditions. In order to further study the pathology of CMT, the formation of stress granules must be studied to determine their role in this disease. Some mutations that cause CMT are found in genes encoding tRNA synthetase enzymes. One such gene, HARS1, which codes for histidine tRNA synthetase, has several known CMT causing mutations. The Hars1 protein has been found not only to bind to mRNA, but was also found to be present in stress granules. Utilizing standard yeast cloning methods, CMT causing mutations were inserted into the yeast histidine tRNA synthetase gene. Fluorescence microscopy was then used to monitor the formation of tagged stress granules in stressed cells. These stress granules were found to form in more abundant numbers when the histidine tRNA synthetase gene had been mutated. By studying these mutations and observing their downstream effects, further conclusions can be made regarding the pathology of CMT. Further studies will examine the relationship between CMT causing mutations in tyrosyl tRNA synthetase and stress granule formation to determine if a similar connection is present.

Childish Gambino’s "This is America": Popular Media and The Black Experience
Briana King

Perhaps the most socially impactful music video of 2018 was Childish Gambino’s "This is America". The video accumulated over 480 million views since it’s YouTube release on May 5, 2018, won eight awards, and multiple Grammy nominations. The messages in Gambino’s video sparked a viral online conversation regarding violence and discrimination against Blacks in America. Through the lyrics and visuals in the video, Gambino argues that as a result of White colonialism and privilege, popular media acts as a means to mask over and alter the actuality of the Black experience in America. By releasing his work on Youtube, Gambino attempted to harness the power of social media platforms to cause meaningful conversations about the underlying contrasts between popular media’s portrayal of Black culture and the realities of the systematic violence and discrimination faced by African-Americans in modern society.
A textual analysis of the video’s visual symbols, lyrical metaphors, and juxtaposition of historical and present day issues faced by African-Americans revealed the role popular media plays in the manipulation of Blacks, including the normalization of Black cultural appropriation. An examination of a data pool of social media discourse about the video revealed the liminality of popular media as it has both the ability to spread awareness and distract from important socio-political issues. Thus, how can popular media bridge the gap between social consciousness and ignorance? Do social media platforms advocate against or instigate America’s racism?

Classifying Degree mp Extensions of the p-adic Numbers
Kaitlyn McGloin

Qp has only finitely many extensions of a given degree and the polynomials that generate these extensions have integer coefficients. Consequently, it is possible to classify all extensions of a given
degree by making a complete list of generating polynomials. Degree p and 2p extensions of Qp were classified by Amano [1] and Awtrey-Hadgis [2], respectively. For all other degrees n divisible by p, the only complete results are when n \( \equiv 15 \). The goal of this project was to classify all extensions of degree mp, where p does not divide m.

We produced a list of polynomials that generate all extensions of degree mp where p > m and gcd(m, p) \( \equiv 1 \), along with their automorphism group sizes. With Panayi’s Algorithm, we proved that the proposed polynomials define distinct extensions and verified that we indeed found all of the extensions and their automorphism sizes. Furthermore, we determined the number of distinct extensions for each possible j value. Since primes are the building blocks of all numbers, studying Qp and its extensions has important applications across all of mathematics, including number theory and cryptography.

**Climate change and Health in European Countries**

Avery Dillon

Climate change is considered by WHO to be the biggest threat to human health. This study is part of a larger WHO Regional Office for Europe and the European Commission research project aiming to provide an analysis of climate change impacts on health and national health climate adaptation developments in 28 European Union (EU) Member States.

A questionnaire was sent to departments dealing with climate change and health in 28 EU countries. This study analyzes questions related to climate change and health effects. Data collection took place between March and July 2017 from 28 EU countries.

Countries reported a variety of health impacts due to climate change, which fell into four general categories: environmental, contagious and infectious diseases, injury, food and water insecurity. 12 countries responded with health impacts due to climate change that are currently being observed. Of the impacts reported, 38% were categorized as environmental or weather related, such as heat stress, cold stress, asthma and allergies, and UV damage. The next leading category of impacts is the spread of contagious and infectious disease, with 31% of observed health threats. The third and fourth highest impacts/concerns are risk for injury due to natural disaster (17%) and food and water insecurity (14%). The outcomes of this study contribute to identify priority impacts of climate change into health in EU countries and to support the identification of adaptation strategies and practices to be considered in the review of the EU climate adaptation Strategy.

**Comparative assessment of the sedimentary carbon stocks of Halophila stipulacea beds in Lac Bay, Bonaire**

Candice Cross

Worldwide seagrass meadows act as blue carbon sinks, sequestering dissolved CO2 from the ocean and depositing it into the sediment beneath them. Through carbon sequestration, seagrass beds show promise as a valuable means to mitigate ocean acidification. Surveys from 2002 to 2018 report the increasing expansion of an invasive seagrass, Halophila stipulacea, throughout the Caribbean islands including its ability to outcompete and replace native seagrasses Thalassia testudinum. This study evaluates the capability of H. stipulacea to function as a blue carbon sink in comparison to T. testudinum. Sediment cores and seagrass samples were collected from H. stipulacea beds, T. testudinum beds, and adjacent bare sand in Lac Bay, Bonaire (approximately 7km2) for δ13C and % total carbon analysis. Bare sediment and sediment in H. stipulacea beds exhibited significantly less carbon content than sediment in T. testudinum beds at 13.8% and 14.9%, respectively (ANOVA p<0.05). Overall sediment carbon content exhibited a significant decrease moving from the mudflat (14.9%), to mid-bay (14.1%), to the oceanic opening of the bay (13.6%) (ANOVA p<0.05). Understanding the amount of carbon deposited into the sediment before (using bare sand as a proxy) and after the arrival
of the invasive may give insight into the future carbon balance of Caribbean benthic habitats. Further quantification of area replaced by the invasive seagrass will serve to better estimate the scale of impact on current seagrass blue carbon stocks.

**Comparison of Quadriceps-to-Hamstrings Ratios and Isokinetic Torque During Cutting**

Dana Eitan

Introduction: Hamstrings-to-quadriceps ratios assess functional ability of the knee as well as muscle balance. Isokinetic testing has found no significant difference in quadriceps-to-hamstrings between the left and right leg in male soccer athletes. Further, torque is a rotary force that can demonstrate strength when kicking a ball, but it is unknown how this relates to the dynamic quadriceps-to-hamstrings ratio.

Purpose: The purpose was to determine if hamstrings-to-quadriceps ratios were significantly different between the right and left leg in male soccer athletes during cutting drills and if there is an association between these ratios and max torque.

Methods: 15 male soccer athletes (age=19.79±1.25 years; height=176.74±6.22 cm; weight=77.24±11.01 kg) performed isokinetic testing and 10 cutting drills while wearing Athos compression garments. A paired t-test determined group differences between legs. Pearson’s correlation coefficient determined a relationship between peak isokinetic torque at 240 degrees/sec and hamstrings-to-quadriceps ratios during cutting drills. Alpha was set at 0.05.

Results: No significant difference was found between the legs hamstrings-to-quadriceps ratios during cutting drills (P>0.05). However, significant relationships were found between left cutting and peak isokinetic flexor torque at 240 degrees/sec for the left leg (r=-.58; P=.047), peak isokinetic extensor torque at 240 degrees/sec for the left and right leg (r=-.69, P=.01; r=-.66, P=.02, respectively).

Conclusions: It appears that soccer athletes display balanced hamstrings-to-quadriceps ratios during cutting. However, it appears that as this ratio increases, peak extensor and flexor torque is reduced. This could indicate dynamic functional imbalances that are not seen during isokinetic testing.

**Computational Comparison of Water Oxidation in Mononuclear Manganese Catalysts**

Jiayan Li

Hydrogen is a clean, renewable, and in many respects may serve as an ideal fuel for modern power needs. If hydrogen is obtained from water, it can be a carbon-free fuel as well. Splitting water into protons, electrons and oxygen is called water oxidation. Plants accomplish this chemical redox reaction in Photosystem II. Although mononuclear catalysts have been synthesized to allow an analogous reaction, most of these involve costly and rare metals such as ruthenium. Here, we characterize similar catalysts that contain the abundant metal manganese, which is the same metal used in Photosystem II’s oxygen evolving catalyst. The research presented in this paper employs ab initio quantum chemical calculations to characterize the energetics and intramolecular features along each of the steps of a water oxidation mechanism to compare performance metrics of 11 different mononuclear manganese catalysts. Free energies of each step in water oxidation cycle are determined by DFT calculation using the B3LYP exchange-correlation functional using the LanL2DZ basis set in an implicit water solvent using a polarizable continuum model (IEFPCM). The resulting data is compared with the previous study of mononuclear ruthenium catalysts in water oxidation. We find energetics of the manganese catalyst is similar to the results of the ruthenium catalysts for all steps except the intermediate step where the energetics are less favorable. The energetics of using manganese catalysts are higher than the energetics of using ruthenium catalysts in general but less than 50% difference in the actual data set.

**Confronting the Past: How Universities Remember Their Connections to Slavery**

Thomas Duncan
Dotted around campus are objects which signal LMU’s history, place, and culture. Stained glass windows in the chapel locate LMU among the pantheon of American Catholic universities. The statue to St. Ignatius connects LMU to its religious roots and images of Hank Gathers remind students of its sports pedigree. But on this Jesuit campus is also a statue to a Franciscan, Fr. Serra, who’s mission system resulted in the death of thousands of indigenous peoples. There is a memorial to the Tongva whose land LMU sits upon. And the images of Gathers overlook the lack of institutional oversight which allowed a sick player to die on the court. All American universities remember, and memorialize their institutional history. But at a number of American institutions histories’ are deeply intertwined with America’s history of slavery. This paper discusses the ways in which enslaved people literally built some of America’s most famous and most prestigious universities; and it examines how those universities remember their bloodsoaked pasts. This paper specifically examines case studies of Harvard University, Georgetown University, and Brown University all of which took different paths to recognize and remember the enslaved peoples who suffered to build those universities. This paper concludes by putting the ways in which LMU remembers its past with the aforementioned universities.

Connect
Mariam Alnahedh

I will be tackling the issue of stereotypes against Middle Eastern countries, specifically Kuwait. Being in the US this past four years, I have come to realize that people know very little or nothing about Kuwait which leads to misinformation that breeds fear. The terms Middle East or Muslim often carry negative connotations because people in the US are often not familiar with that region of the world. My goal is to educate the misinformed, by creating a mural comprised of answers I received through a series of interviews with people in Kuwait, and in Los Angeles. Questions range from: “What is the first thing you think of when someone says ‘Arab’?”, to “What defines a Middle Eastern Woman?”. I have asked the same question to people from both sides of the world to show the contrast between how Americans view Kuwaiti’s and how Kuwaiti’s view themselves. The mural will be made with an Arabic typeface that I have created, which strips the characters down to their fundamentals, much like the mural aims to strip away stereotypes and show who the Kuwaiti people really are. The exhibit aims to educate people about the very real stereotypes that are prevalent today.

Correlation of Childhood Maltreatment and Adult Attachment Pattern
Stephanie Milbrodt

Millions of children are referred to Child Protective Services every year for fear they are being maltreated at home, and many of these fears are confirmed when the agencies intervene. Furthermore, cases of maltreatment, which includes physical and emotional abuse as well as neglect, are believed to be far under reported, so many more children may face maltreatment than is known. While the short-term effects of maltreatment are certainly detrimental, this paper explores the long-term effects that are often harder to discern. Recent research has suggested that maltreatment may influence the formation of different attachment patterns, which would then affect the development of healthy mental and physical functioning later in life. Based on the likelihood of such a link, researchers must reevaluate the intervention methods used to help maltreated children avoid adverse outcomes. This paper compiles evidence from five scholarly, peer-reviewed articles to suggest that secure attachment relationships can mitigate the negative effects of childhood maltreatment later in life and intervention methods for children that are known victims, as well as those who have yet to be discovered as such, should be adapted to fully utilize the findings of their research. Teachers, who are present in the lives of every child, provide the most viable option for maltreated children to create secure attachment relationships.
with. Thus, further research should be conducted into how effective they could be at improving children’s lives through encouraging the development of healthy attachments.

Creation and Initial Test of Paraburkholderia Tuberum ΔnodD1D2 Double Mutant
Leonardo Gonzalez-Smith

Rhizobia bacteria have an important involvement in the nitrogen cycle, resulting in the development of a symbiotic nodulating relationship with plants of the legume family. Paraburkholderia tuberum is a beta rhizobia, which are not as well characterized as their alpha rhizobia counterparts. P. tuberum has two copies of nodD, which is responsible for creating a NodD protein. NodD protein binds with flavonoids, plant chemical messengers, to create a complex which regulates the nodABC operon leading to nodulation in the roots of legumes. From our previous experiments, it was seen that when nodD1 is deleted, nodulation still occurs within the plant roots. We therefore hypothesized that nodD2 is also involved in the nodulation process and is not a pseudogene. In this experiment, the goal was to create a ΔnodD1D2 double mutant and test the ΔnodD2 and ΔnodD1D2 double mutants for nodulation of Phaseolus vulgaris. The ΔnodD1D2 double mutant was successfully created by using a nodD2 deletion vector to create a nodD2 deletion in the existing ΔnodD1 mutant using a triparental mating strategy between E. coli pK2013, E. coli pir116 and ΔnodD1 P. tuberum. Selection for the integration of the the nodD2 deletion vector was done on M9 plates containing both rifampicin and kanamycin. After verification of the double mutants creation, ΔnodD1, Δ nodD2, the double mutant, and P. tuberum were tested on black bean; ΔnodD1 and Δ nodD2 inoculation resulted in effective pink nodules, however the ΔnodD1D2 did not nodulate. Therefore both nodD1 and nodD2 play a critical role in the nodulation process.

Critical Analysis of Mainstream Queerness within Los Angeles
Ricky Barocio

The mainstream understanding of queerness in Los Angeles is predominantly white, cis-male, and upper-class. This limited identity is not representative of the full scope of the queer community whatsoever, yet this West Hollywood corporate queerness has taken over the public’s eye. Being primarily raised in South Central, LA led me to question how queer people of color, particularly chola/o/xs navigate these spaces. It is important for queer people of color to find safe spaces that provide community alongside like-minded folks. With lack of comprehensive representation, queer people of color are further ostracized and pushed out of the realm of acceptance. Art and music have been essential to my own queer experience, which is intrinsically different than white queers that have gained systemic privilege when compared to their racial counterparts. My research will consider the socio-economic-political influences within queer chox identity. Furthermore, how do queer choxs disrupt mainstream queerness? This research will be accompanied with the help from LMU faculty such as Dr. Rodriguez y Gibson, Dr. Jennifer Williams, and Dr. VanessaD iaz. My methods will follow that of Richard T. Rodríguez whose work is centered around the "chosen family" and the gay Latinx space, which he claims enables the formation of new queer Latinx communities. Methodologies will involve visual and discourse analysis along with an element of cultural production studies where I will visit a queer chox nightclub and analyze my experience. Main points of reference and analysis will derive from academia and art within this field.

Cultivating Compassion: Humanizing Legal Rhetoric Through Dance Performance
Brynn Bodair
Taking an interdisciplinary approach, this research asks: can dance serve as a connective force that transcends beyond the legal writing of this case to offer a holistic model of legal communication? This project will result in a full-length performance divided into three sections that energetically reconstruct the three part test discussed in the Supreme Court case Frontiero v. Richardson, which struck down a statute that commanded dissimilar treatment for men and women similarly situated and tested historical oppression, political powerlessness and immutability in relation to gender. Dance will serve as a second form of communication, igniting empathetic feelings for those, like the transgender community, inherently impacted by the court’s decision. Additionally, a written component will illustrate the documented movement research and artistic choices made in terms of lighting, costuming, and structure, as well as the choreographic tools, and themes of the work, that, in culmination, will assist the energetic reconstruction of the case. This research suggests that through viewing this movement in performance, the audience member may experience the emotional significance of this case through dance and, in conjunction, experience empathetic and compassionate feelings towards those persons affected by the ruling of Frontiero v. Richardson and its legal precedence.

Dada
Anthony Avaylen

AVAYLEN, It’s In All Of Us
Growing up in Orange County, you learn to love the beach, travel the coast, and appreciate the weather. You’ll also grow to love action-sports. Whether it was learning to surf, skate, or create art, there were always new challenges to discover. I was understanding the benefits of taking risks and getting out of my comfort zone trying these new activities. Getting older I questioned, "Why doesn’t everyone push themselves to grow and try new hobbies? Honestly, why don’t more people try out action-sports?" Throughout researching, asking, prototyping, and surveying, I got a variety of results. From, "I’m not white enough," to "I’m not a guy," it was a very interesting, educational process. As a result, with over five years of doing research, I started Avaylen in 2014. Avaylen, It’s In All Of Us, is an action-sports project (entitling surfing, skating, snowboarding, respectively) that I created to empower generations to reach new heights, regardless of your background. Our slogan "it’s in all of us" goes beyond action-sports. This is our reason for being and what separates us from everyone. With my designs, I want people to utilize this idea through apparel, gear, and art; as my experiment continues, I look to advance Avaylen. I’ve learned that it’s about believing in something and running with it. My goal- to make people understand that it truly is in all of us and it’s up to you to bring it out of yourself. The inner boarder, inner artist, and inner all-star, that is what’s in all of us.

Detecting IAPP Amyloid Fibers from Diabetic and Nondiabetic Organisms
Betssy Jauregui, Kevin Chang, Sara Shapiro, Eileen Olivares

Currently, there are 27 million children and adult diagnosed with Type II diabetes in the United States and the number increases every year. Although the causes of Type II diabetes remain unknown, previous research suggest a direct correlation between the aggregation of Islet Amyloid Polypeptide (IAPP), a 37 amino acid polypeptide, and the death of pancreatic beta cells. As IAPP misfolds, it aggregates and forms amyloidogenic oligomers which are highly toxic to insulin-producing beta cells. Given that not only humans, but also animals seem to develop type II diabetes, we investigated whether certain animal IAPP aggregate. We examined the propensity of animal IAPP aggregation using Atomic Force Microscopy and Thioflavin T assays. Our results indicated that animals known to develop type II diabetes showed IAPP aggregation whereas those who do not develop type II diabetes showed no IAPP aggregation.
Determination of the Relationship Between Thermodynamic RNA Stem-Loop Stability and Frameshift Efficiency
Carolyn Egekeze, Mary Soliman, Leila Robinson

Human T-cell lymphotropic virus type 1 (HTLV-1) affects roughly 10 million people worldwide, particularly in west Africa, central and south America, and east Asia (Gessain and Cassar 2012; Futsch et al. 2018). Approximately 5% of infected individuals will develop adult t-cell leukemia lymphoma at some point in their lives (Matsuoka and Jeang 2007; Meissner et al. 2017). HTLV-1 is a retrovirus that ultimately seeks to replicate itself, which requires making many viral proteins. One way it makes a subset of these proteins is through ribosomal frameshifting. The frameshift site we are studying includes an RNA stem-loop. Stem-loops are structures formed by the base-pairing of the RNA nucleotides in the transcript. It is unknown how the stability of this stem-loop affects the frequency of frameshifting. The goal of the project is to investigate the relationship between HTLV-1 programmed ribosomal frameshift efficiency and the thermodynamic stability of an RNA stem-loop. We hypothesize that decreases in stem-loop stability will cause corresponding decreases in frameshift efficiency. We will test this hypothesis by varying the base-pair composition of the stem-loop and evaluating its impact on frameshift efficiency. We designed four stem-loop mutants that each decreased the stem-loop's stability relative to the wild-type structure. Each mutant is expected to decrease frameshifting to a different degree. Here, we report our preliminary work on this project. Ultimately, our research will contribute to a gap in the understanding of how viruses replicate and perhaps to develop drugs to stop viral frameshifting.

Developing Cloud-Based Machine Learning Tools to Analyze the Frequency of Alcohol in Social Media Posts
Michael West

Social media sites like Facebook and Instagram have achieved near-universal popularity, with 94% of first-year college students now using at least one social media site. Social media sites represent potentially powerful sources of alcohol influence as students tend to portray heavy drinking in a positive light on social media sites while often ignoring negative consequences. Though a few studies have linked exposure to alcohol-related social media content with students' own drinking, research on this relationship is scarce. A key drawback to the limited work in this area is reliance on self-report measures of social media site alcohol exposure. In addition, research has focused primarily on Facebook which has been surpassed in popularity by Instagram among students. In an NIH funded study, we collected nearly 500,000 images from the newsfeeds of first year students during their transition to college. We utilized the Google Cloud AutoML API to train a machine vision model to recognize twelve different categories of alcohol and the absence of alcohol in these posts, generating a numeric confidence that a given image contains alcohol. This powerful tool allows us to efficiently analyze this large set of posts. After training, the model achieved an average of 92.5% precision with test data. Reported results will include rater reliability of the machine vision model, percentage of post containing alcohol in students' newsfeeds, and longitudinal associations between exposure to peers' alcohol-related content on social media sites and alcohol consumption during their first year in college.

Directional Statistics and Data Visualization
Taylor Flanagan

Directional statistics is a branch of mathematics that provides an analysis for data that, unlike linear data, is most readily graphed on a polar axis. Despite its relevance to many fields, directional statistics has been widely underrepresented in mathematical literature until quite recently. N. I. Fisher’s work on the subject, Statistical Analysis of Circular Data, is one of the only books published in the field. This project
aims to add to Fisher’s work on circular summary statistics, particularly in the field of data visualization. Data was gathered concerning the times at which text messages were sent during the day. Graphs for the collected data points were then coded in a MATLAB script, expanding on the limited circular options currently built into the software to include mean direction, trigonometric moments, and probability density estimates. Finally, hand-drawn visualizations of the data were created, taking a more artistic approach to better express the periodic nature of the circular data. The resulting graphs, both digital and sketched, provide new insight into how to best display directional data. Ultimately, a spiraled design is favorable for time data collected over several days, although multiple other designs also accompany the project.

Discovering the Growing Angeleno Vote by Mail Population
Samantha Zinn, Barbara Velasco, Shane Williams

Voting by mail (VMB) has become a popular way for Americans to participate in democracy, a trend that has impacted Angeleno voters. In coming years Los Angeles County will adopt the VBM system along with voting centers. The purpose of this research is to examine which Angelenos are currently engaged in the vote by mail practices. The project examines 2018 voting data of Angelenos from the Los Angeles County Registrar’s office and 2013-2017 American Community Survey from the US Census. Data is analyzed by prescient with different demographic factors such as median household income and percentage of individuals with bachelor’s degrees with information provided by the Census. The methods of this research are analyzed using GIS (geographic information system) and spatial analysis. Preliminary results include populations with higher incomes and education levels will have higher participation in the VBM method. Gaining an understanding of the VBM population in Los Angeles will give more information to other counties in California to possibly adopt this non-traditional voting method in the time of California’s Voter Choice Act. Those that experience voting through the postal service is a growing part of the population and could lead other counties and states to broaden their voting methods.

Disrupting the Narrative: Intersections of Feminine Writing and Experimental Fiction
Milena Beliso

From Virginia Woolf’s To the Lighthouse, to William S. Burrough’s Naked Lunch, narrative structure has continually reinvented itself, and continues to explore ever-changing boundaries. This project begins as an attempt to discover unexamined narrative form, thereby creating new genres of fiction. Can a story be told without exposition? Can seemingly unrelated forms of media, like bathroom graffiti, serve as dialogue or even create their own multi-dimensional characters? I explore concepts such as heteroglossia, spatiality, dialogism, and semantics, seeking to gain a profound understanding of fiction, and to question the very definition of narration itself. Our ideas about “experimentalism” are rooted in the notion that there are dominant, traditional narratives, which can be subverted to create new avenues of literary thought. Feminine writing as introduced by Helene Cixous in The Laugh of the Medusa examines the act of writing as a tool for female rebellion, to rewrite male-centric narratives that revolve around western society’s worship of the phallus. I apply feminine writing, as both a concept and discipline, to our preconceived notions about experimental or post-structural narration. The project becomes post-critical, taking on the very object it seeks to understand. It merges personal memoir with poetry, photography, and critical theory. The thesis of Disrupting the Narrative is that the very nature of experimentalism is rooted in femininity. Because male dominance and societal oppression are elemental in constructing femininity, the female identity requires aspects of both performance and passivity to survive. Thus, fearless and unapologetic femininity is itself an alternative narrative, a rebellion of the homogeneity that threatens the phallocentric order.
Domestic Violence: Policy and Resources for Undocumented Women
Savannah Medina

The focus of the research project is on undocumented women who are domestic violence victims. The organization chosen is the Los Angeles Center for Law and Justice (LACLJ). LACLJ is an organization that assists domestic violence victims with services that includes: legal aid, protection, and advocacy. Their sources are primarily geared towards families and immigration law. My question will be: How well does this organization service undocumented women that are victims of domestic violence? The significance of the project is the power that knowledge about these resources and legal aid can do for undocumented women. Domestic abuse women often stay in their abusive environments based on the lack of information. These women aren’t sure of the rights that they have based on documentation status. The significance of this research project is to educate readers on the rights of undocumented women. The more people that are aware of these rights, the more people that can help these women that have been domestically abused. My research method for the project begins by researching the legal aid, protection, and advocacy of the organization. Based on research of what domestic abuse victims need and the rights of undocumented women, I can make a conclusion on how well the organization services these women. I predict results of the research will conclude the organization’s services for these women are adequate with room for improvement.

Dystopia 20XY
Nicholas Tarricone

The idea of a dystopian future is so often written about and spoken about, but would we ever know if we were in one? Dystopian itself refers to the idea of a state of great suffering or injustice, and by that definition we are in the midst of our own dystopian reality right now. My thesis hopes to bring this idea to light by using a blunt and sometimes hyperbolic lens on our own reality, allowing us see it as the dystopian world it has become. Visually I am hoping to create a sort of visual artifact of this world. The purpose being to almost transport the viewer to this realm, and allow them not only see but experience the dystopia. My goal is to ultimately let my audience realize the somewhat scary reality of where our current world is and where it could be heading without awareness.

Early Development of Scale-able Rehabilitation System
Michael Rea, Ariana Albiar

Stroke remains the leading cause of serious long-term disability in the United States, and is a growing concern in Low-and-Middle Income Countries. Movement practice is central to the recovery of stroke. Ideally practice takes the form of repeated, intensive exercise in which the patient is fully participatory. There is growing evidence that simple rhythmic arm exercise devices not only help to restore a patients arm function, but also their ability to walk. The approach used in this rehabilitation system is an arm exercise repeating the motion of extending and retracting the arm, by pushing and pulling on a handle bar which attaches to the wheel of any wheelchair. Also attached to the handle is an Adafruit TFT LCD Shield Touch Screen connected to an Adafruit LSM9DS0 Accelerometer and Gyroscope powered by a USB battery pack. Using the open source electronic platform, Arduino, the accelerometer is programmed to read the accelerations in the x, y, and z directions and use those accelerations to calculate the angle, in degrees, of the accelerometer in a specific direction. The angles obtained by the accelerometer allow the user to calibrate their own exercise, by storing angles of extension and retraction in the program. Once the exercise is calibrated, the LCD screen will instruct the user to begin
their exercise and also counts the number of repetitions the user completes, where the repetitions are defined by the angles of extension and retraction. The user is able to recalibrate or restart their exercise at any time. In low-and-middle income countries, this device could amplify a therapist's time and help them address the increasing demand for motor rehabilitation.

**Ecological Green to Economical Green: Current and Future Value of Ecosystem Services Provided by Los Angeles’ Ascott Hills Park**

Kesterlyn Wilson

Rapid urbanization has stimulated interest in valuing ecological services and the possibility of incentivizing the restoration of damaged urban habitats. Ecosystem services are defined as the natural profits that a healthy, functioning ecosystem provide to humans, such as climate control, water filtration, and recreational benefits. These aspects have an economic value to them. Located in a highly urbanized neighborhood of Los Angeles, California, Ascott Hills Park (AHP) offers hiking trails and scenic views inclusive of the San Bernardino Mountains, Catalina Island, and iconic Hollywood sign. This study seeks to quantify a dollar value on the natural benefits of the different habitats of AHP. The park consists of 98 acres with four primary habitat types: grassland (72%), woodland (8%), California sage scrub (5%), and riparian (5%), as well as roads and parking lots (8%). In its present condition, the value of park land is $2,365 per hectare per year based off the lower estimations of other valuation efforts done on similar habitats. This is in comparison to the estimated value of $9,700/ha/year major cities globally provide. Software analysis was used to evaluate the productivity of over 500 trees measured in the park, as well as individual habitats and their spill-over effects on the surrounding neighborhood. We hypothesize that underwriting of restoration efforts in AHP will grow the economic value of the park's ecosystem services and provide a long-lasting return on investment to the people of Los Angeles.

**Economic Optimism in LA**

Andrew Brown, Sebastian Arceo

Self-identified political ideology and race are well established in economic literature as being correlated with different economic views. This study will examine how perceptions over the national economy have changed among Los Angeles County residents from 2014 to 2018. Loyola Marymount University’s Thomas and Dorothy Leavey Center for the Study of Los Angeles conducts its annual Los Angeles Public Opinion Survey of 2,400 adult Los Angeles County residents. This project examines the responses to two questions: (1) In general, do you believe the national economy will do much better, somewhat better, somewhat worse, or much worse in the following year?; and (2) In general, do you believe the regional economy will do much better, somewhat better, somewhat worse, or much worse in the following year? by two variables: political ideology and race/ethnicity. Overall, from 2014 to 2018, Angelenos have been fairly optimistic that the national economy will get much better or somewhat better in the coming year. When examining optimism trends, liberal Angelenos were more optimistic about the economy until 2016, while conservative Angelenos were more optimistic about the national economy following 2016. Furthermore, among Black, Asian, white, and Latina/o Angelenos general optimism remains high that the national economy will get somewhat better. Although overall optimism dropped in 2017, it has risen primarily among Black, Asian, and white Angelenos in 2018. These trends reveal how differences in economic perceptions can be influenced by political ideology and race.

**Education Equality and Civic Engagement**

Barbara Velasco, Samantha Zinn, Shane Williams
There are groups of people aged 18-24 who are eligible to vote but do not. The purpose of this project is to provide insight into what factors in high school education in the United States contribute to the disparity in voter registration within this age group.

Data is collected on public Los Angeles elementary schools with special attention to socio-economic background and test scores. Data regarding voter demographics in the corresponding neighborhoods is collected with special attention to age and frequency of voting. The data is illustrated on a map using Geographic Information Systems (GIS).

The preliminary results show that low-performing public elementary schools are more likely to be located in communities where there is a high percent of Latinx and Black residents. Additionally, those communities are likely to have a high rate of young eligible citizens who do not vote. The results of this study would serve to illustrate the inequalities that marginalized communities face within the public education system. These educational inequalities result in those communities having a disadvantage in elections.

**Equitable Biking Infrastructure in Los Angeles County**
Ryan Burke, DaVaughn Wong, Emily Sinsky

Recent criticism has arisen about the implementation and implications of bike lanes in urban communities, especially in lower class or gentrifying neighborhoods. The bicycle as a commuting tool is seen in some communities as a white upper middle class novelty. Studies have arisen for the relationship between bike infrastructure and class in cities such as Portland, Chicago, and D.C. but this study observes the selective, unequal infrastructure of bike amenities in Los Angeles county. Though there are many news articles and studies on equitable bike infrastructure in other cities, there is no academic study on the recent implementations in Los Angeles. The study uses LADOT development data in Los Angeles to assess the correlations between bike lane mileage and variables including race, socioeconomic status, and bike use across census tracts. The density of bike lanes per census track will be found using ArcGIS pro and will be analyzed with each variable using regression analysis. Biking infrastructure in many cities is concentrated in more affluent areas due to lack of representation in city government and the community pressure brought upon local planners by influential white upper class activists. This leads to a disparity in bike amenities, a greater focus on middle to upper class commuting, and an overall higher rate of bike or pedestrian deaths among minority ethnic groups.

**Evangelicals and Abortion: A Tool for Political Power and a Reaction to the Rights Revolution**
Marie Quintana

In the final few decades of the twentieth century, the debate over abortion became increasingly divisive in the United States. Being pro-life or pro-choice came to dictate one’s political affiliation as the GOP adopted a strong pro-life stance in the 1980s, in line with its new Evangelical Christian base. This research examines the history of American Evangelical leaders embrace of a pro-life agenda in the second part of the twentieth century, and was guided by the questions: When, why, and in what context did Evangelicals adopt pro-life politics? How did this differ from their previous stance on abortion? Through the analysis of primary sources, including newspapers and a popular Evangelical magazine from the time, an autobiography by Evangelical leader Jerry Falwell, and an interview of him, as well as recent secondary sources I conclude that the cultural issue of abortion was strategically used by Evangelical leaders to advance their political power and agenda. In the late 1970s, in the wake of the Rights Revolution, white Evangelicals were angry over new social changes, especially desegregation, and their waning influence in American society. Evangelical leaders, who previously hadn’t staunchly or vocally opposed abortion, seized the opportunity to gain political power by leveraging opposition to abortion to coalesce Catholics and Evangelicals into a voting block for the GOP. Thus, strengthening
their ability to exert the control they wanted over American politics and society to fight social reforms, ushering the U.S. into a period of conservatism as they worked towards wedding religiosity and conservatism.

Every Data Point Counts
Julian Kehle

Synthesizing the investigative research and cautionary messages from experts in the fields of technology, political science, and behavioral science, this project explores the ways in which digital analytics has begun to influence the American political arena. Historically, political parties have constructed systems to target voters and win elections. However, rapid changes in the field of technology (such as big data, artificial intelligence, and the prevalence of social media) threaten to undermine the integrity of elections themselves. Future political campaigns will utilize profiling to micro-target individuals and manipulate them with hyper-personalized political content. Most dangerously, the average American voter does not understand how these technologies will influence elections. This research project simplifies the complex technological and sociopolitical landscape in order to educate the public on the issue. Even more important than understanding the problem is arming people with practical solutions to combat this intimidating problem. Therefore, this project utilizes the language of visual design to turn something complex and intimidating into something approachable and empowering. This academic and creative contribution aims to ensure that American elections remain free and fair.

Evolution or Expediency? An analysis of Hillary Clinton’s public position taking
Samuel Baron

The 2016 presidential election was perhaps the biggest electoral upset in American history. The Democratic Party’s nominee for President, Hillary Rodham Clinton was the most disliked candidate to ever run on the party’s ticket and polling overwhelmingly found that a majority of voters found her to be ‘untrustworthy’ or ‘dishonest’ in the lead-up to the election. This paper examines Clinton’s public position taking throughout her nearly three-decade long political career in an effort to quantify whether her ‘evolving’ views affected her perceived level of honesty and trustworthiness during the 2016 election. The paper analyzes Clinton’s public positions on six areas of policy: Healthcare, Foreign Affairs, Trade, Crime, Women’s Rights, and LGBT Rights at five different junctures of her career. The
methodology tracks Clinton’s positions against publically-available data on public opinion for each issue. Results indicate that Clinton changed her positions to mirror public opinion, even in cases where doing so was contradictory, and thus contributed to voters’ opinions on her levels of dishonesty.

**Examining the effects of short term exposure of microplastics on Daphnia magna**
Sydney Lee

Examining the effects of short term exposure of microplastics on Daphnia magna Sydney Lee, Demian A. Willette Plastics are widely utilized materials and over 300 million tons of plastic are produced every year. With use and disposal, plastics can be fragmented into smaller pieces called “microplastics” that eventually are washed into and remain afloat in the world’s oceans and lakes, contaminating water and negatively impacting marine life. Microplastics range in size from as small as 10nm to as large as 5mm and can easily be ingested by marine life. Ecologists are concerned about how micro-plastics pollute and impact marine and aquatic trophic interactions; however, data on the effects of microplastics on marine life are limited. To better understand the effects of microplastics on marine life, we examined if Daphnia magna could ingest and digest micro-plastics, and if the micro-plastics caused observable physical effects. D. magna were exposed to a green fluorescent microplastic that sized 1-μm in a 200mL beaker of water with a 1/8th of a tsp of soybean flour for 96 hours. Daphnia were offered concentrations of 62μm, 125μm, 250μm, 500μm, and 1mL of microplastics per 200mL of water to observe the effects of differing levels of exposure on mobility and mortality. Understanding how long D. magna retain microplastics and how they behave when micro-plastics are digested will enable us to better understand the effect of micro-plastics on lower marine trophic levels, and can give us insight into how micro-plastics may accumulate in fish and other organisms higher marine food chain.

**Expecting the Unexpected: Angeleno Perceptions of Disaster Preparedness and Emergency Services**
John Andrikos, Xavier Orozco

Every year, massive wildfires char California, which heightens the need for excellent disaster preparedness and emergency response services in every county. This project examines Los Angeles County residents’ perceptions of the quality of disaster preparedness, fire, and emergency medical services in their city of residence using three dependent variables from the 2018 Los Angeles Public Opinion Survey of 2,400 adult residents conducted by the Thomas and Dorothy Leavey Center for the Study of Los Angeles (StudyLA) at Loyola Marymount University. Residents are asked to rate these services using a scale of good, fair, or poor. This project’s analysis focuses on how these perceptions differ significantly by socioeconomic status (SES) indicators, specifically, household income, education, and perceived social class using a Chi-square test of independence. Generally, results show that respondents’ ratings of their city’s disaster preparedness and emergency services do not differ significantly by SES indicators or city of residence. Two exceptions are ratings of emergency medical services (EMS) by social class identification and education level. Respondents of higher self-perceived social class (95% of those identifying as upper class compared to 67% of those identifying as lower class) rate EMS as “good.” Those who hold graduate degrees (82%) and high school diplomas (81%) give the same rating, compared to a lower percentage of those who hold high school diplomas (69%) and undergraduate degrees (68%). These differences in perception of life-saving services are important, as they could reflect an actual disparity in quality.

**Exploring Equality and Femininity through the Choreographic Process**
Gillian Ebersole
I spent last summer researching Laban Movement Analysis as a way to combat the racism and body image issues of the dance world. I think dance notation provides a mechanism with which to create movement and choreography that celebrates bodily diversity, rather than restricting dance to a certain aesthetic. I attended the Laban International Conference in New York City and participated in the Institute for Dance Journalism and Advocacy in Washington, D.C. In addition to this academic research, I studied choreography in Paris with Labanotation scholars and choreographers, Dr. Teresa Heiland and Olivier Bioret. I sought to create inclusive movement while maintaining the authenticity of the choreographic process. This challenged me to find new body patterns in my own performance, and I created and performed my work, This is My Body, in Paris. This choreographic culmination of my research process led me to bring my work back to Los Angeles, where I continued to research the potential for dance notation as a choreographic device. I created and performed a second piece, Catcalls from God, in Los Angeles. I believe in making dance a more equal experience for all, and my research implements an interdisciplinary approach to approach choreography from a perspective attentive to diversity. In this dance video presentation, I discuss the experiences of my research and how they influenced the process of creating and revising choreographic work. My choreographic exploration negotiated with the ideas of feminism and bodily autonomy in relation to my conservative upbringing.

Fear in Western Europe: Why Voters Support Nationalism
Devin Kellett

In recent years, right-wing nationalism has risen in Western Europe, producing a threat to established democracies in the region. Given this threat, what compels Western Europeans, specifically voters from European Union member nations, to support these nationalist parties and candidates? This thesis will argue that emotion, specifically fear, is what drives constituents to vote for nationalists. To prove this, I examine all national elections in the last 20 years from three case studies: France, Germany and Sweden. In each case, nationalist parties were able to win a sizable portion of the ballot and gain a foothold in the national legislature, increasing there foothold every election since 1998. By conducting a time-series analysis of each case study, we can see how various societal and demographic factors across each nation impact the levels of fear experienced by constituents. I review Eurobarometer public opinion surveys and expect to find a positive relationship between the electoral success of right wing nationalist parties and higher reported levels of anxiety in Western Europe. I argue that a corrosion of societal trust, denoted by trust in one’s neighbor and government, is the main reason that fears increase in Western Europe, and this resulting fear is what drives voters to place their trust in nationalist parties. If fear is the cause for this rapid rise of nationalism, then political scientists will be one step closer to understanding and addressing the corrosion of the EU.

Femicide: An Epidemic in El Salvador Fueled by State-Sanctioned Violence
Brenda Quintanilla

Every day, 137 women are killed. Femicide, the intentional murder of women, is a global epidemic. Most women are killed by an intimate partner or someone they know. Gender-based violence (GBV) is perpetuated by social, political, and economic systems. Though femicide is not unique to Central America, El Salvador is the country with the highest rate with more than 10 killings for every 100,000 women. This phenomenon led me to ask the following research question: why does El Salvador have the highest rate of femicide in the world? From 1980 to 1992, El Salvador suffered from a civil war, killing over 75,000 people. This tragedy, fueled by US imperialism, led to El Salvador becoming the country with the highest rate of femicide. The state-sanctioned violence facilitated the development of gangs,
which continue to perpetuate gender-based violence and the murder of women. I present this project by dividing it into three sections: background, explanations, and policy suggestions, and draw from the research of various interdisciplinary scholars in the fields of politics, gender studies, and Chicanx/Latinx studies. By reading historical accounts of the civil war, gang development, and women’s experiences with GBV, I am able to better understand the complexities that led to El Salvador becoming the country with the highest rate of femicide. This epidemic is continuing to haunt women and we must not allow them to keep falling into the hands of violence.

First Principles Investigation of the Defect Structure of Metal Oxide Nanopowders for Catalytic and Solar Energy Materials
Jared Lyons

Metal oxide nanopowders have extensive applications in a variety of fields ranging from photocatalysis in solar energy panels to medicinal drug delivery. The catalytic and electrical properties of these powders are dependent on the concentration and spatial distribution of point defects present in the metal oxides, particularly at the surface. Traditional microscopy and spectroscopy methods cannot allow direct, detailed characterization of surface structures and point defects within metal oxide nanopowders. Nuclear Reaction Analysis (NRA) was used to characterize TiO2 and ZrO2 nanopowder surface structures and stoichiometries. The NRA results display distinct surface structures and reactivities for these nanopowders relative to one another and their oxide-free crystal counterparts. These detailed properties are influenced by nanopowder preparation and storage conditions. In this research, we employ electronic structure calculations to elucidate the physics underlying this distinct behavior for these two metal oxides. Developing an understanding of these nanopowders’ surface behaviors and how they are impacted via synthesis conditions permit tuning properties to improve efficiency of the nanopowders for catalysis and solar energy applications.

Food Insecurity in Regions Degraded by Climate Change
Emily Sinsky, Ryan Burke, Davaughn Wong

As the negative effects of climate change are most consistently found in less developed countries (LDCs), I am investigating how these effects are correlated with food insecurity in order to determine if both phenomena are dependent on a country’s economic position. This study focuses on how regions affected by food insecurity are coping with drought, tropical storms, or other natural disasters determined by climate scientists to be caused by climate change. I have operationalized these values by looking at factors defined by the World Health Organization to be identifiers of food insecurity: current rates of anemia, childhood malnutrition, and median calories consumed compared to historical rates as well as those of similar regions. I then mapped out these WHO identifiers and compared with regions which have both environmental factors the UN has associated with climate change as well as the factors previously identified by the WHO as contingent upon food insecurity. Geographic information systems (GIS) is useful in this process, as my study design dictates looking at a spatial spread of countries and overlaying two variables to see if and where they coincide. My preliminary findings suggest correlation between climate change-induced damage such as flooding or drought, and indicators of food insecurity. Prevention of environmental and urban damage due to climate change will likely become a major part of national budgets in the coming years, and LDCs will suffer most acutely. This, coupled with already insecure food sources, can further degrade these communities, stunting development in the Global South.

Foreign Accent Perception and Speech Production
Renee Borges, Nicole Infantino
Previous research indicates that perception and production systems are tightly coupled. The study aims to examine the relationship between auditory capabilities and foreign accent production abilities. We hypothesize that people with good auditory abilities will have better foreign accent production abilities. To test our hypothesis, participants were measured on Tests of Basic Auditory Capabilities (TBAC) to evaluate their auditory discrimination abilities. Next, participants listened to sentences spoken in different foreign accents (French and British) and they were instructed to reproduce the sentences in those accents. The overt responses were recorded and two research assistants independently rated participants reproductions. The participants were split into "good producers" and "poor producers" based on their accent production scores. After a median-split was done, an independent samples t-test was run on the TBAC scores. Analyses revealed that poor producers had lower TBAC scores compared to good producers. This suggests an association between general auditory capabilities and speech production.

Gay Men as Sexual Beings in AIDS Cinema
Kyle Saavedra

This paper comes out of my First Year Seminar, where I researched how the AIDS epidemic defined a generation of gay men, but how AIDS films also defined portrayals of intimacy between gay men. As mainstream media outlets perpetuated inaccurate descriptions of HIV transmission amongst gay men, film and television programs also crafted stereotypes of gay men that paint AIDS as a “gay disease” and demonize sexual relationships. How did AIDS cinema contribute to these stereotypes during the crisis? The most prominent issue in these depictions of gay men remains the disparity between gay sexual culture in reality and the entertainment industry’s understanding of such diverse sexual practices, where films fail to capture the history of gay sexual subcultures and resort to superficial pairings between gay men that align with "traditional" heterosexual narratives. By examining AIDS films made between 1981-1995, I compared gay, male character arcs to those of heterosexual characters, revealing that 1980’s AIDS films consistently included tragic endings for sexual gay characters, while 1990’s films both continued and subverted the tragic narrative. In my presentation, I will provide a timeline of AIDS cinema and the different narrative tropes that contrast real gay sexual culture. I will also discuss images from these films, emphasizing the way that camera angles and imagery affect the gay male’s ability to embrace their sexuality. The presentation will conclude with how this research has initiated my interest in queer cinema.

Gender and Underground Hip Hop: Female Artists and how they Challenge the Industry
Alexandra Meek

This research explores gender construction in hip hop; I chose this focus because hip hop is one of the most widely consumed types of media, and because it has been an important part of movements for social and political change and racial equality. However, hip hop has also been a male dominated industry; consequently, it is often critiqued for the way it portrays and reinforces gender inequality. This project looks at underground hip hop, where female artists have increased in number, and presumably have more freedom to express new ideas. I ask: how do women in the underground hip hop challenge or reinforce traditional structures of gender present in mainstream hip hop? To answer this question, I conducted a content analysis of randomly sampled songs produced by underground female artists, along with their accompanying videos. Additionally, I conducted a quantitative analysis of gender involvement in content production, as well as streaming numbers. I found that female underground hip
hop artists counteract the construction of gender in mainstream hip hop by displaying personal agency in both their content, and their role in the production of said content. They use this agency to display autonomy and control over economics, sexuality, and life experience through their own lenses of gender and race. The content these women produce, while proportionally a smaller segment of hip hop, contributes to the industry's larger rhetoric, and may eventually shift the conversation within the industry, and within broader society due to hip hop's role as a socializing agent.

**Gender, Neoliberalism, and the International Division of Reproductive Labor**

Camryn Barker

In this paper, I offer an analysis of the relationship between gender, neoliberalism, and the international division of reproductive labor, arguing the international division of reproductive labor has negative implications for both female domestic migrant workers and their female employers. I first consider how reproductive labor is gendered insofar as the daily activities it encompasses are those patriarchy deems to be women's responsibility. I then use the scholarship of Rhacel Parreñas to argue the global commodification of reproductive labor prompts women in the Global South to migrate to the Global North to perform the reproductive labor of those women working in the formal economy, thus producing the international division of reproductive labor. I consider how the international division of reproductive labor emerged by analyzing the global expansion of neoliberalism alongside the shift in women laboring outside of their homes in the Global North during the 1980s. I use the scholarship of Nirmala Erevelles, Joya Misra, Jean Pyle, and Barbara Sutton to argue neoliberalism exacerbated inequalities between the Global North and Global South, thereby leading women from the South to migrate to work for higher wages. These female migrant workers fulfilled the demand amongst working women in the North for help in performing the reproductive labor of their households. I then consider the implications of the international division of reproductive labor for all women, arguing exploitation increases the lower one is situated within the system. I conclude that the gendered division of reproductive labor disproportionately impacts women.

**God in Our Image: La Virgen de Guadalupe and Latina Identity Formation**

Jessica Leu

La Virgen de Guadalupe is a cultural hybrid of indigenous spirituality and Spanish Catholicism, one with incredible significance for the Catholic Latinx community. Not only has Guadalupe served a very vital role in the syncretic experience of Mexican popular Catholicism, but she has also been used by Latina/o activists for political, social, and personal decolonization efforts. By analyzing Catholic icons through new critical lenses, Latina feminists have given Guadalupe a new contemporary identity. This influence can then be seen in contemporary Latina art, used as both self expression as well as to reinvent Latinx identity. This essay, through textual analysis of two novels and visual analysis of two paintings, will argue that Guadalupe's religious iconography has not only influenced the formation of Catholic Latina identities, but has also been recreated and given new meaning by Latina writers, artists, and other creatives in efforts to decolonialize themselves. By analyzing contemporary Latina narratives within Catholicism, we can better understand both cultural heritage as well as its hybridity within religion.

**Greenspace and the Community Along the Los Angeles River**

Julia Pradel

The purpose of this study is to better understand correlation between green space along the LA river and areas of affluence. In this research the green space along the LA River is defined by categories of natural habitat, manmade park space, and cement, and affluence/socio-demographic factors will be
found by utilizing data from the American Community Survey, focusing on variables of mean household income and race. Preliminary findings show that there is more greenspace and plant life along the Los Angeles River in neighborhoods of affluence and higher socio-demographic statuses. Consideration of the current status which greenspace along the LA river provides a look into the prevalence of green settings as a mean for environmental justice and socio-demographic opportunity-based inequalities. This comparison of different biotas along the Los Angeles River and the corresponding demographics of the neighborhoods is important to city growth as it recognizes preexisting patterns while also providing data that can be used in future planning and development.

Hatch-a-Match: A Genetic Matching Algorithm for Bigs and Littles
Haley Fletcher

In universities across the country, on-campus organizations use mentoring programs called "bigs" and "littles" to help match up new members with more seasoned members of their organizations. This process helps the newer members to feel more at home in the organization. Many organizations designate one person or a committee of people to help decide on a pairing for the bigs and littles. This process comes with biases towards people that the organizers know the best. It also generates complexities from not having an equal number of potential bigs and littles. Hatch-a-Match seeks to eliminate the biases and complexities from this process by automating a matching system from an easy-to-use web app. In the matching process, the algorithm will automatically match any two people who ranked each other as top choice. The rest of the matching process uses a genetic algorithm to sort which of the matchings are better than others. The current goal of the project is to allow organizers an easy and efficient way to input the preferences of their participants, and in return receive a potentially great matching. Hatch-a-Match will be available on Github as an open source project.

Have Women Achieved Commensurate Representation?: Gender Quota Effectiveness in the Cases of Singapore, South Korea, and Taiwan
William Lighthart

Quotas designed and implemented to increase the representation of women in representative democracies have become widely popular in countries all around the world. Despite the broad implementation of gender quotas, not all states or political parties that impose the quota are able to increase their representation of women in national legislatures. Discourse has erupted on which of a variety of potential factors is most influential on the efficacy of gender quota systems. Most of the research done to substantiate this debate has taken one of two routes: the research conducted is either broad in attempts to gather statistics to make generalizations regarding gender quotas by region, or, the research focuses on only one country without comparison to similar countries. In this analysis, a middle-ground is taken by examining Taiwan, South Korea, and Singapore. All three of these countries have adopted gender quota systems in some form. Using a most-similar-systems approach, this study addresses the type of gender quota system that is implemented as a means of rationalizing discrepancies in the representation of women. As a result, the findings are able to shed light how, depending on the type of gender quota adopted, most-similar-systems have seen varying results. Initial findings show government-legislated quotas are the most effective form of gender quota, especially in terms of political party compliance.

Hermana Pedagogy
Maria Lopez Zamudio
This work centers on the teaching and learning between hermanas (Latina/Chicana sisters) through both consejos (advice) and role modeling. The transdisciplinary study considers that informal education between siblings is informed by both gender and ethnic identity and develops a new conceptual framework to understand this dynamic called Hermana Pedagogy. This framework is informed by the work of Moraga (Theories of the flesh), Anzaldúa (Mestizaje), Villegas (Mother-daughter pedagogies), and Delgado Bernal (pedagogies of the home). The questions that guide the research are: What characterizes Hermana Pedagogy? and How does sisterly mentoring impact lived experiences? The qualitative study involves the collection of personal narratives or testimonios through interviews and open-ended surveys and pattern analysis through the new conceptual framework. The study finds gender roles are a key component in how sibling care-taking is enacted when girls are socialized to be more nurturing, obedient, and responsible. Moreover, learning done within Latinx family households is intergenerational and nuanced by ethnic/racial identity. In the end, knowledge-produced by hermanas is not only gendered and raced, but vital and valuable for young women navigating their context. The work provides a field with a new lens with which to understand household education and personal and gendered identity formation for Chicana/Latina communities and disrupts deficit lenses and white and patriarchal frames.

How could we forecast housing price in Los Angeles?
Guangpeng Ren

The housing prices in Los Angeles County continue to grow at an increasing speed, causing hurdles in Angelenos’ access to affordable housing. The following project (1) examines if an increase in average housing prices is reflected in Angelenos’ perceptions on the topic, and (2) calculates the accurate coefficient for predicting housing price increases in Los Angeles. Data used includes the 2014-2018 American Community Survey 1-year estimates to measure incomes and population flow, Zillow to measure average housing prices, and the 2014-2018 Los Angeles Public Opinion Surveys conducted by the Thomas and Dorothy Leavey Center for the Study of Los Angeles at Loyola Marymount University. Preliminary analysis of the public opinion survey of 2,400 adult Los Angeles County residents shows that access to affordable housing availability has been a problem for Angelenos over the past four years with 27% fewer Angelenos rating it as "good" in 2018 than in 2014. In terms of coefficient calculations, a regression analysis will be performed with average housing price as independent variable, and incomes and population flow as dependent variables. The hypothesis is that as population flow and incomes increase, the average housing price will increase as well, but incomes will not grow as rapidly. Determining the accurate coefficient of average income and population flow has important implications, as it can help better forecast the housing prices in Los Angeles. Accurate predictions are in turn a useful indicator for creating effective housing policies that improve access for all Angelenos.

How to Earn Marshmallows: Examining Factors Predictive of Gratification Delay in Children
Michaela Cahill

Commonly known as the “marshmallow test,” Walter Mischel’s self-imposed delay of gratification task is today among the most widely-used tools in developmental psychology. The test has repeatedly proven to predict future success on the basis of a simple task performed in early childhood. Which factors account for this observation, however, be they personal, environmental, or a combination of both, are unclear. This paper analyzes six primary research studies, each of which investigates how a different relevant factor affects preschool gratification delay and its connection to adolescent achievement. The paper devotes specific attention to how socioeconomic status and environmental stability shape children’s perceptions, trust levels, and rational thought, and how these factors, in turn, impact delay ability. Despite the common perception that delaying gratification is inherently valuable, the results of
this research suggest that environmental instability can make resisting temptation in the hope of future benefit both counterproductive and maladaptive. Consequently, rather than emphasizing self-control, educators and parents might better serve preschoolers by training their prefrontal cortices, which control executive function. Strengthening this vital brain region would enable children to determine for themselves when to resist temptation and when to embrace the resources immediately available. This shift in educational focus would thereby teach kids to behave in a contextually-appropriate manner and provide them with important life skills while accounting for differences in environmental stability and personal experience.

Human Islet Amyloid Polypeptide (IAPP) Aggregation is Inhibited in the Presence of IAPP of Alternate Species
Dillon Rinauro, Kate Menefee

It is estimated that 30.3 million children and adults in the United States have diabetes, approximately one out of every 10 individuals. Additionally, one in four adults living with the condition are unaware that they have the disease. These patients have been noted to lose pancreatic β-cells, with up to 45% loss of pancreatic mass in severe cases of the disease. It is believed that islet amyloid polypeptide (IAPP) is one of the agents responsible for the death of β-cells. This is because IAPP, for unknown reasons, accumulates in the pancreas, where it misfolds and subsequently aggregates into a variety of forms that are toxic to β-cells. Previous studies have been conducted that have enhanced the correlation between the aggregation of IAPP and the contraction of type II diabetes. In this research, we have shown that by selectively combining individual animal IAPP-variants, such as raccoon IAPP or dolphin IAPP, with human IAPP (hIAPP), the aggregation of hIAPP has been significantly reduced or inhibited. The findings of this work thus have the potential to be used as pharmaceutical therapeutics to treat patients with type II diabetes.

ICERaids and the Restaurant Industry
Brooke Duplantier

Since 2017, U.S. Immigration and Customs Enforcement (ICE) has increased immigration raids in cities across the United States. At a time of labor shortage within the restaurant industry, restaurant owners, employees, and consumers have expressed concern over ICE raids, resulting in the "Sanctuary Restaurant" movement. My research asks, what is the profile of restaurants that are targeted by ICE raids? Specifically, I explore if the category of "ethnic" restaurants experience ICE raids more frequently than other restaurants. Ethnic restaurants are often perceived by consumers to be "authentic" due to the appearance of the staff at the restaurant, which may or may not consist of immigrants. I examine this assumption from the perspective of the federal government’s immigration practices, hypothesizing that the perception of ethnic restaurants can place them at increased risk of ICE raids. To trace the number of raids on restaurants and the category of restaurants experiencing the raids, I will collect data on ICE raids in restaurants from 2010 to today, through newspaper articles and yearly ICE reports. Additionally, I will collect 50-100 responses from restaurant owners and employees in Los Angeles on their perception of the risk and impact of ICE raids. Ultimately, I will develop a profile of the restaurants that have encountered ICE raids and portray whether these results are reflective of consumer perceptions of ethnic restaurants. This research will provide a deeper understanding of ICE raids and increased visibility for the impact of these raids on the restaurant industry.
Sports continue to be one of the largest forms of entertainment in our culture. While they are entertaining to watch, the true value of sports comes from their ability to empower the players. For many people growing up, sports are a way to develop skills, muscles, and a mentality. Some of the benefits of playing sports include learning life lessons, teamwork, and the rewarding feeling of developing new friendships. Whether it’s losing a high school game or winning a NBA championship, sports provide a bond between others and a special way of learning. It has been proven that kids who grow up playing sports have better test scores, more lifetime earnings, and increase in college attendance. It’s also an amazing way to stay healthy and fit. Being active has proven to increase one’s mood and lifespan but also provides a way out of poverty for some people. One important aspect of athletics is that they provide everyone with the opportunity to be on an equal playing field. No matter your race, ethnicity, religion, or social class, everyone is out there for one thing, and that is to play. Overall, participating in sports is a healthy way of growing up and becoming a better more rounded person. By utilizing graphic design, I will create pamphlets and a campaign to promote the idea of sports as a means of better development and show the impact they have among society. As a result it will become clear to others how much of an impact sports actually has on the benefit of individuals.

**Improving the Mechanical Properties of Magnesium Alloy AZ31B through Heat Treatment and Cold Rolling**

Nathan Santos, Salim Es-Said, John Manganiello, Robert Wood, Spencer Chan, Finnegan Lynch, Jared Ramirez, Matthew Soriano, Andre De Leon

Magnesium Alloy AZ31B is a common commercial material that is used in many applications ranging from aircraft fuselages to cellphones. The main problem with this particular alloy is its poor ductility due to its hexagonal close packed structure. The objective of this study is to increase the ductility of this alloy. Blocks of AZ31B that were 0.2-0.33 inches thick were cold rolled with intermittent annealing. The final rolling was at roughly 50% total reduction in thickness. Roughly seven rolling passes of 10% reduction in thickness were achieved in the first case and about twelve in the second case. The intermittent annealing was at 250°C for 30 minutes followed by air cooling. Samples were machined and tested in tension. The fractured surfaces were evaluated by scanning electron microscopy (SEM). Orientation distribution functions will be generated from x-ray diffraction data and a model will be derived.

**Integration of Health and Agriculture in Climate Change National Commitments**

Hayley Hart, Avery Dillon

The Paris Agreement establishes a framework for global action to address climate change. At the core of this agreement are Intended Nationally Determined Contributions (INDCs), and the Nationally Determined Contributions (NDCs) which lay out national plans to reduce Green House Gas emissions and improve resilience to climate change. Other relevant climate policies are the National Adaptation Plans of Action (NAPAs) and National Adaptation Plans (NAPs).

This study analyzes the extent to which health, dietary patterns, education, gender, agriculture (i.e. livestock, food waste, feed), have been integrated in the NAPAs/NAPs and the INDCs/NDCs submitted to the United Nations Framework Convention on Climate Change (UNFCCC) by 2018. While the INDCs and NDCs usually integrate agriculture mitigation options such as livestock production, feed, and food waste reduction, they have not addressed demand-side mitigation options, such as changes in diets or food procurement with a view to less GHG-intensive dietary patterns. Most NAPAs and NAPs identify health, agriculture and food security as priorities, but frequently do not consider the nutritional aspects.
Only 29% of the countries with NAPAs have included nutrition as a priority. This periodic revision of the NDCs offers an opportunity for the health and nutrition communities to strengthen the commitments made in the NDCs, with a focus on integrating food security, nutrition and the promotion of sustainable and healthy dietary patterns into climate action plans, both from an adaptation and a mitigation point of view.

**Intersectional Identity Politics as a Tool for Successful Social Movements**

Angelica Ortega

With the increase in insurgent demonstrations in the U.S. in the past fifteen years, it is evident that oppressed groups of individuals have been mobilized to express their political distress. Many of these groups have formed around elements of their identity such as race, gender, and citizenship status. These movements are often explained in narrow terms of one-dimensional and exclusive "identity politics." Yet, organizers of these movements think of identity politics as intersectional and based in women of color feminist theory. I ask: how have contemporary social movements utilized a multidimensional form of identity politics, and in using this strategy, how have these movements redefined success? I argue that the social movements of Black Lives Matter, the Women's Marches and Immigration Marches have applied a multi-dimensional identity politics to their efforts. I argue that their measures of success do not necessarily equate to legislative or policy change, rather their goals for change are to impact national discourse or public opinion. I turn to the work of Rosa Luxemburg and the Combahee River Collective to lay a theoretical ground, which promote the concepts of working from the ground and utilizing a form of intersectional identity politics. I expect to trace these two key components across all three case studies. Finally, I anticipate finding that these particular movements have affected the democratic system through changing dialogue rather than instigating legislative change.

**Investigating Computationally the Red Shift of Organic Polymers for Performance Enhancements for Solar Energy and Electronics**

Thomas Kelly, Emmett Barnes

Research and development of organic chromophores that are excited by electromagnetic radiation and give off electrical charge is of great interest particularly in solar and electronics applications. Synthesis and experimental characterization of these organic polymers and devices made from them can be time consuming and costly. Hence, a computational approach to modeling these molecules that reproduces experimental results and trends would allow much more efficient screening of chemical modifications for improved performance. Several chromophore monomers of interest exhibit red shifts in the UV-Vis spectra when different electron accepting molecules, commonly referred to as Lewis Acids, bind to the nitrogen atoms at either end of the molecule. This presents the advantages of some degree of self-assembly as well as the potential for tuning the absorption spectrum specific to the application. We discuss our distinct computational approach to modeling such monomers with several Lewis Acids, using novel application of a recently developed method, which has correctly ordered their adduct absorption wavelengths. Furthermore, our first-principles calculations have allowed methodical exploration of intramolecular properties that would not be possible to characterize by experimental means including bond lengths, rotations affecting UV-vis absorption, and other properties. The insights gained through computational characterization of novel adducts complementing experimental synthesis and testing may permit design refinements leading to performance gains dramatically faster than experiment alone.

**Investigating faster rates of fish speciation within volcanic Taal lake of the Philippines using RAD-seq genotyping of local Sardinella populations**
Leonardo Gonzalez-Smith

The Indo-Malay-Philippine Archipelago (IMPA) is considered a major center of marine biodiversity with the highest concentration of shore fish anywhere on Earth. Composed of over 7,000 islands, the Philippines boasts a range of different aquatic environments such as volcanic lakes, rivers, and 10,000s of kilometers of coastlines. Geographic, oceanic, and physical processes can inhibit gene flow among fish populations, and over time, may result in the origin of new species via allopatric speciation. A local example is Taal Lake, formed only 300 years ago after a series of extreme volcanic events and geological changes constricted the flow of the Pansipit River and separated the marine environment from the now freshwater Taal Lake. The vicariant event also disrupted the putative gene flow between organisms in the lake and those in the adjacent South China Sea, including sardines. Regionally there are two morphologically similar sardines: Sardinella tawilis, an endemic freshwater lake fish, and Sardinella hualiensis, a marine fish found along the Philippines and Taiwan. Using restriction site-associated DNA sequencing, single nucleotide polymorphisms are aligned to investigate whether these two fish have a most recent common ancestor that lived prior to the vicariance event that occurred 300 years ago. Analysis of the genetic relationships will allow us to estimate a divergence time between the two species and determine if the evolutionary split between these two morphologically species pre-dated the formation of Taal Lake. The genetic data will also inform ongoing conservation efforts of endemic and threatened S. tawilis within the lake.

Investigating the Association Between Amphetamine Use and Psychotic Symptoms: A Mini Meta-Analysis
Lakyn Kearns, Kaitlin Bakhshian, Erick Carranza

This mini-meta analysis looked at the relationship between psychotic symptoms and amphetamine use. After an extensive research process, previous literature has shown a possible correlation between amphetamine use and increased psychotic symptoms, especially in children with ADHD (Moran et al, 2015). Based on previous literature, we predict that amphetamine use will be associated with a higher likelihood of psychotic symptoms. We conducted a mini meta-analysis which is a quantitative and systematic analysis of multiple independent samples using effect sizes. Our study is comprised of five journal articles retrieved from two databases: PsychInfo and Pubmed. We define amphetamine use as: any use of a drug that stimulates the central nervous system and falls under the family of C9H13N chemical composition. Psychotic symptoms are defined as: presence of psychotic symptoms diagnosed using standardized measures and structural interviews by trained clinicians. The results showed that amphetamine use was positively correlated with higher likelihood of psychosis/psychotic symptoms (OR= 2.144, 95% CI: 1.571- 2.925). This research has implications for clinical use. Clinicians should use caution when prescribing amphetamine-based medications. Clinicians should also investigate potential amphetamine use when diagnosing psychotic disorders. Such information can be particularly useful when working with genetically predisposed populations, who may experience an earlier onset of the drug-induced psychosis.

Investigating the Regulation of the Nod Genes in Paraburkholderia tuberum
Ashwarya Sharma

Rhizobia bacteria provide leguminous plants useable nitrogen through their capability to fix atmospheric nitrogen (N2) into ammonia (NH3). In this mutualism, α-rhizobia trigger the formation of nodules on plant roots through Nod Factor, rhizobial signaling molecules responsible for the induction of plant nodulin genes. In α-rhizobia, the nodABC gene products are responsible for creating the chemical backbone of Nod factor, while NodD is a major transcriptional regulator of the nod genes. The number of nodD
genes and their requirement for nodulation varies per species of rhizobia. The pathway of nodABC gene induction has been well studied in α-rhizobia, however, it has not been characterized in β-rhizobia. This project is investigating the role of NodD in the regulation of the nod genes of Paraburkholderia tuberum, a gram-negative β-rhizobia known to nodulate Phaseolus vulgaris. Analysis using a lacZ fusion to the nodABC promoter shows that the flavonoids genistein and daidzein both upregulate nodABC gene expression, similar to what has been observed in the α-rhizobia symbiosis. However, we have identified two functional copies of nodD in P. tuberum, suggesting that each copy plays a unique role in regulation of the nod genes. In order to determine at what point in the symbiosis each copy of NodD is needed for nodABC gene regulation, a nodABC promoter fusion to green fluorescent protein is being constructed by Gibson assembly. This construct will be introduced into wild type P. tuberum as well as nodD1, nodD2 and nodD1D2 mutants in hydroponic growth experiments. Roots inoculated by each of these strains will be observed by fluorescence microscopy to allow us to establish when nod gene expression occurs in the symbiosis and the requirement of each copy of nodD for this activity.

Investigation of the Time-Dependence of Intershock Properties and Potential Consequences for Earthquake Forecasting
Junheng Li

Earthquakes pose destructive threats to both humans and property. Many larger earthquakes are preceded by foreshocks, smaller-scale earthquakes that occur near the mainshock source in both space and time, however, the physical relationship between foreshocks and mainshocks is unknown. If smaller-scale earthquakes could be identified as foreshocks in real time, instead of classified as such after the mainshock has already happened, this knowledge could be a key ingredient in the potential for a mechanics-based earthquake forecasting method. In this study, we analyze intershocks, smaller-scale earthquakes that occur in the extended nucleation region of the mainshock during the recurrence interval between mainshocks, that are produced from 3-D numerical simulations. Our goal is to determine whether the relative timing of the foreshock-like events affects their source properties, and thereby includes information about whether a mainshock event will appear in the near future. Our approach is to group intershocks into bins based on their relative timing before the next mainshock, allowing us to search for characteristics that may indicate the mainshock is approaching. Our results so far indicate that the intershocks occurring towards the end of the recurrence interval tend to have a larger rupture size. This quality may be explained by the increasing readiness of the fault to slip in the upcoming mainshock. In order to confirm the preliminary findings, further analysis with a larger pool of data is needed. However, the results so far provide hope that characteristic features in the source properties of foreshocks could be found.

Lessons in Peacekeeping Failure: Comparing UNMISS and UNOSOM Missions in East Africa
Senay Emmanuel

United Nations’ peacekeeping forces have come under scrutiny in recent years for being prone to committing human rights abuses, failing to establish resilient peace, and being unable to effectuate provisions of the mission mandate. This study aims to determine which factors contribute to the failure of peacekeeping missions specifically in the East Africa region. It hypothesizes that a lack of integration of local knowledge and civilian perspective in the daily functions of peacekeepers is a main cause of mission ineffectiveness, as most operations are handled in a blueprint fashion not adapted to fit local dynamics. This is tested through a structured, focused case analysis of UNMISS (2011-present) and UNOSOM (1993-1995) missions in South Sudan and Somalia respectively. Data regarding duration of
troop deployment, troop rotation, the demographics of the peacekeeping personnel, and to what extent stationed troops understood and communicated in the local language is analyzed to determine the degree to which the peacekeeping presence was able to interact with the local population. The research expects to find that, in both cases, local populations were not consulted with and integrated into the data used by the United Nations to craft missions, reducing the overall effectiveness of the two peacekeeping operations. The findings have implications for the development of strategies that can establish and administer better peacekeeping operations today and in the future.

Like A Woman
Samantha Jordan

My research will examine how women are strong in ways that are different than men, and in ways that have not always been considered "strong." I have conducted my research through observation and personal experience. In a time when female empowerment is encouraged, I want to add my voice to the conversation in order to bring a new perspective to the topic. Instead of showing the strength of women through dominantly male characteristics, I will distinguish women by their own unique characteristics. I have focused on four female characteristics: Motherhood, Relationships, Heart, and Beauty. Through the creation of a magazine that is focused on these topics I will use design to uncover how women are viewed and how women view themselves. My research will explore identity, and examine how my observations have shaped my own views, and how they have shaped the way that I view women. The goal of my research is to empower women in their undeniable strengths and to cast vision for who women are currently and what we can be in the future.

Long Beach Coyote Management Plan
Jaclyn Findlay, Jaclyn Findlay, Dominic Baechler, Jarrod Kleya

The LMU Center for Urban Resilience (CUREs) is currently in the third year of a three year project to create a long-term management plan for the resident coyotes of Long Beach, California. This plan will be used and applied by the Long Beach Animal Care Services Bureau. This project consists of using game cameras set up in Long Beach to determine coyote abundance, movement, and distribution. This includes studying where the coyotes are spending the most time, if they are transient or mobile, what packs are present, peak activity, and if there are potential threats. Additionally, radio collaring and tracking of target study site coyotes will be implemented. This will allow for deeper analysis of coyote movement patterns and interactions. The goal for the project is to create a management plan to optimize the urban ecology in Long Beach for humans, coyotes, and the surrounding environment. We plan to inform and educate the public on how to co-exist with the natural world while spreading awareness about the coyote population in Long Beach.

Los Angeles Seafood Monitoring Project
Stacy Lam, Mary Balducci

Seafood mislabeling is a widespread and potentially dangerous problem around the world. Recent government regulations aim to combat mislabeling, yet little change has occurred at the restaurant level. For example, sushi sampled from Los Angeles restaurants between 2012-2015 and identified to species level using DNA barcoding revealed an average mislabeling rate of 47% (Willette et al. 2017). The widely-publicized results of that broad study promote joint discussion among restaurant owners, government regulators, and local researchers to explore ways to reduce and eliminate seafood mislabeling in Los Angeles. This study is part of this new multi-tiered effort, The Los Angeles Seafood Monitoring Project. Here, we conducted monthly sampling of six common fish from 10 sushi restaurants.
across Los Angeles beginning in April 2018. The tissue samples were processed using well-vetted DNA barcoding methods, and sequenced. The genetic identity of each sample was compared to the menu name and US Food and Drug Administration’s list of acceptable market names. Menu names that did not match acceptable market names of genetically identified fish were defined as mislabeled. Four months of samples have been analyzed thus far and we have found the preliminary mislabeling rate in 2018 to be 43.5%, a slightly lower than 2012-2015. As part of the Monitoring Project, specific results will be reported back to individual restaurants later this year and explored to see where progress has been made and what work remains.

Lost
Kelli Nagasawa

On the morning of December 7, 1941 Japan attacked Pearl Harbor in the midst of World War II. With war hysteria on the rise and the threat of another invasion from Japan, the U.S. government worried about the loyalty of the highly concentrated West Coast Japanese-American population. In February 1942, President Franklin D. Roosevelt signed Executive Order 9066, which authorized the government to remove 120,000 Japanese-Americans living on the West Coast and incarcerate them in “relocation centers” across the country. When the U.S. government allowed the Japanese-Americans to leave the camps, the War Relocation Authority forced the interned to shed their Japanese identities and assimilate into white-American society. This push for accelerated assimilation had major consequences that are still seen today. Since 1941, most Japanese-Americans have experienced an American life, at the expense of their family’s Japanese identity, heritage, and culture. Japanese-Americans were taught to suppress their Japanese identities in order to break away from the stigma that resulted from the war. This led to a loss of Japanese culture in America that was passed on from generation to generation. Throughout my piece I explore the impacts forced assimilation has on Japanese-Americans, through a series of autobiographical and historical accounts. By educating the public on the loss of culture and identity of Japanese-Americans following World War II, people will better understand the consequences and lasting effects of racism and will be more likely to stand up against politicians and administrators who are targeting the most vulnerable members of society.

Making “Bright Half Life” Whole
Kayan Tara, Kayan Taraporevala, Katherine Bianco

What does an intense connection between two people deeply in love look like over the span of 40 years? Bright Half Life, written by Tanya Barfield and directed by Dana Resnick in the fall of 2018, gave audiences a taste of a committed relationship between two women. The show, set in the round, presented us, as actors, with several challenges, the biggest being allowing ourselves to be vulnerable in such an intimate setting. In our presentation, we will discuss how the process of bringing Bright Half Life alive involved engagement with our characters on a deeper level, and in rehearsals, creating a chronological timeline of a story otherwise told out of time. We worked not only with our director, but also two student assistant directors, who helped us with intimacy and dramaturgy. Due to the timeline of the production process, we condensed rehearsals for a complex and emotionally challenging play into an intensive three week process, where we attended four to six hours of daily rehearsals. Not only did we rehearse the play in a short amount of time, we also only had four performances, which occurred during the first week of school. Due to the intensity of the play, the energy of the audiences, and each of our emotional states, each performance was unique in its delivery. Being a part of telling such an important story involving two women so unapologetically in love was both exhilarating and terrifying because we
felt a great responsibility to do the story justice for the communities it reflected. As a part of our presentation, we will be performing a small section from the play.

Mapping Modern Reasons for California Wildfire Increase
Aurora Crum

What changes in the modern Californian environment have made its landscape more prone to wildfires than in the past? On November 8th, 2018, California was presented a unique but devastating situation where multiple wildfires were happening at once in the North and South. This instance can help give an understanding of what makes California the most wildfire prone state in the US. The purpose of this study is to prove that California has experienced an increase in wildfires over the years and where these factors are most prevalent in the state. Geographic Information Systems (GIS) is used to map drought intensity, forest insect infestation, power plant locations and precipitation patterns throughout California. High drought and low precipitation conditions create dryer landscapes which transform them into ideal locations for wildfires to form. The recent arrival of the bark beetle to California has left behind thousand of dead trees which become strong fuel for wildfires. Fallen power lines have been one of the leading causes for starting wildfires. That is why urban factors like power plant locations are being taken into consideration as well. A historical map layer will be added to illustrate any changes in current wildfire patterns. The maps will demonstrate a positive correlation between the increasing presences of these factors in areas where there is increasing wildfire activity. The data collected from this study can be used to develop new legislation that could prevent wildfires from continuing to increase or even occur in the future.

Measuring Progress in News Media Representations of Sexual Assault
Samantha Larmon

In this paper, I examine whether and to what extent feminist progress has been made in how news media represents cases of sexual assault. I position news coverage of the landmark case between Anita Hill and Clarence Thomas in 1991 in comparison to coverage of the 2018 case between Dr. Christine Blasey-Ford and Brett Kavanaugh. The striking resemblance between the Hill/Thomas and Ford/Kavanaugh hearings provides an ideal setting to study shifts in rhetoric around sexual assault. The twenty-five-year gap between the cases enables an inquiry into whether modern representations of sexual assault have improved. Using content analysis, I measure feminist progress in terms of adherence to rape myths when covering the two cases. Examining rape myth adherence in media coverage is vital, as rape myths in media both perpetuate the myths in readers that already hold them and teach the myths to those who do not. News media is an important outlet to study, as journalists possess a powerful air of credibility, playing a large role in how readers understand stories. In pursuit of responsible reporting, this paper contributes to wider discourse around the consequences of rape myths in media, urging journalists in particular to abandon rape myth rhetoric.

Measuring the Effects of Confidence and Prior Experience on Academic Success in Physics
Larry Sprott

This project will study the effects of confidence on prior experience and measure its effect on academic success in physics. I will gather anonymous data from questionnaires and tests and search for correlations between confidence and academic performances considering prior experience with physics. The questionnaires will be used to assess students’ confidence. The intellectual merits of this project come from the potential benefit that this research can have for future student’s academic success. The
analysis can help those who may potentially have difficulties with physics and can aid professors devise strategies to assist the students in meeting the learning outcomes.

**Method Development for the Analysis of Microplastics on Sandy Beaches**
Hanna Weyland, Samantha Smith, Cameron Rehmani Seraji, Havana Campo

Microplastics, plastic particles less than 5mm in diameter, are chemicals of concern due to their ubiquitous presence in the environment. They are the result of degrading macroplastics and are potentially harmful to marine life through ingestion. A pilot study was implemented in 2017 to analyze microplastics found in beach sand from the Santa Monica Bay beaches. The previous method yielded a low percent recovery for seeded microplastics and an abundance of sand was carried over from samples. The purpose of this project was to improve the process of separating microplastics from sand. Using density separation, a dense heavy liquid (Lithium Metatungstate) was added to the sand sample where microplastics would then float to the top of the heavy liquid/sand mixture due to their lower density. The resulting solution was poured into a filtration apparatus containing two different sized mesh. The samples were then dried and analyzed under a stereomicroscope. Finally, the microplastics were identified using Infrared Microscopy. If organic material was present, samples were placed in a 30% hydrogen peroxide solution to remove any organic material allowing a clearer identification of microplastics. A separation apparatus constructed out of PVC was made to help better separate the microplastics from the sand and to minimize the abundance of sand that was carried over from the samples. Experiments testing the method’s effectiveness yielded a higher percent recovery rate than previously tested. This new method will be used for the analysis of microplastics in beach sand from various Santa Monica Bay beaches.

**Microseepage of Light Alkanes in Los Angeles' Long Beach Oil Field and Wilmington Oil Field**
Brynne Weed, Mikaela Ribi

Oil deposits within the greater Los Angeles area are key indicators of potential microseepage sites of C2-C5 alkanes. This microseepage is only able to be determined via air samples and is not visible at the surface and can occur via vertical migration. We were able to gather multiple sites of potential successful sampling, as indicated by the presence of nearby oil deposits. Signal Hill Park and Ken Malloy Harbor Regional Park were the most promising sites, situated above the Long Beach Oil Field and Wilmington Oil Field, respectively. In order to determine if these two locations experienced measurable alkane emissions, we employed an upwind-downwind method via canister collection, thus enabling us to determine if the researched locations had quantifiable alkane emission. The canister samples were analyzed for methane using a Bruker 430 gas chromatogram (GC) operating isothermally, in conjunction with a flame ionization detector (FID). The C2-C5 alkanes were run through a Varian 3400 oven temperature programmed GC-FID analysis that employed cryogenic preconcentration. The Wilmington Oil Field provided one sample that showed an approximate 10% increase for methane and 50% increase for ethane and propane. However, the wind was not in a true upwind-downwind direction, so further sampling must be conducted to validify the observed data. There were no significant upwind-downwind differences with the samples taken from the Long Beach Oil Field. This data will be used in the future as a means for finding optimal locations for direct measurement of gas flux using a closed-chamber method.

**Mockingbird**
Madaline Riley

During this presentation I will perform a dance piece I created in response to the song
Mockingbird by Rap artist Marshall Mathers, aka Eminem. I will share my creation process as well as the different skills I draw upon in order to physically express Eminem’s story through dance languages drawn from both the underground and the concert stage. Eminem and I are both freestyle-based creators. Improvisation is the root of the styles I work with—such as Popping, Animation, Hip Hop, and Contemporary dance, and also for Eminem—emerging from the underground Rap scene of Detroit as a freestyle-based rapper. Mockingbird is a conversation, Freestyler to Freestyler, that I chose to document so that people can see, hear, and feel this story, which is just as much personal for Eminem as it is representatively social and cultural. I become a new medium for his words and I learn from his musical structure how to compose physical expression that is raw and contextual without losing its authenticity while still being able to make strong choreographic choices. In doing so, the process becomes personal for myself as well. I witness an inner dialogue that seeks to pay homage to the places that I believe inspire us both as artists. I aim to bring together all of the different parts of myself for art-making that at times seem distant, but are actually very close.

Modeling of Gene Regulatory Network Dynamics Predicts which Regulatory Relationships are Important for Controlling the Cold Shock Response in Saccharomyces cerevisiae
Lauren Kelly

A gene regulatory network (GRN) is a set of transcription factors which regulate the level of expression of genes encoding other transcription factors. The dynamics of a GRN show how gene expression in the network changes over time. Microarray data were obtained from the Saccharomyces cerevisiae wild type strain and five transcription factor deletion strains (Δcin5, Δgln3, Δhap4, Δhmo1, Δzap1) before cold shock at 13°C and 15, 30, and 60 minutes after cold shock. Genes that showed a significant change in expression were submitted to the YEASTRACT database to determine which transcription factors regulated them. Data from each strain were used to generate a candidate GRN of 15 nodes (transcription factors) and 28 edges (regulatory relationships). The edges of this network were then systematically deleted one-at-a-time to create a family of 28 networks for determining the importance of each edge in the network. We used differential equations modeling through the open source software GRNmap to estimate the production rates, expression thresholds and regulatory weights for these networks from the microarray data. Based on the least squared error and mean squared errors for each network, we found that certain edge-deletion networks performed better than the intact candidate network, and some edge-deletion networks performed more poorly. By examining the changes in the production rates, expression thresholds, and regulatory weights, we predict that the regulatory relationships involving HMO1, MSN2, and CIN5 are most important to the cold shock response in budding yeast.

Morphological Asymmetry as an Indicator of Stress in N. lepida and O. torridus, Morphological Changes in Response to Pollution in Inyo County
Jacquelyn Galvez, Michelle Liaolo, Catherine Dauw

Vertebrates develop in a bilaterally symmetrical manner, but it is hypothesized that this pattern may be disrupted by stressors such as environmental pollutants. Pollution exposure may lead to the introduction of fluctuating asymmetries (FA) during development. Moreover, pollutants can make their way into the food chain through plants and are likely to be more concentrated in higher trophic levels. This accumulation of pollutants via diet is predicted to result in higher amounts of FA. By measuring skulls for their degree of bilateral symmetry through calculating distances between landmarks, identifiable sutures, differences in FA can be analyzed. In this study, two variables are examined to better understand the role of PM10 pollutants and trophic level in the formation of two rodent species. PM10 is defined as particles of any substance, e.g. dust, pollen, mold, that are less than 10μm in diameter. Specimens of Neotoma lepida, the desert woodrat, and Onychymous torridus, the southern grasshopper
mouse, with an exposure to higher pollutant levels (those found within an EPA non-attainment site) are compared to specimens from areas with lower levels. Specifically, N. lepida living within an approximate 40 mile radius of Owens Lake, CA are compared to those living outside of Inyo County. In addition, rodents from a higher trophic level, O. torridus, are compared to the N. lepida groups above. We predict N. lepida from within Inyo County will have higher amounts of FA compared to those outside, and that O. torridus will have higher FA levels compared to all groups of N. lepida.

**Murals and Representation in Boyle Heights**
Karla Ramirez

This research examines the roles that murals play in the rapidly changing community of Boyle Heights in Los Angeles. This project utilizes cultural studies and gender studies framework and implements a visual analysis of murals. An overview of the history of murals, Boyle Heights, and the role murals have played in the community since the 1960’s Chicano movement is provided, in which I highlight female muralists and their work. This work focuses on 3 murals painted within the last ten years in Boyle Heights to consider the role in both attracting new residents and including existing residents. Further, the narrowed focus on murals painted by young female muralists shows the significance of murals painted by young Latinas in the rapidly changing community of Boyle Heights both historically and today. Although many studies and findings show how gentrification mostly focuses on the displacement of residents through new developmental projects, the preliminary findings of this research show that visual landscapes also matter. Ultimately, the visual landscapes of murals in Boyle Heights better represent the community today, in which the emergence of more female muralists has impacted the content of murals and the resistance against the gentrification the community has faced and continues to face.

**Neuroscience and Free Will**
Kai Henthorn-Iwane

My research paper "Neuroscience and Free Will" investigated the neuroscientific and philosophical discourse over the issue of free will: its definition and whether or not it exists. Many people believe that the existence of free will determines whether or not we have moral responsibility. After surveying eleven neuroscientific and psychological articles on free will, as well as consulting the Stanford Encyclopedia of Philosophy for the philosophical arguments for and against free will, I concluded that there is no conclusive evidence or argument that either we do or do not have free will. Within the field of neuroscience, the psychologist Benjamin Libet stands at the center of most disputes over the existence of free will. His experiments in 1983 and subsequent replications by other researchers seemed to show that conscious voluntary decisions are predetermined by unconscious involuntary processes. Some psychologists dispute the validity of Libet's experiments, arguing that they employ flawed methodology. Despite the critiques of Libet's research, most psychologists and neuroscientists take it for granted that free will and determinism are incompatible, a view known in philosophy as "incompatibilism." While incompatibilism is a strong position, there are good reasons to reject it. Thus, supposing that neuroscience proves determinism, as Libet-style experiments claim, it does not follow that we do not have free will. Though we may never know what neuroscience really says about determinism anytime soon, we need not assume that determinism would imply that we do not have free will.

**New Balinese Gamelan Composition: Hujan**
Daniel Ostrander
Balinese Gamelan is an exciting musical tradition of ensemble performance that remains innovative into the modern day. As a performer in LMU’s Gamelan Ensemble, I became interested in the generation of new techniques and sounds from these ancient instruments. I was particularly interested in the ambient and atmospheric noise generated by abandoning the use of the mallet in favor of fingers and picks. I decided to create a composition utilizing these new sounds and contribute to the modern Gamelan movement, known as Gamelan nouveau. To begin, I listened to several newly composed Gamelan pieces to get a feel for the direction of Gamelan nouveau. I then took time to explore the sonic possibilities of each component of the ensemble by remaining in the recital hall after rehearsal. I also spent time considering what the piece would represent; in general, all the pieces our group performed had a greater motivational theme that connected each musical idea. I worked extensively with Dr. Paul Humphries, the conductor of the ensemble, and Dr. Dorin, my composition professor. I also worked with members of the performing arts community within the ensemble, namely Hirotaka Inuzuka, to ensure my work did not overstep any cultural norms. The final product of several months composing and refining is a piece entitled Hujan, or rain. The piece contains traditional elements intermingled with extended technique for the Gamelan. I believe this piece explores a structure and sound that is previously unheard and may inspire more composers to tackle this exceptional challenge.

New Layouts, Data Types, and Architecture for GRNsight 3: A Web Application for Visualizing Gene Regulatory Networks
Mihir Samdarshi

GRNsight is a web application and service for visualizing small- to medium-scale gene regulatory networks (GRNs). A GRN consists of genes, transcription factors, and the regulatory connections between them which govern the level of expression of mRNA and protein from genes. GRNsight accepts input files in the Excel, SIF, and GraphML formats and then produces weighted or unweighted network graphs by representing genes as nodes and regulatory connections as edges. Activation is represented with red edges, repression is represented with blue edges, and weight magnitudes below a certain threshold are represented with gray edges to denote weak activation or repression relationships. GRNsight now contains features to facilitate network comparison. Nodes on each graph show a heat map corresponding to gene expression levels over time; these nodes can be overlaid with up to two different data sets. The graphs generated by GRNsight may now be automatically laid out in a grid. When a user right-clicks on a gene, data requests are made to five public databases and a web page is dynamically populated with the data returned. Finally, a number of under the hood improvements were made to GRNsight’s architecture. Most notably, GRNsight was made to follow a strict Model-View-Controller (MVC) paradigm. MVC consolidates the application’s state into a single object, from which presentation and interaction are derived. GRNsight version 3.1.3 is freely available at http://dondi.github.io/GRNsight/; the code is available under the open source BSD license at https://github.com/dondi/GRNsight.

NGO Neutrality: How Levels of Political Involvement Impact the Ability to Provide Aid to Vulnerable Populations
Nayar Islam

In the literature regarding non-governmental organizations (NGOs), there is a lack of consensus regarding how NGOs can most effectively provide aid to their target populations. These contrasting viewpoints can lead NGOs to take actions that inhibit their ability to provide aid, instead of creating recommendations for NGOs to efficiently address the needs of their target populations. In order to address this problem, this project asks, “is it more beneficial for NGOs to remain politically neutral when providing aid or to be politically associated?” I argue that greater degrees of political association can
decrease an NGO’s ability to provide aid, since governments are likely to retaliate against NGOs that are critical of their actions by limiting the NGO’s operations. I evaluate how NGO neutrality either benefits or inhibits NGOs by conducting case studies for NGOs that operate at different levels of political involvement in two South Asian countries: India and Bangladesh. I utilize a mixed methods approach, incorporating qualitative case studies of NGO and states’ relationships alongside quantitative data on NGOs collected from survey responses. The qualitative portion includes incorporating information from local newspapers and annual reports conducted by NGOs. The quantitative portion includes coding survey responses and analyzing this numerical data. Given examples in the current literature, I expect that my results will demonstrate that higher degrees of political associations reduce NGOs’ effectiveness. My findings illuminate one factor that can impact NGOs’ functions, which can help determine the best methods that NGOs can take to assist vulnerable populations.

Ontogenetic Distribution of Late Pleistocene Megafauna at Rancho La Brea
Melissa Morado, Anna Yager

The asphalt deposits at the Rancho La Brea Tar Pits in Los Angeles, California are one of the largest continued excavations of Late Pleistocene megafauna. This unique site has allowed for continuous recovery of bones of both extinct and extant specimens over the past century. Fossils from the earliest excavations, known as the Hancock collection, were subjected to collecting bias that favored retention of well-preserved specimens, compared to the modern Pit 91 collection, where all specimens were collected. This could have led to lower juvenile counts compared to a higher predicted entrapment rate because of their smaller size and fragility, as they were more likely to break and be discarded. A previous study utilizing the Pit 91 collection found a higher percentage of juvenile entrapment in large herbivores (51%) than in large carnivores (29%). Asphalt deposits from South America indicate a high variation in the entrapment rate of juveniles, with localities ranging from 10% to 55%. Juvenile entrapment rates from the Hancock collection are unknown and allow direct comparisons to Pit 91 and the South American deposits. Pit 61/67 census data of the Hancock collection of the sabertooth cat (Smilodon fatalis) and the antique bison (Bison antiquus) were used to calculate minimum number of individuals. Ontogenetic stage was categorized as adult or juvenile, and percent juveniles for each taxon was calculated. We expect that data for La Brea will show no significant variation in ontogenetic distributions and that both deposits will not differ significantly from the South American deposit.

Operation Bird Smack: Studying the Incidence of Avian Window Collisions on Campus
Tiffany Tang, Emily Jensen, Cristobal Spielman, Sofia Acosta, Francesca Foltz, Annie Heckman, Sol Lewites

Collisions with man-made structures (e.g. buildings, communication towers, vehicles) result in billions of avian fatalities. In the United States alone, collisions with glass structures, such as the windows of buildings, are the cause of approximately one billion birds deaths annually. The purpose of this study is to investigate the prevalence of avian collisions with buildings on the Loyola Marymount University campus. In light of several studies concluding that both the amount of glass as well as surrounding vegetation influence the rate of avian window collisions, we seek to determine whether buildings that differ in these features differentially affect the rate of avian window collisions on the LMU campus. Our methodology focuses on three campus buildings: The Life Sciences Building (primarily glass facade with prominent vegetation on some sides), Hannon Library (primarily glass facade with minimal surrounding vegetation), and Hilton (minimal glass with prominent vegetation). Every morning, between 0700 and 0900 avian surveys search each building perimeter for mortalities. Surveys are conducted at a
standard pace and surveyors rotate building assignments to minimize bias. Surveys will be conducted daily throughout 2019, mortalities collected, their position noted (side of building), and species identified. We will present data on the incidence of avian mortalities during early 2019. Additionally, we will present results of the quality control tests we will conduct by staging avian mortalities along the survey route. Ultimately our study will reveal whether these buildings are causing avian mortalities, and, if they do, will allow for informed future mitigation.

**Orpheus and Women on 5th and 4th century BCE Athenian Vases**
Samantha Burton

In Greek myth, Orpheus is a musician with such talent that it charmed the beasts and guardians of the Underworld, and eventually Persephone and Hades themselves, into allowing his dead wife Eurydice to returning to the living realm. When he defied their singular rule of not turning to look back at her and she was then banished to the Underworld forever, Orpheus returned to the mortal realm, began to worship Helios instead of Dionysus, and was promptly killed by Thracian women sent by Dionysus. An overwhelming majority of literary retellings and visual representations of the myth place Orpheus at the center of the story: the viewer or reader follows him as he experiences loss, travels into the Underworld, retrieves his bride, and loses her once more. This is undoubtedly reflective of the patriarchal society in which the myth was born. This paper looks to explore visual representations of the women with whom Orpheus interacts, particularly Eurydice and the Thracian women who kill him, by studying 5th and 4th century BCE Athenian decorated vases. I track a chronology to see if representations of the women change, and note patterns among modes of representation. In some tellings of the myth, Eurydice is his nameless bride; similarly, on many vases, Eurydice is an unidentifiable woman only recognizable when she is connected to Orpheus. The visual portrayal of her, including an often deferential and veiled bent head, mimics her lack of autonomy found in the myth. For the Thracian women, they are often portrayed as hysterical, spear-wielding attackers. Orpheus, though often less active, always remains at the center of the scene, the protagonist of the visual story.

**Overexpression of Type IV Pili in the Legume Endosymbiont, Sinorhizobium meliloti**
Desiree Gonzalez

Legumes form symbiotic relationships with rhizobia, a Gram-negative soil bacteria which lives inside of root nodules. During this symbiosis, the rhizobia converts atmospheric nitrogen to ammonia, a biologically usable form of nitrogen which is provided to the legume host in exchange for carbohydrates and housing within the nodule. In order to have a successful symbiosis, the bacteria must successfully infect the nodule. This requires a strong bacterial attachment to the legume’s roots. During the infection process, the bacteria Sinorhizobium meliloti has pili that assist in its attachment, mobility, and cell interactions. The goal of this research project is to generate a strain of Sinorhizobium meliloti that can overproduce the Type IV pili, which have been implicated in root attachment. To overexpress the Type IV pili, the SmpilA1 gene was amplified from genomic DNA by Polymerase Chain Reaction and was cloned into a plasmid vector behind the constitutively active Ptac promoter. This novel plasmid was initially transformed into E. coli. After the DNA sequence is verified, then the plasmid will be conjugated into Sinorhizobium meliloti by triparental mating. *S. meliloti* carrying the pilA overexpression plasmid will be identified by tetracycline resistance which is conferred by the plasmid. In the future, this Type IV pili overexpression strain will be used to assess the role of pili in attachment to biotic and abiotic surfaces (soil and the roots of the host plant), as well as its role during later stages of the symbiosis.
Pablo Neruda: A Political Poet for the People / Pablo Neruda: Un poeta político para la gente común
Madelyn Starr

Pablo Neruda is a world-renowned poet known for the political nature of his poetry. My research question asks, how did Pablo Neruda infuse his poetry with his politics? Which techniques did Neruda use to make his poetry political and comment on the political life of the common, working-class people? This paper answers this question by comparing two of Neruda’s famously political poems, "Explico algunas cosas" and "Alturas de Machu Picchu." In this paper, I identify the techniques that Neruda uses to imbue his art with a political fervor and make it accessible to the common people for whom he wished to advocate. In order to analyze these two poems, I researched four articles regarding Neruda’s writing style, political experiences, and relationship with the common folk during his time in Spain and Peru. I also analyzed each poem both from a literary perspective and a historico-political perspective. By using the literary perspective, I examined Neruda’s use of literary devices such as personification, metaphor, and versification which imitates oral tradition. From a historico-political perspective, I drew connections between Neruda’s time spent living with members of the working class and his desire to advocate for their interests by discussing the way that political events affected the daily lives of the common people who did not have the power to make political decisions. My paper found that Neruda’s discussion of daily life and use of oral tradition in his writing style both highlighted the political plight of the working class and made his poetry accessible to its members, allowing his poetry to become a useful political tool. I wrote this paper in Spanish, and I intend to present it in Spanish as well. I can also translate my presentation to English so that it may be more accessible to more members of the symposium.

Performance of Two Spanish-speaking Samples and an English-speaking Sample on the Cordoba Naming Test
Erick Carranza

Neuropsychological assessment can be useful in detecting possible brain damage; a major domain measured is language. Confrontation naming tests are commonly used to test patients by requiring them to name a series of different images. In the United States, the Boston Naming Test (BNT) is one of the most well-known confrontation naming test. Assessments like the BNT are usually developed for native English monolingual speakers, and can present unique challenges to patients with other language backgrounds. For instance, in the BNT, multiple items do not have equivalent terms in Spanish (e.g., pretzel); therefore, it begins to measure Spanish-speakers’ general knowledge instead. Another important aspect of this would be that some Spanish-speakers have immigrated to the U.S., oftentimes at different ages which means that their experience with a formal education in their native language varies. This study examines the correlation between age of immigration for U.S. Spanish speakers and their performance on the Córdoba Naming Test (CNT), a confrontation naming test that is intended to be multicultural. We predicted that those who immigrated at a later age, whom we expect to have more years of education in their native language, will perform better on the CNT. At this time, 13 Spanish-speaking participants have been recruited. The overall trend of the data so far suggests that older age at immigration was indeed associated with better performance on the CNT. Our results highlight the importance of language and acculturation issues when being assessed with neuropsychological or cognitive testing.

Practical Navigation of Virtue
Joe Coleman, Daniel Siciliano
While Aristotle does not explicitly say that the virtuous person has the moral obligation to follow the spiritual work of mercy of instructing the ignorant, it is evident that the inference can be made and applied to the lives of the virtuous person. A virtuous person has an obligation to those around him to pass on the knowledge that he has attained to those who have not yet reached the same level of understanding, and, moreover, is not fully virtuous unless he attempts to do so. This project will attempt to illustrate exactly what the obligation of the virtuous person is to those around him who are not virtuous, as well as illustrate ways to understand whether he is himself is the virtuous person or if he should seek out the virtuous person. Using Aristotle’s Nicomachean Ethics, especially Books 8 and 9, the project will attempt to act as a guideline for how those who are unsure of their level of virtue can navigate the world in ways that are most enjoyable and fulfilling, learning where their strengths and weaknesses lie in determining which possible routes of their lives will produce the most virtue, and consequently, happiness. This work will explicitly refer to Aristotle’s Ethics as a pragmatic guideline to a happy life while simultaneously bringing into conversation modern scholars of the Ethics as well as Ignatian Spirituality.

Predatory Institutions: Metal Detectors in Chicago Public Schools
Siobhan Collins

Metal detectors have been used in a growing capacity to combat the problem of violence in public school systems across the United States. While research has been done regarding their legality, their efficacy, and their disproportionate use on minority students, there has been no extensive research done on the relationship between corporations that produce metal detectors and those who decide to implement metal detectors in schools. My project will address the question: do corporations that produce metal detectors, and politicians that work with these companies, implement metal detectors in schools as a means of profit rather than under the belief that they actually contribute to a safer school environment? I will answer this by using the foucauldian genealogical method and by conducting a case study in the city of Chicago. The foucauldian genealogical method requires that I look at the entire history that made metal detectors in schools possible at all. Chicago has a history of using metal detectors, of segregationist school practices, of corporate reform efforts, and of corrupt politicians. All of these factors considered make Chicago a perfect case study to explore this question. Further, by examining the relationships between politicians and corporations, and tracing back political donations, I believe that the connection will be made even more clear. I expect my results to show that politicians and corporations directly benefit from the use of metal detectors, and that their implementation is not solely for the purposes of school security.

Prey Species Identification from Urban Coyote Scat Samples using PCR Amplification and Enzyme Restriction
Matthew Sheridan, Grace Riggs

Interactions between humans and local wildlife are inherent to urbanization and have created a demand for wildlife/human management solutions. Coyotes (Canis latrans) are prominent in urban ecosystems and can cause a variety of residential threats. The aim of this study is to monitor coyote distribution and activity in Long Beach, CA to better understand urban predatory behavior and develop local wildlife management techniques. One method for better understanding urban coyotes is through scat analysis, which provides insight into the specific animal species that comprise their diet. This study focuses on prey species identification using DNA isolated from coyote scat samples. DNA was isolated using a modified Chelex method, in which scat material was suspended in a higher volume and lower percentage Chelex solution than the standard method. A 1,000 bp portion of the mitochondrial genome, which contains part of the cytochrome b gene and D-loop region, was amplified using PCR.
The PCR primers flanked the cytochrome b/D-loop region at sequences that are conserved in nearly all mammals. Since the amplified region is variable between species, restriction enzymes will digest the region into different sized fragments. The amplified DNA was digested using the Bfa1 restriction enzyme to produce species-specific DNA fragments. Determining dietary information on coyotes allows us to take effective steps towards managing wildlife and educating Long Beach residents on the predators that share their neighborhoods.

Queer Failure and "Successful Aging"
Ken Cavanaugh, Col Cavanaugh

This paper challenges the gerontological framework of successful aging, considering this framework alongside queer theoretical work on failure. The successful aging paradigm seeks to define and identify markers of 'successful' aging to develop programs and medical treatments that mitigate the 'negative' effects of aging on physical, mental, and social health. Many gerontologists are critical of this paradigm for its implication of failure on behalf of those who do not meet its arbitrary set of criteria. To begin, we offer a review of work that challenges the heteronormative metrics of this paradigm and the normative life course narrative it presumes. We then build on previous works of queer aging scholarship on aging and failure, further developing accounts of how failure relates to experiential and gerontological understandings of aging. In particular, we consider how Jack Halberstam's work in The Queer Art of Failure on forgetting, losing, looping, ending, fleeing, and surviving comes to bear on successful aging and on the lived experiences of queer elders. With this in mind, we argue that reframing failure and its partnered affects and styles in aging paradigms opens new avenues for understanding queer ways of being and knowing in old age.

Ran: How Kurosawa Wrote Back to and Revised Shakespeare for Cinema
Matthew Gaydos

Cinematic adaptations of Shakespeare often fall short; they can be too blindly married to the original text or try to create something that is different on only a superficial level. This presentation argues that Akira Kurosawa, the Japanese filmmaker that can be seen as a Shakespeare-esque figure in international cinema, is successful in his King Lear adaptation Ran because he does more than just "adapt" Shakespeare. Kurosawa, like some post-colonial authors, "wrote back" to Shakespeare and revised Lear to better capture the essence of the play through the medium of film, while also putting forward a thesis on his culture’s form of theater known as Noh. With Ran, Kurosawa meets the call of feminist poet and essayist Adrienne Rich in her essay "When We Dead Awaken: Writing as Re-Vision" to "know the writing of the past, to know it differently than we have ever known it"( 19). This presentation will examine how other American filmmakers wrote back to Kurosawa before the making of Ran, Kurosawa's rewriting of the gender dynamics originally found in King Lear, how Ran's successes can be traced back to Kurosawa's two earlier adaptations of Shakespeare, the way Noh-inspired elements were critical in converting Shakespeare's use of pathetic fallacy from words to visuals, the techniques Christopher Hoile describes as "splitting, doubling, and distancing," and the importance of writing back and revision to the canon of literature and film.

Red in a Sea of Blue: An Analysis of Conservative Thinkers in Los Angeles
Alden Lundy, Jayna Ortiz
American mega-cities are trending more liberal and are continuing to grow. Despite this trend, Los Angeles County still houses a contingent of conservative residents that exist in a county and state whose governments are democratic supermajorities. Using data from the 2017 and 2018 Los Angeles Public Opinion Survey conducted by the Thomas and Dorothy Center for the Study of Los Angeles, the project examines this cross-section of conservative Angelenos to better understand how they view the overall and economic future of the region. The project analyzes significant differences in opinion by self-identified political affiliation, using Chi-square test of independence. Results show that there is a significant difference between how self-identified liberals and conservatives view the future of the LA region, while a majority of liberal respondents believed the region was heading in the right direction (76% in 2017 and 68% in 2018), fewer conservatives felt this way (55% in 2017 and 45% in 2018). Self-identified conservatives were also less likely to think that the regional economy is getting better, but only in 2018 (62% vs. 70% for liberals). Considering that the conservative portion of Angelenos has remained steady over the past four years (30% since 2014), perceptions of this minority are important to understand. While conservative ideology is in opposition to the liberal supermajority in California, these results can inform governance on minority viewpoints existing among their constituents. Better understanding of a minority group like Los Angeles conservatives allows those in leadership roles to make more informed decisions incorporating all Angelenos.

Redesign of the Resonating Arm Exerciser for Intuitive use by Clinicians and Patients
Jared Ramirez, Millyon Mesfin, Willow Brown, Ahmad Khalifeh

Stroke remains the leading cause of serious long-term disability in the United States, and is a growing concern in low and middle income countries. Movement practice is central to the recovery of stroke. Ideally, practice takes the form of repeated, intensive exercise in which the patient is fully participatory. The Resonating Arm Exerciser (RAE), is a rehabilitation system in which a patient exercises by repeating the motion of extending and retracting their arm. They do this by pushing and pulling on a handle bar which attaches to the wheel of any manual wheelchair. A limitation of the existing version of RAE is that whenever the user exercises, i.e. by pumping the handle bar attached to one wheel, the rocking motion causes the other wheel to slowly but steadily drift across the ground, even though the brakes on that wheel are applied. This project accomplished three goals: 1) it enhanced the manufacturability of the RAE device, using 3D printing, 2) it facilitated greater ease of use by therapists and their patients, through a simplified mechanism for attaching and adjusting the elastic elements that support the rocking motion, and 3) it identified a novel approach to resolve the drift issue, using a plate that supports the locked wheel as it pivots, and ensures that this wheel remains stationary throughout the exercise session. This work represents substantial progress toward a revised version of RAE that can be rapidly fabricated and deployed, and smoothly integrated into rehabilitation hospitals anywhere in the world.

Reduction of Phenolic Content in Theobroma Cacao cotyledons by Microbial Fermentation
Talyssa Topacio

Theobroma cacao, simply referred to as "cacao" or "cocoa", is the primary starting ingredient in chocolate production. On its journey from bean to bar, the cacao beans must undergo a six day fermentation during which a complex microbial succession of yeasts, lactic acid bacteria and acetic acid bacteria metabolize the mucilaginous coating around the cotyledon, facilitating the arousal of tastes and aromas indicative of chocolate. The microbial ecology of cacao fermentation is undoubtedly complex, exhibiting critical interactions between these organisms that unfold to balance the taste and quality of the final chocolate; however, the spontaneous development of this community upon pod preparation serves a key point in determining whether or not the microbial fermentation community is significantly
influenced by the natural environment it was harvested in, referred to as terroir, and further, if the nuances reflected within this community have a significant impact on the taste of the final chocolate. Analyzed using a Folin-Ciocalteau assay for total phenolic content, it was found that microbes have a significantly greater impact than temperature and pH in reducing phenolic content during the fermentation process. Additionally, preliminary sequencing results for fermentation yeast samples reveal species indicative of natural-vegetative environments. Further directions of this study will involve continued yeast sequencing and identification in order to better understand the influence of the natural environment on cacao processing.

Relationship between Socialization and Weight Changes Using Wearable Fitness Devices
Milagro JeanMarie-Tucker

Over the past few years, the use of fitness-tracking wearable devices, or wearables, has increased. They have many features that allow users to monitor their activity, measure pulse rate, and communicate their progress with other users. With an accessible and streamlined user interface, these devices assist individuals in maintaining or achieving their fitness goals while sharing their results with others in their social groups. Prior research has shown evidence for a positive association between weight loss and in-person socialization during workouts. However, research on the social aspect of these devices and changes in weight is limited. PURPOSE: To investigate the relationships between socialization and changes is body weight using wearables. METHODS: Surveys were distributed electronically via social media applications and emails. Data was compiled and entered into Qualtrics for analysis. Chi-square tests and Spearman correlations were used to observe the correlations between changes in weight and in-person socialization versus device socialization (e.g. interactions with likes, comments, competitions, leaderboards, etc.). RESULTS: In accordance with previous studies, there was an association between in-person socialization and weight loss (p=.038). There was a moderate negative correlation for these factors (rs= -.482). There was no association between changes in weight and the usage of competition and leaderboard features (p=.260). There was no association between changes in weight and the usage of socializing features (i.e. likes and comments) (p=.463). CONCLUSION: The analysis of the data has shown no relationship between changes in weight and socialization within the wearables. There was a relationship between changes in weight and working out with a partner. No definite conclusions can be drawn based on these figures.

Road Crack Detection Using The Deep Learning Approach
Alejandra Vasquez, Ericson Hernandez, Casey Johnson

The United States road network exceeds over 6.58 million kilometers, with the County of Los Angeles having 11,910 kilometers of paved roads alone. Fixing these roads can prove to be difficult as construction companies use human inspection to label and classify the road damage. This is slow, costly, and imperfect. Similarly, current development is being done to create self-driving cars; these transportation systems would benefit from identifying speed bumps and other road abnormalities to know when to decelerate. Crack detection technologies are based heavily on machine learning. Machine learning uses three types of layers to classify an image: the convolutional layer to filter an image, the pooling layer to decrease the image size and processing time, and the fully connected layer to return a single output. Given this context, our team investigated an automatic approach using machine learning to classify road cracks using images of road damage. We found images from online databases, past research projects, and driving videos to test our program. The images had road cracks in varying degrees of intensity, potholes, speed bumps, and safe roads. These images were classified using Google Spreadsheets and resized using online image converters. We used Tensorflow tutorials to familiarize ourselves with existing machine learning code to train existing programs using our image data set. Our
findings focus on a preliminary code to test machine learning methods to help create a safe transportation system for future use.

**Role of NodC genes in Paraburkholderia tuberum**
Nicole Ann Villa

Rhizobia are soil bacteria that are present in the root nodules of plants, where they have the ability to form a nitrogen fixing symbiosis with members of the legume family. Paraburkholderia tuberum is a rhizobia of the β-proteobacteria that nodulates legumes such as Phaseolus vulgaris (bean). Additionally, P. tuberum has been recognized to contain the nodulation genes, nodA, as well as two copies of nodC, which in β-rhizobia are specifically responsible for the synthesis of Nod factor, a lipochitin oligosaccharide (LCO), which is required for root nodule morphogenesis in plants. We are generating deletions in each of the nodC genes to determine whether nodC is also critical for the β-rhizobia symbiosis. Primers were designed and used to amplify the border regions of nodC1 and nodC2. These were cloned into the pk18mobsacB vector to make a construct that could be used to generate each deletion. We successfully generated the nodC2 mutant and found that it did not nodulate black bean. This suggests that nodC1 is not redundant to nodC2. However, we are in the process of making the nodC1 mutant to see if it also plays some role in nodulation. Overall, this shows that nodC is important for both β- and β-rhizobia symbiosis.

**Sacred War**
Ellen McGraw

Religious violence is one of the most perplexing issues plaguing our world. For the last few decades, the Muslim world in particular has been entangled in a multitude of these conflicts, yet we struggle to understand why. Some scholars simply attribute violence to the religion, but if this were true, then all countries that are primarily Muslim would also be involved in conflict, or if they were involved in conflict, it would be over religion (Svensson 2013). Others attempt to explain this high correlation between Muslim countries and levels violence using other factors, such as resource, religious outbidding, or endogeneity (Gleditsch and Rudolfsen 2016, Toft 2007, Isaacs 2016). My study will add to this body of literature, with the purpose of better understanding the factors that ignite religious violence, aside from religion itself. Using Pew Research data on religion by country, I gather information on levels of religiosity. Using the Religion and Armed Conflict (RELAC) data, I then look at what countries are, and have been, most prone to religious violence. Initial findings show that while Muslim countries are more prone to violence, there are many majority Muslim countries that do not have high levels of violence. I argue that other factors, such as religious outbidding, as well as interpretation and manipulation of religious values in Abrahamic faiths, completely outside of the practice of religion, cause a higher level of Muslim religious violence. My findings will contribute to understanding of religious violence, and allow us to stop or prevent conflicts.

**Sentiment Analysis of Yelp Businesses Based on Reviews Using Natural Language Processing**
Muyuan Li

Many people depend on Yelp reviews to find good restaurants. However, the rating system of Yelp is not good enough sometimes as there is other information that can be worth evaluated such as environment, service or flavors instead of simply inputting "stars", and these evaluations are usually shown in the customer review sections. The main approach of this research paper is to build a sentiment
analysis model using machine learning and natural language processing for Yelp businesses so that the
model can predict if how much a user likes this business based on his comment on the business aside
from star ratings, which would give very valuable outputs to Yelp, business owners and customers. The
sentiment model was built by using multiple python libraries (pandas, numpy, NLTK, Scikit-learn, etc.)
and was trained by using the review file of Yelp dataset. Our model will predict a business’s rating based
on one review and give a score in percentage, evaluating if the user likes the business or not. Using the
model, business owners will be able to evaluate based on customer reviews and compare their business
across the industry based on environment, service or flavors; Yelp users will be able to choose
restaurants more specifically by typing in words such as "upscale Italian restaurants".

**Smart Fiber Spooler**
*Joseph Gorman, Nicholas Cabarse*

A Fiber Spooler is an industrial system that lays a specified amount of optical fiber onto an empty spool
and ensures it does not break in the process. This project involves modernizing a traditional Fiber
Spooler with mechanical controls. In modernizing the system, we are replicating it to be more cost-
effective, power efficient, and more user-friendly. We have successfully implemented these ideas in our
project with a few proofs-of-concept. An intelligent motor is used in the implementation, which was
programmed and tested in Python. A tension measurement device is used for communicating with a
magnetic brake controller to provide more torque if there is less tension and less torque if there is more
tension. Also, a Raspberry Pi 3 Model B+ is controlling all of these electronic subsystems to accelerate
the system performance. The computing platform allows for extensive testing and unprecedented error
detection capabilities. The Raspberry Pi also confers with a MATLAB simulation for additional error
detection methods. Error correction can be done in operation, as there are sensors for tension and
length of the fiber being spooled. These proofs-of-concept and programming capabilities show that our
product can revolutionize an industry that has not yet been changed by state-of-the-art hardware
platforms.

**Sorry, Honey**
*Aurora Occelli*

"Everyone’s future flies on the wings of pollinators" - Simple Truth Brochure

Pollinators are vital to our planet’s ecosystem. They are why we have food on our table and ultimately
why we’re alive. Ironically, those who depend on pollinators most are decimating their populations, and
the pesticides that are designed to aid in food production are inadvertently destroying our crops, our
food supply, and our future. One out of every three bites of food we consume exists because of winged
farming aids, such as bees, birds, and butterflies. An attack on pollinators is an attack on our nation and
the world. Not only does the assault on pollinators threaten our food, it directly impacts our economy.
It’s said that 217 billion dollars are added to our global economy by pollinators. Ultimately, we live and
die by them. This project aims to pinpoint the cause of pollinator decimation and provide the individual
with a way to consume responsibly. I believe that we can affect change by restructuring our buying
habits. Although not a perfect solution to colony collapse and pollinator decimation, purchasing organic
produce and supporting organic practices combat the large impact pesticide use has on pollinators.
Organic produce tends to be more expensive than conventionally grown, pesticide laden products,
however the impact of our choices is far more costly to our health, future generations, our economy, and
our lives.

**Species Speak**
The human population greatly contributes to the demolition of animal habitats all across the world. As our population increases, we are becoming more and more responsible for the extinction of other species. Very few rhinos are able to survive outside of reserves because of human poaching and habitat loss due to urbanization. Aside from human’s contribution to ocean pollution, humans are also responsible for slaughtering turtles for their eggs, meat, skin, and shells. Like many other marine animals, they are subject to human’s exploitation. We have the responsibility to protect the animal species that are at risk of extinction due to human activity. Using simple line illustrations, I have created eco-friendly merchandise to promote the animal’s point of view. With ten percent of every purchase, the buyer has the choice of donating to one of three organizations I have teamed up with: WWF, Sea Legacy, or Wildlife Alliance. My company, Species Speak, helps fight unjust behavior towards animals through artwork, raising awareness and contributing to prominent organizations seeking to aid the cause.

Spin! The Effects of Exercise on Speech Perception
Lakyn Kearns

Previous research suggests that adults who exercise regularly perform better on cognitive tasks. Most of these studies have aimed to understand the impact of aerobic exercise on the aging brain, but not much research has focused on how exercise affects cognitive and perceptual performance in healthy young people. The purpose of this study was to test whether exercising, defined as cycling for 30 minutes, affects auditory perception. We hypothesized that performance on a speech perception task (identifying degraded speech in noise) would increase after cycling for 30 minutes. College-aged participants were recruited from Loyola Marymount University and participants performed a speech perception task before and after 30 minutes of aerobic exercise on a stationary bicycle. Target heart rate zone was calculated for each participant and heart rate was monitored throughout the cycling session. Participants cycled at approximately 70% of the maximum heart rate (aerobic zone). Auditory stimuli were degraded speech used in previous experiments (Vaden et al 2011) and consisted of a male voice reading a list of words amidst heavy background noise. Participants were instructed to listen to the auditory stimuli and report aloud to the experimenter what they thought the word was. The experimenter recorded participant responses during the trial and the percent of words correctly identified was calculated. A paired samples t-test revealed that there was a significant difference between the percent of words correctly identified before exercise and after exercise. These results suggest that moderate aerobic exercise has immediate effects that improve speech perception ability.

Subword Unconscious Processing Occurs Early in the Learning of Novel Category Exemplars
Ariel Pruysuer, Demarko Flanagan, Reed Morgan, Kian O’Conner, Karya Ozmen, Alexandra Horvath

Language processing involves the coordination of distributed cognitive operations, only some of which are consciously accessible. Robust evidence for unconscious processing of language is found in studies of category priming where participants respond to a visible target word immediately preceded by a briefly flashed, consciously imperceptible prime from the same or a different category. In three experiments, we tested unconscious priming from extremely rare category exemplars that participants learned for the first time shortly before an unconscious priming task. In Experiment 1, fish and flower names learned and practiced for the first time 24 hours earlier yielded unconscious category priming (i.e. target response was more accurate when targets were preceded by same-category primes), p = .008. In Experiment 2, no priming (p > .10) was obtained from the fish and flower exemplars when they were learned just before the priming task, suggesting that an interval of consolidation is required to enable priming. Experiment 3 supported earlier research in showing that the day-after priming in Experiment 1
was likely driven by subword processing; the newly-learned exemplars in Experiment 3 acted as potent unconscious primes (p = .044) even when only fragments of the exemplars were presented as the primes. Altogether, these results indicate that the subword-driven language-processing systems that analyze visual language unconsciously are recruited very early in the process of learning new words (in this case, within 24 hours).

Sunni-Shia Fundamentalism and the Resurgence of Sectarianism in the Middle East
Kienan Taweil

The modern Middle East has undergone rapid transformation since the 2003 Iraq War and the Arab Spring. A significant consequence of these events has been the resurgence of sectarian conflict between Shias and Sunnis in the region, most evidently in Syria, Iraq, and Yemen, marked by Saudi Arabian and Iranian intervention. In this study, I ask "How does religion fuel violent sectarianism in the modern Middle East?". This question is crucial because the existing literature does not adequately address to what extent and why religious differences among Muslims impact sectarianism. I find that religious differences have a far greater impact on conflicts in the Middle East today than the current literature would suggest. Using a textual analysis of a key Qur'anic verse, I conduct case studies of Revolutionary Shiism in Iran and Wahhabism in Saudi Arabia to gain new insight into how the two nations impact sectarian violence in the region. I argue that while sectarianism can be driven by political factors, its foundations are embedded in the Shia-Sunni divide over religious leadership post-prophethood of Muhammad. These divisions are exacerbated when nations like Iran and Saudi Arabia adopt systems of government that adhere to extremist ideologies and which are inherently sectarian and expansionist, leading to the violent proxy confrontations seen today. I find that as long as these nations continue to operate under this status quo, sectarianism will thrive and conflicts will endure.

Surface Flow Measurements in the Ballona Wetlands Freshwater Marsh
Calvin Foss

The Ballona Wetlands Freshwater Marsh is a 26-acre constructed wetland located in coastal Los Angeles, CA. The Marsh serves an important ecological function of capturing and filtering runoff from the surrounding urbanized area before it enters the Ballona Wetlands Ecological Reserve. Mosquito populations in the Marsh are monitored by Los Angeles County Vector Control to prevent public health risks. Knowledge of the areas in the Marsh with the least water movement, an indication of the highest probability of mosquito breeding, may help to maximize the efficiency with which the control is being exercised. Additionally, knowledge of the marsh hydrology will assist in further research done in the area. To address this need, this study used flotation devices and GPS tracking units to collect information on surface water velocity and an electronic temperature gauge to measure water temperature in the Ballona Wetlands Freshwater Marsh. The velocity measurements of the water at different points in the Marsh were combined to create a vector field layered over a satellite map of the marsh to clearly show where water flow is fastest and slowest. This map can facilitate further examination of mosquito concentrations in the Marsh, as well as improve the knowledge of the Marsh’s hydrological characteristics. This research on surface flow is a crucial first step in establishing the entire Ballona Freshwater Marsh Ecosystem Monitoring Program, and the collected data will be useful for a variety of purposes.

Symbiosis between Chamaecrista fasciculata and Nitrogen-Fixing Bacteria
Victoria Nguyen
Nitrogen-fixing bacteria reside in nodules on roots of legumes such as Chamaecrista fasciculata (the partridge pea) and convert nitrogen gas to ammonia, a bioavailable form of nitrogen that the plant can use for nutrition. The two strains of nitrogen-fixing bacteria known to form symbiotic relationships with Chamaecrista fasciculata are Rhizobium tropici (alpha-rhizobia) and Burkholderia tuberum (beta-rhizobia). This project examines nodulation in the primitive plant species, Chamaecrista fasciculata, and aims to determine whether nifH (nitrogenase) gene expression occurs in Rhizobium tropici during symbiosis. Previously, a RtnifH::Km mutant was generated through PCR amplification of the nifH internal fragment, digestion and ligation into pKNOCK-km vector, and triparental mating of Rhizobium, E. coli with pKNOCK nifH plasmid, and E. coli with helper plasmid. Mutants have been verified to be Kanamycin resistant, suggesting that insertional mutagenesis occurred (location of insertion currently being validated by DNA sequencing.) Genomic DNA isolated from the R. tropici mutant was grown on Kanamycin TY plates to ensure that the Km resistance gene was properly inserted. The nifh region was PCR amplified and will be sequenced. To observe the functionality of the nifH gene in R. tropici, plants will be infected with either the nifH mutant or wild type Rhizobium tropici. Additionally, plants will be co-inoculated with B. tuberum and R. tropici (both mutant and wild type) to see in which bacteria nifH expression is occuring.

Synergistic Effects of Mixed Populations of Sinorhizobium meliloti and Bacillus simplex on Root Infection and Nodulation
Talyssa Topacio

Legume plants form mutualistic relationships with various rhizobacteria in the soil, which promote plant growth by improving nutrient acquisition, modulating plant hormone levels, and protecting the plant from biotic and abiotic stress. The rhizobacteria Sinorhizobium meliloti and Bacillus simplex are known to have symbiotic relationships with white sweet clover, Melilotus alba. S. meliloti is an alpha-Rhizobium species which forms a host-specific endosymbiosis with Melilotus, Medicago, and Trigonella species where the bacteria fix atmospheric nitrogen into ammonia that can be used by the plant. In exchange, the legume provides the bacteria with carbohydrates; it houses and protects the rhizobia in specialized structures on the root called nodules. The effect of B. simplex on plants is not as well-characterized; however, it has been shown to increase plant biomass, enhance resistance to fungal disease, alter lateral root architecture, and improve nodulation in pea. This study examined whether B. simplex could enhance infection and nodulation by S. meliloti. Furthermore, B. simplex was assessed for its ability to rescue various infection-deficient S. meliloti mutants. The pilA and exoY genes encode Type IV pili and exopolysaccharide biosynthesis, respectively; mutation of pilA genes delays root infection and mutation of exoY leads to fewer infection sites and abortive infection threads. M. alba roots were inoculated with individual strains (S. meliloti or B. simplex) or they were co-inoculated with S. meliloti and B. simplex. Plants co-inoculated with S. meliloti and B. simplex displayed greater biomass, more root nodules, and more infection sites than plants inoculated solely with an individual S. meliloti strain.

Synthesis and Evaluation of Isatin and Indigo Derivatives for G-Quadruplex Stabilization
John Richards, Alex Gavia, Vincent Hayward

DNA G-quadruplexes are secondary structures of DNA consisting of two or more stacks of G-tetrads, square planar structures consisting of four guanine bases associated together through Hoogsteen hydrogen bonds. The G-quadruplex structure is found in vivo in telomeric DNA and has been shown to inhibit the enzyme telomerase. Many cancer cells are considered ‘immortal’ because telomerase activity allows them to live much longer than any other somatic cell, which, combined with uncontrollable cell proliferation is why they can form tumors. The goal of this research project is to synthesize novel organic molecules that stabilize the G-quadruplex structure and inhibit telomerase as a potential treatment for
cancer. To achieve this goal, our group investigated derivatization of two core structures, isatin and indigo. Theoretical binding affinities of derivatives of isatin and indigo to quadruplex DNA were calculated via a free web-based program. Concurrently, the syntheses of these isatin and indigo derivatives were pursued. Using the Suzuki reaction, which couples a boronic acid and an aromatic organohalide catalyzed by a palladium complex, a small library of compounds was made in one step. Both experimental and computational results indicated that isatin derivatives were not effective binders of quadruplex DNA. Binding affinity calculations of indigo derivatives demonstrated these compounds to be much stronger binders to the quadruplex structure and our synthetic efforts focused on making these derivatives. Specifically, we investigated the Suzuki reaction on Ciba blue (an indigo derivative) with different boronic acids and various methods to couple isatin derivatives to form the indigo core structure. Complete characterization and identification of indigo derivatives have thus far proved problematic. We will continue to focus our efforts on the synthesis of a variety of indigo derivatives and then test these compounds for their ability to stabilize quadruplex DNA.

**Synthesis of Cyclotides for Peptide-based Therapeutic Usage**
Eduardo Encina, Dipankar Chaudhuri

Cyclotides are known for the characteristic cysteine knot topology that makes up their backbone and provides a structure with high tolerance against thermal, biological, and chemical stress. The aim of this project is to chemically synthesize a specific modified cyclotide, based on MCoTI-I. To properly do this, concurrent solid-phase peptide synthesis with an N-terminal Fmoc protection scheme and cyclization along with folding was done by native chemical ligation. The resulting cyclotide was characterized using high performance liquid chromatography and mass spectrometry, which confirmed that the cyclotide of interest was properly synthesized and folded. It is expected that the information from this study will be used to further the development of peptide-based therapeutics to target key molecules of interest, along with being used to further research in areas such as molecular bio-imaging.

**Synthesis of Polyphenolic Derivatives that Inhibit IAPP Aggregation**
Scott Clark, Madeline Miller

In recent studies, aggregation of the protein islet amyloid polypeptide (IAPP) has been found to occur in the pancreas of individuals with type 2 diabetes. Evidence suggests this aggregation is likely a causative agent for the loss of β-cells in type 2 diabetes. Recently, the McCallum lab has synthesized a small library of novel polyphenolic ester derivatives that have demonstrated the potential to inhibit or suppress IAPP aggregation. Our goal was to expand this library by synthesizing new polyphenol ester analogs that more effectively inhibit IAPP aggregation. Upon treatment with tert-butyldimethylsilyl chloride or benzyl bromide, several polyphenolic acids were protected as silyl or benzyl ethers. Reaction with oxalyl chloride and catalytic DMF afforded the corresponding protected acid chlorides in good yields. Coupling with a variety of diols (ethylene glycol, glycerol) followed by deprotection with TBAF or Pd-catalyzed hydrogenation afforded the deprotected polyphenolic esters in good yields. All compounds were characterized at each step using ~1H and 13C Nuclear Magnetic Resonance (NMR) Spectroscopy. Mass spectrometry will also be used to complete full characterization of our small library of compounds. Initial testing using a fluorescence assay has indicated several compounds are successful for inhibiting IAPP aggregation.

That Face: Costume Design Presentation
Lisa Lawrence
What we wear in everyday life is often an afterthought. In theatre, however, every garment and accessory chosen by a costume designer must have intention and thought behind it. How, then, can a costume designer translate a character’s motivations and personality into costume pieces worn onstage? My goal in designing costumes for "That Face" was to tap into the family dynamics portrayed in the script, and access the individual characters’ thoughts and feelings in order to better understand what they would dress in, if they were real-life people. One of the main tasks at hand was working with fellow designers, the costume shop manager, and the director in order to make certain challenging stage directions come to fruition. My design process began with research and searching for inspiration through various online sources, as well as meeting with the director intermittently to discuss the designs as they developed. Once ideas were solidified, I moved onto rendering my designs into watercolor sketches. Through this process, I learned a tremendous amount about how designing for theatre works, and how to balance personal creative vision with the vision of the director. In my presentation, I will display my designs, as well as convey how a costume designer goes from sketches, to garments worn onstage.

The Absurdity of Anxiety
Daniel Akavi

Anxiety disorders affect 40 million adults in the US alone. Of that number, only 36.9% receive any professional treatment. For the rest, everyday can be a constant struggle. It is no mystery that the human mind is capable of creating scenarios that are woefully unfounded in the real world. For those with anxiety, these unfounded thoughts and scenarios culminate into self-destructive perceptions of the real world. Anxiety convinces the mind that the sometimes ridiculous notions we come up with, may in fact be the truth. The only way to confront this dilemma is by placing these thoughts out in the open, and analyzing their plausibility in the real world. For someone who suffers from anxiety, I can attest to the benefits of getting my thoughts out into the world however I can, as opposed to keeping them in my mind. There are various ways people cope with this, but whatever it is that they do, it helps ground them back into a sense of reality and comfort. I aim to create a series of graphic displays which depicts each anxious thought that myself, and presumably others with anxiety, go through everyday. In doing so, these graphic pieces will underline the unreality and intensity of the thoughts we let become our reality, and place them into the real world. I hope the effect of this grounds people back into a comforting sense of reality, by realizing that the thoughts we believe are sometimes as absurd as the pieces they will see.

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sense of reality, by realizing that the thoughts we believe are sometimes as absurd as the pieces they will see.

The Butterfly Lovers Violin Concerto: Music for the People
Veronica Rose Tan

In the midst of Mao Zedong's Great Leap Forward campaign and soon after the enactment of his Marriage Law, Shanghai Conservatory of Music students Chen Gang and He Zhanhao composed their Butterfly Lovers Violin Concerto (1959) on commission by the Party. This concert overture tells the ancient legend of a girl (Zhu Yingtai, represented by the solo violin) who disguises herself as a boy in order to become educated, falls in love with her classmate (Liang Shanbo), and is later subject to an arranged marriage. Known as the "Tchaikovsky Violin Concerto" of China, it completely embodies Chinese culture, from Confucian feudalism to Maoist Communism. Approved by Mao, it was used as propaganda in order to garner more support by the people, particularly women. However, in the years leading up to the Cultural Revolution, this once-revolutionary piece was branded as "bourgeois" and was banned, the government imprisoning Chen for his suspected preference for and emulation of Western music. Despite being composed for Western orchestra, the piece is built from the pentatonic scale and prominently incorporates erhu technique in the solo violin part, thus establishing "Chineseness" in the context of a borrowed Western medium. By examining the historical context and purpose of composition, this study considers the potential reasons behind scoring the piece for the Western violin rather than the erhu (the Chinese violin). Understandings that emerge from the analysis will be illustrated in a brief erhu demonstration and a performance of the "Protestation of Marriage" section of the concerto on violin.

The Coloniality of Gender in the Criminalization of Transgender Individuals in the United States Prison System
Naomi Williams, Molly Learner, Samantha Larmon

In this project, I ask: What role do settler-colonial conceptions of sexuality and gender inform the criminalization of Transgender people in the U.S. prison system? As scholars of colonialism have shown, conceptions of gender, sexuality, and heteropatriarchy, in the 21st century are a direct result of colonialism. Indigenous acceptance of gender and sexual diversity was pointed to by colonists to distinguish Indigenous people as "sexually primitive," and therefore objects of fear amongst other settlers. Consequently, colonists were able to "justify" their efforts to eliminate Indigenous people from colonized land. Colonial domination relies on the imposition of colonial conceptions of the gender binary onto Indigenous people. I argue that this formulation of modern sexuality and gender as a colonial project helps us understand the criminalization of transgender persons in the contemporary United States. Through an analysis of the Los Angeles County jail system's use of specialized segregation units for LGBTQ+ individuals, I show how the regulation of Transgender persons in the prison system is rooted in the subjugation of queer subjects established by colonialism. Specifically, Transgender individuals are classified as "worthy" or "unworthy" based on their ability to perform their gender or sexuality within a colonialist framework. The unit relies on a "verification" process in which Transgender individuals (as well as other LGBTQ+ persons) are forced to "prove" their gender and sexuality based on norms of sexuality and gender expression that are rooted in colonialist thought.

The Double Pendulum: A User-Friendly, Numerical Mode
Mia Calhoun Mummert
This project explores the principles of chaos through the motion of a double pendulum. The motion of the double pendulum is calculated from its Lagrangian equations of motion using numerical integration methods. The motion is simulated using Python and PyGame. The model allows the users to visually observe sensitivity to initial conditions, a defining characteristic of chaotic motion. Measures of chaos are also calculated based on the output of the model. The measures of chaos allow the user to evaluate how accurately the model was able to represent the motion of the double pendulum. The result of this project is a comprehensive tool that allows users to manipulate and analyze the double pendulum in order to better understand chaos.

The Effect of Travel Time on Voter Satisfaction
Luis Lopez, Claudia Moran, Titania Davis

By March 2020, Los Angeles County will fully transition from polling places to vote centers, allowing voters the opportunities to cast their ballot at a location most convenient to them. What do Angelenos value about their current voting experience that needs to be taken into consideration when implementing the vote center model? This research examines the results of the 2018 Gubernatorial General Election Exit Poll conducted by the Thomas and Dorothy Leavey Center for the Study of Los Angeles (StudyLA) at Loyola Marymount University. The survey of 1,500 at-poll voters from 25 randomly selected polling places throughout Los Angeles County asked about overall experience at the polling place on Election Day. Results are analyzed by race, gender, household income, and travel time to a polling place. Findings show a negative correlation between travel time and satisfaction with voting experience. Overall, those who travel 5 minutes or less rate their experience as "excellent" sixty-nine percent (69%) of the time while those who travel 20 minutes or more rate it as "excellent" only thirty-six percent (36%) of the time. Among all other demographics, there was a general consensus that the voter experience was "excellent", with little to no variation. These findings are important to take into consideration for the successful implementation of the vote center model. Los Angeles County needs to consider solutions to this negative relationship to ensure that voters are satisfied with their voting experience.

The Effects of Law Enforcement Assessments of Alleged Child Neglect and/or Abuse
Christina Chu, Vinkya Hunter, Ashley Naliwajko

This paper investigates law enforcement's involvement in cases of alleged child abuse and neglect referred to the Los Angeles County’s Department of Children and Family Services (DCFS). These cases often result in separating children from their families and placing them in foster care. This research reveals significant and troubling trends about the assessment of child neglect and abuse in LA County. First, public records requests filed with DCFS revealed that the overwhelming majority of child abuse and neglect allegations comes from law enforcement. Second, DCFS’ definition of "general neglect" fails to account for families who are vulnerable to systemic ills such as poverty. Third, these assessments have led to false charges of neglect and abuse due to over-policing in regions highly populated by Black and Latino people in Los Angeles County, which renders these communities more vulnerable to charges than others. In many cases, these charges have led to the termination of parental rights. This process disrupts the potential for family reunification as well as increases a child’s susceptibility to emotional trauma, which, as a result, can manifest in ways that make the child more vulnerable to arrest. These findings allow for an opportunity to hold DCFS accountable for their goal of increasing child and family wellbeing.

The Effects of Political News Source on Reading Comprehension
Sam Cassidy
"In our age there is no such thing as ‘keeping out of politics’"; this quote by George Orwell made several decades ago still captures the essence of the divide within modern politics and news, perhaps even more today than at the time it was initially made. The rising relevance of political discourse thus begs the question as to what impact it has on our psychology, as evidence indicates there exist ties to cognition, performance and prejudice. The purpose of this study was to examine the effect of various political news sources’ influence on college students’ reading comprehension, namely if an identical text would be comprehended differently based on the political news source it appeared under. A group of 74 participants composed of college students primarily from Loyola Marymount University read a TIMES news article under the headline of either CNN (liberal) or Fox News (conservative) and then answered a series of reading comprehension questions. The study hypothesized that participants would have different times spent reading and scores based on which article they read, race/gender demographics, and political party/ideology due to partisan selective exposure. Female (p = .004) and Black students (p = .025) showed significantly more varied scores when reading Fox News, and Non-Caucasians spent significantly more varied times reading the Fox News article (p = .049), showing that gender/race may impact how people react to political articles of certain sources. Future research is recommended to assess how different news sources may be perceived and affect political attitudes.

The Examination of Fear as a Perpetual Roadblock
Cameo Brown

This paper comes out of research from my first year seminar course, Art in the Age of AIDS taught by Professor Leon Wiebers. Fear is abstract; an intangible concept that has a unique construct that influences how people operate within their daily lives. I have always understood the power that fear has over people, however, I never fully grasped the consequences that can occur due to fear. As author Bude Heinz said, "Through concepts of fear, the members of society come to an understanding about the conditions of their coexistence: who moves forward and who is left behind; where things break and where chasms open up; what is inevitably lost and what might yet survive. It is through concepts of fear that society takes its own pulse". In my presentation, how fear inhibited the growth of newly emerging safe spaces for the homosexual community like molly houses and balls will be explored. The methodology of my research includes examining fear from both a psychological and social perspective, in order to understand how it is a perpetual roadblock for gay liberation and the LGBTQ community. Through this research, I was able to gain an understanding of how fear infiltrates communities and inhibits change in the hetero-normative standards of society which revolves around heterosexual relationships. To even begin the conversation, society must recognize the role fear can play in our lives so that we can be more open and flexible to change.

The Flawed Science Behind Implicit Bias Trainings
Michelle Chernikova

In recent years, numerous universities, corporations, and other institutions have begun implementing implicit bias trainings to help highlight and, hopefully, mitigate discriminatory behavior. If these well-intentioned sessions, however, are based on a flawed mechanism, are they creating the intended change? Are they worth it? The Implicit Association Test (IAT), the most commonly used measure of implicit bias today, is under rigorous debate in regard to its reliability and validity. This paper, through primary and secondary source analysis, examines this controversy. While proponents of the IAT may argue that their work reveals the roots of hidden prejudice, numerous studies have determined that the IAT is an inaccurate, misleading test for measuring individual differences. Many scientists have established that, since various factors besides prejudice can also contribute to one’s IAT results, it is not
possible to infer the cause of one's test score. The comprehensive research indicates that the IAT falls short of basic scientific standards and cannot predict individual behavior. This paper explores possible reasons why implicit bias programs today are generally not as effective as commonly believed. Although institutional inequalities need to be addressed, the IAT should not be the central focus of these programs. Until scientists can accurately measure and reduce implicit bias to generate a discernable effect on discriminatory behavior, trainings should, instead, focus on altering people's explicit prejudicial tendencies.

The Framing of a Disease: A Critical Look at Representations of HIV-Infection from the 1980s to Present Day
Blake Colton

Since 1981, when the CDC first diagnosed a person with AIDS, the disease has killed more than 700,000 people in the United States. Because the epidemic began in the gay community, which is still disproportionately impacted by it, government, media, and the wider culture either ignored or blamed those suffering from the disease. This had the effect of exposing more gay men to death, and of further spreading the disease. Not until Ryan White, a fourteen year old boy who had contracted HIV from a blood-transfusion, was barred from his school in Kokomo, Indiana, did the national response to HIV/AIDS begin to shift. While many studies of the AIDS crisis have focused on the role homophobia played in framing this shift, I draw on the works of Cathy Cohen, Simon Watney, and Cindy Patton to argue that race and respectability are fundamental to understanding how the discourse around HIV/AIDS has been framed to determine who is eligible for care provisions and public concern, a framework that had its origin in the early years of the crisis and is still operative today. To make this case, I offer a media analysis to determine how contemporary responses to HIV/AIDS continue to rely on race and respectability. I examine television and print advertisements that address HIV infection to determine how representations of the disease are framed. I argue that current responses to combat HIV/AIDS fail to address the historical framing of the disease through the concepts of respectability, de-sexualization, and whiteness.

The Generational Affect of Parental Legal Status on Education
Tatiana Estrada

Within immigration studies, existing literature continually overlooks how immigration policy that is intended to curb unauthorized immigration directly affects U.S. citizen children of undocumented parents. While it is perceived that legal status is a static agent exclusively affecting one individual, this analysis shows how when economic integration based on legal status, resulting in a documented child's ability to enroll in university based on their undocumented parents' economic capacity, revolutionizes interpretations of legal status to be a fluid, generational agent that has the capacity to benefit or affect not only the individual but also the family of the individual. An analysis of data and surveys collected by the U.S. Census Bureau and the Pew Research Center on Latinos/Hispanics from 1990 to the present will show that the undocumented status of parents affects their economic integration in the U.S. through lower median household income, lower levels of homeownership, and lower levels of access to financial institutions and resources. Through this data comparison, the hypothesized result is that Latino U.S. citizen children of undocumented parents have lower enrollment rates in four-year universities than enrollment rates for Latino U.S. citizen children of documented parents. This research is imperative in promoting comprehensive immigration reform because the persecution of undocumented parents positions their U.S. citizen children to be treated as second class citizens, and are considered "acceptable" collateral damage of immigration policy.
The Internal and External Factors Contributing to the Underrepresentation of Women and Ethnic Minorities in the Workplace: Intersections, Interventions, and Implications
Dylan-John Loo

This paper is prompted by this question: What are the factors that contribute to the underrepresentation of women and ethnic minorities in senior or executive level positions? As a person of color, I felt personally motivated to identify gaps that exist in prior literature about underrepresentation in the workplace and to provide recommendations for effective promotions of diversity and inclusion. By looking at studies, I quantified the representation of women and ethnic minorities with executive level corporate titles in leading companies and indicated the disparity between the population of each people group in the workplace and the population of their respective group in the surrounding area. I also focused on the diversity and inclusion initiatives of a specific company, Bank of Hawaii, and conducted an interview with its Chief People Officer. Through my research, I explored the external biases that contribute to the lack of female and ethnic representation, the internalizations specific to members of different minority groups that stifle them from pursuing higher level positions, and the intersection that demonstrates how the former perpetuates the latter. I dissected the discriminatory cycle that traps people from climbing up the corporate ladder and assessed how current implementations of diversity ideologies affect the demography of various companies, specifically looking at the benefits and shortcomings of a colorblind ideology in comparison to a multiculturalist one. As a result, I developed progressive interventions to create fair and accessible opportunities for members of every protected class to occupy senior level positions.

The Migration Routes of LA County Endangered Species
Jaclyn Findlay

The California Floristic Province, a geographic area along California’s coast characterized by its Mediterranean climate and distinguished by high amount of native biodiversity, is one of the top 25 global hotspots of rapid biodiversity loss. Mediterranean ecosystems cover only 2% of the Earth’s land surface but account for 20% of all known plant species; making this unique habitat even more vital to protect in the fight for ecological preservation. This research will focus particularly on endangered species native to Los Angeles County and their migration patterns and compare it to the location of large highway systems. Geographic Information Systems (GIS) is used to map the distribution and concentration of endangered species including mountain lions, coyotes, shrikes (bird), acorn woodpeckers, and california quails as well as their migration patterns documented by various government entities. This is compared to the location of major highway systems. The preliminary findings of this research demonstrate a positive correlation between the location of major highway systems and the absence of habitat connectivity (significant areas of habitat crucial for sustaining populations of biodiversity), causing shifts to migration patterns and cutting off resources needed for a species to survive. This research can be used to educate communities, promote further animal research, and lead to further actions to help protect some of the endangered species in our beloved city. This research can also inform future research to identify other factors that contribute to rapid biodiversity loss.

The Miracle of Medellín’s Social Urbanism
Carlos Mesa Baron

The city of Medellín, Colombia in the last 30 years has undergone the miraculous transformation of being called the “murder capital of the world” to the “most innovative city of the world.” This resilient change can be attributed to the innovative policies implemented by the government that caused a higher quality of life, economic growth, and the internationalization of the city. From being the first city
globally to utilize a metro-cable system as public transportation, having outdoor escalators in a mountainous low-socioeconomic community, to burying noisy and polluting highways underneath public green space the Medellín Urban Development Model demonstrates how innovative public investments foster positive social change. These innovative projects can attest to why the city has been recognized internationally and awarded outstanding awards. This thesis believes that public transportation has been the propeller of positive effects in Medellin. The positive effects that may have been induced by the implementation of public transportation methods in previously disadvantaged neighborhoods are that of human development. This project will analyze if three new public transportation projects have impacted human development in the recipient communities. To identify the factors that promote or hinder the success of the projects in producing human development, a qualitative study will be utilized to uncover its effects on the population. On the basis of this analysis, the paper presents a study that helps urban development efforts in other contexts, with the intention of showcasing the Medellín Development Model as an exemplary model to replicate or be inspired by.

The Necessity of Motion Feedback for Driver Rehabilitation
Theresa Siri, Buddha Elkenani, Kayci Smith

Current therapy in rehabilitating driver competency only uses a wheel and pedals, while exercising the patient’s visual feedback. Our research hypothesizes the necessity of motion feedback while rehabilitating someone’s driving competency. We use a driving simulator coupled with a wheel, pedals, and computer that has multiple software and triple-screen view to demonstrate a panoramic view of various driving situations. Our experiment includes a 45-minute session of driving in the racing software Assetto Corsa along a track that would be an average of 11 laps per person per trial. In one trial, human subjects drive with the motion feedback and in the other session, they drive without motion feedback and rely solely on their visual feedback. Our results conclude, regardless of the subjects attempting the track with motion feedback or without motion feedback during their first trial, that their average lap times decrease during their second trial. Essentially, subjects improve their driving ability from their first to second trial based on average lap time. However, when we change our definition of “bad driving” from “slower lap times” to “increased crash rate,” we find that 7 out of 8 drivers are less likely to crash with motion feedback as opposed to without the motion feedback. Moving forward, if we are to ask stroke victims to test our simulator, we would make sure the settings simulate real-life driving, to ensure the least possibility for simulator sickness and design our experiment to track their “wellness” of driving in terms of crashes and remaining within the lanes, rather than focus on lap times and speeds.

The Paradigm of Learning
Parker Charles

Yearly, 1.3 million high school students don’t graduate on time. The current education system is failing us. It neglects the majority of learning styles, instead favoring heavily on the technique of cramming and regurgitation. There are a total of 5 recognized learning styles: Visual, Aural, Verbal, Physical, and Logical. Each of these are activated by different parts of the brain. Each individual has a unique brain and can find success when activating the strongest or most developed parts of the brain. By discovering your most successful learning style, we can take more effective notes for ourselves, raise awareness for learning diversity, and grow toward a more accommodating society. This thesis aims to invite everyone to find out how they learn best, and apply this knowledge in order to become more productive and successful from the professional workplace to everyday life. The expected result of my visual art exhibition is to showcase the diversity in learning styles. I am interested to see if any tendencies occur, and how this might help to find an answer to students and adults around the world who struggle to learn with current methods and standards.
The Plant Growth Promoting Potential of Bacillus spp., Brevundimonas sp., Paenibacillus polymyxa, and Streptomyces sp.
Giovanni Di Franco, Giovanni Di Franco, Sabrina Soto, Raeyvenne Parker

Current agricultural practices involve the use of chemical fertilizers. These products leach into the ground and can pollute local environments as runoff. Biofertilizers have been seen as a viable alternative to chemical fertilizers; they are comprised of microorganisms such as fungi and plant growth promoting rhizobacteria (PGPR). PGPRs are located in soil and form commensal relationships with plants through successful colonization of the rhizosphere that allows for increased nutrient availability. In this study, five bacteria strains isolated from plant roots were characterized and tested for possible PGPR properties. The bacteria strains underwent DNA isolation, library preparation, and genome sequencing. Molecular analysis identified the strains as Bacillus spp., Brevundimonas sp., Paenibacillus polymyxa, and Streptomyces sp. Biochemical testing showed individual strains positive for nitrogen fixation, phosphate solubilization, and cellulase production. Testing for optimal growth conditions at varying temperatures was also conducted and varied between strains. PGPR properties were further tested through plant growth analysis. Arabidopsis thaliana, Zea mays, and Trifolium pratense were inoculated with liquid cultures of the five bacteria strains. Although impact on growth was variable between the different plant species, results indicate these bacterial strains have potential use as bioinoculants to promote plant growth.

The Rich Taphonomic History of the Late Pleistocene from Rancho La Brea
Ellie Pitcher, Nicolas Noriega

The Rancho La Brea tar pits represent a unique window into the environment leading up to the end-Pleistocene megafaunal extinction. It is one of the most fossiliferous sites in North America, preserving thousands of specimens, and presents an opportunity to observe the paleoecology of the Late Pleistocene. At the tar pits there are two major collections: the original Hancock collection and the modern Pit 91 collection. The Hancock collection focused on large, museum-worthy specimens, often excluding smaller and heavily damaged fossils. In contrast, the modern Pit 91 collection records and collects all specimens using modern excavation techniques, so it is imperative to understand any collecting biases between these collections. Taphonomy, the process that an organism undergoes from death to discovery, is important to understand because it provides insight into the local environment at the time of death. By determining the taphonomic processes of the Hancock collection and Pit 91 collection, collecting bias can be quantified to better understand biological differences between these collections. This study compared taphonomic features including abrasion, pit wear, weathering stages, and census data in the sabertooth cat, Smilodon fatalis, and the bison, Bison antiquus, from Pit 61/67 of the Hancock collection and from the Pit 91 collection. Taphonomic features were similar in both collections, indicating that differences in census data can be attributed to collecting bias. With this data the collecting bias was quantified between the Hancock collection and Pit 91, which will allow for more meaningful paleoecological comparisons between the two collections in the future.

The Riches of Rape: An Examination of the Profitability of Sexual Violence and Incarceration
Molly Learner, Naomi Williams, Samantha Larmon

My research explores how the reliance on the prison industrial complex in anti-rape discourse and praxis upholds the economic, social, and political powers that proliferate sexual violence. Sexual violence and how to end what scholars refer to as “rape culture” are critical sites of feminist academic, social, and political concern. However, anti-rape work is dominated by the logics of carceral feminism, a branch of
feminism that works to end sexual violence through policy, law enforcement, and incarceration. Thus while many feminists acknowledge the injustices of the so-called justice system, dominant feminist ideology still imagines collaboration with the carceral state as the appropriate means to end sexual violence. In my research I examine carceral feminism’s effect on marginalized communities both through the depoliticization of Rape Crisis Centers as well as its role in the expansion of the carceral state. Furthermore, my research interrogates the role of neoliberalism, both as an economic/political system as well as a social ideology, in anti-rape work. I employ an extensive review of academic literature to understand the rise of carceral logics and practice in anti-rape work in the era of neoliberalism. I argue that in a neoliberal framework, both rape and the prosecution of rapists are profitable to the neoliberal state, and thus it maintains a direct investment in both the proliferation of sexual violence and the prison industrial complex.

The Socratic Method is more Beneficial than Lecturing
Courtnee Collins

The important debate concerning education is whether the Socratic Method or lecturing is a more effective teaching style. Lecturing is a teaching method in which the instructor "gives" students information. In the Socratic Method, the instructor leads students in the right direction by presenting questions to help solve and identify how they can get closer to the answer. By doing this, students can then determine strengths and weaknesses in their thought process which then ultimately allows them to make the necessary improvements to find the answer. Several studies found that when students become active participators rather than just listeners, they reduced failure rates and boosted scores on exams. After analyzing these research studies, I concluded that the Socratic Method is the more effective teaching style than lecturing because it allows instructors to interact and engage with students, increases the chances of an active-learning environment and forces students to improve their critical thinking skills. With this research, professors would benefit by using a more effective teaching style, while their students would benefit by actually learning and retaining the information being taught. Having an instructor use the Socratic Method would ignite students' intellect which is much more beneficial than just trying to fill their mind.

The Sound Design of ‘That Face’
Marisa Whitmore

In this presentation, we will explore the importance of sound design and its impact of the tone and mood of a production. I want to showcase that sound design can contribute to the mood and affect an audiences reception of a scene. I created a sound design for the Theatre Department’s production of ‘That Face’ in Fall 2018. This design consisted of environmental soundscapes, in-world effects, and collaboration with the director to achieve musical cohesion between the events and tones in the scenes and the music chosen as both diegetic and non-diegetic sounds as well as incorporating the directors vision for the final production. In order to do this, I used dramaturgical methods of researching setting elements such as location, time period, time of day and cultural distinctions, as well as design and technical methods in achieving mood to portray the right information to the audience. Through this process I learned about collaborating with a creative team and the way sound mixes with psychology to produce certain emotional responses from the audience. Theatre is intended not only as entertainment but as a means to create a shared emotional experience, and sound design methods have the potential to heighten this experience if used correctly.

The Story of Time: A History of the Middle East
Veronica Backer-Peral
Through a detailed analysis of U.S. policy in the area commonly known as the Middle East, my research attempts to consolidate the discrepancy between the relatively strong relationship the United States has with many Middle East states in the late 19th and early 20th centuries, and the events leading up to September 11, 2001, when the United States was subject to the most devastating terrorist attack in modern history. Breaking from a long history of isolationism and purely humanitarian work, the beginning of U.S. involvement in the Middle East can be traced to three main developments. The first was the discovery of oil in Saudi Arabia, and the ensuing economic relationship between these two nations. Another was the Cold War and the severe anti-communist mentality it developed, leading to actions ranging from the Truman Doctrine to the reintroduction of jihad as a military ideal. Finally, the U.S. backing of Israel remains to this day a major point of backlash against the U.S. from many Middle Eastern states. In contrast, we can see that the paramilitary group, Al Qaeda, that arose from U.S. funneling of funds through Pakistan during Operation Desert Storm, centered around three main criticisms of the United States: the deployment of troops to Saudi Arabia, the abandonment of Afghanistan following the Soviet-Afghan War, and the continued support of Israel. All three are direct consequences of U.S. policies within the Middle East. After drawing this parallel, my project proceeds to analyze what terrorism looks like today, touching on the rise of religiosity as opposed to theology, as well as the redefinition of religious language into a political tool. Finally, I look at the development of Al Qaeda into ISIS and use this as a platform to compare extremism across the globe. Specifically, I address the rise of videogame culture amongst radical groups and how this reflects the combination of premodern justifications with postmodern themes into an ideology based on populist, emotional violence.

The Unreal Exporter Toolset: A Pipeline for Quicker Animation Rendering.
Aison King

The aim of this project is to create a set of tools that can recognize and export various custom asset rigs for rendering in a game engine. These scripts are being written in Python for Autodesk Maya to export to Unreal Engine. Using a toolset made for a specific LMU Alumni’s thesis project as a basis, the crux of the project is creating a script that can fully recognize and process a rig of any structure instead of just the rigs the original tools were made for. The current state of this project is expanding the types of objects and rig structures that can be recognized and polishing the user interface of the toolset. Once the project is completed, LMU and the greater CG community will have access to a tool that will allow them to export and render animation through a full game engine suite quickly and easily.

The Use of Stable-Hydrogen Isotopes to Model the Migrational Patterns of Yellow Warblers (S. Petechia)
Leanne Kuwahara

Knowledge of migratory patterns of birds is essential when making conservation decisions, understanding climate change implications, and can contribute to studies of species survival. Migratory patterns have been observed to differ both among and within populations, which may be indicative of differences in migratory routes. Stable isotope analysis, specifically that of hydrogen, has become a powerful tool for understanding the movement biology of Neotropical migrants who breed in North America and molt prior to their southward fall migration. Since hydrogen isotope ratios vary predictably across the landscape, isotope values measured from birds’ feathers represent that of their molt location and thus, breeding site. This study will use stable hydrogen isotopes (δD) to analyze the breeding origins of Yellow Warblers (Setophaga petechia). Over 200 feather samples were collected—160 from migration sites in Alabama, and 40 from sites in Maine—from 2004 to 2014. Samples were thoroughly cleaned and
dried, and feather vane cut to a standardized mass of 200+/−10µg, which is then packaged into silver capsules. Samples are then sent to the University of Oklahoma for δD analysis via isotope ratio mass spectrometry. Data obtained through this study aid in our understanding of the movement biology of Yellow Warblers and will enable further inquiry regarding population-level drivers of migration patterns relative to age, sex, and/or energetic condition differences between individual birds. Understanding the migration patterns between breeding grounds and wintering grounds in Neotropical birds is critical in the modeling of population dynamics, and establishing more effective conservation efforts.

**Thermodynamics of Charged Generalized Uncertainty Principle Black Holes**
Heather Mentzer

This research evaluates the event horizon, Hawking Temperature and the entropy of Generalized Uncertainty Principle (GUP) modified charged quantum black holes, as they evaporate in accordance with Hawking Radiation. In order to resolve the classical thermodynamic instabilities in the sub-Planckian regime, a self-dual version of the GUP in which the mass M, is replaced by M + 1/M, is applied to the Reissner-Nordström metric. In the large mass regime, the GUP modified temperature, T, increases as Mp decreases, reaching a maximum value at the Planck mass (Mp). Below this point, the temperature rapidly decreases to zero when M = 0. As the black hole’s electric charge increased, the peak temperature drops. Upon reaching the maximum charge QMax the temperature vanishes at the extremal mass, TExtremal= 0 as approached from both small and large mass regimes. For Q > QMax the temperature profile splits into two separate, unphysical solutions. The implications of this research will deepen our comprehension of the quantum limit and black hole evaporation. The more extensive applications of the results from this research will replicate the dimensional reduction of the Schwarzschild GUP solution.

**Transportation Behavior and Land Use Regulation**
Davaughn Wong, Ryan Burke, Emily Sinsky

The push for suburbanization rooted in previous eras has produced a host of accessibility and mobility issues that are affecting numerous communities across the nation today. The purpose of this paper is to examine the relationship between land use regulation and transportation behavior. More specifically, this paper will examine the transit decisions of various residents and households based on differences in both the built environment and socio-economic status. Throughout the course of this study a combination of academic journals, news articles, and books were used to analyze the current state of global car ownership rates according to neighborhood type. Additionally, ArcGIS heat and layer maps pertaining to four distinctly different Los Angeles, CA based communities were utilized in order to achieve a more complete perspective about the relationship between the automobile and the different types of land usage in the region. After comparing urban and suburban community car ownership rates the preliminary results suggest that suburban car ownership is resurgent both domestically and internationally regardless of income. During the same period of time the rate of car ownership in urban communities only managed a minimal decrease. Because of this, an immense amount of policy reform regarding land use regulation, public transportation funding, transit fares, car sharing, and ride sharing are all necessary for the future mobility of global metropolitan societies. This is especially true for nations and cities aspiring to provide a higher quality of life for current residents while also catering to an increasingly demanding and growing population.
Underrepresented Students' Experiences of Racial Microaggressions at a Private, Catholic University
Laina Washington

This study researches high-achieving, undergraduate students of color in a graduate/professional school preparation program, the Academic Community of Excellence (ACE), and their experiences of racial microaggressions, subtle, covert verbal or nonverbal insults directed toward people of color, at a private, Jesuit university in Southern California. There is extensive research on students' experiences related to microaggressions at public (and some private) institutions. However, there is little to no research that include ethnically diverse students and their experiences at private, Catholic universities. Using critical race theory as a framework for analyzing participants' focus group responses, this qualitative study seeks to determine 1) whether students have been the target of racial microaggressions by other students, faculty and staff and 2) the various campus settings in which students may have experienced microaggressions. Students shared that they had been the target of racial microaggressions by other students and faculty on campus and had experienced racial microaggressions in such campus settings as classrooms, dorms, the bookstore and other social settings. Such research can be used to help campus programs and support services determine whether support is needed for students who have been the target of racial microaggressions and can inform the implementation of new policies and practices that will help combat microaggressions on campus.

Understanding Course Selection Decision Making of Undergraduate STEM Students
Nicole Ann Villa

The words that are used to present a situation are crucial to the way people make decisions. This is known as the framing heuristic, the "idea that choices partially depend on the way in which problems are stated" (Tversky & Kahneman, 1974). Knowledge of the effects of framing allows people to see through the effects of the frame and make more rational and justified decisions. Framing's effects have been demonstrated in different contexts such as advertising, finance, and healthcare. Wilson et al. (1987) analyzed and interpreted the exchange of framed information occurring in an encounter between a healthcare professional and their patient to determine the effects of framing on the interactions. Such demonstrations of the framing effect within the medical field suggest that patients and their healthcare providers may not always make either rational or optimal decisions. We hope to improve overall patient care by understanding decision making starting in undergraduate pre-health education. We shall determine the effect that the framing of course outcomes has on pre-health students at Loyola Marymount University as well as to inform pre-health students about the effects of framing on their choice in classes and, potentially, their GPA. We focus on course outcomes because pre-health undergraduate students place significant emphasis on GPA in order to matriculate to healthcare related graduate school expect on average GPAs of 3.7 (Association of American Medical Colleges, 2017). The proposed experiment will concentrate on how pre-health students choose classes, such as organic chemistry, based on the presented likelihood of getting an A. The findings and results of this research study would help pre-health students make decisions about their education and understand how they make decisions which can aid them in their future careers where it is crucial for them to understand the importance of framing when they are working with patients and giving certain diagnostics.

Understanding School Police Officers' Day-to-Day Experiences
Julianna Dunivin, Freddy Soltero

Police officers serve a critical role in maintaining and promoting safety in schools. Yet, little is known about school police officers, who they are, their daily experiences with students and staff and the
challenges they may face and the many resources they may use when making complex decisions. The current study employed a focus group methodology and recruited members of the school police department at a local school district. Five different divisions were visited and 30 law enforcement officers (7% White, 3% Native American, 30% Black/African American and 60% Hispanic/Latino; 10% female, 90% male; 86% officer, 10% sergeant, 4% detective) participated in 13 focus groups. Data collection was completed in December 2018 and focus groups have been transcribed. From a preliminary analysis of the data, we found that officers engage in a range of roles, for example, serving as mentors and positive role models where they lead youth-centered programs such as Explorer programs. Officers also work closely with school administration to better understand the school community and get involved in community events. In addition, given the increase rate of mental health challenges among youth, officers also work closely with the MHET team at the district when presented with challenging situations involving youth. Officers emphasized their responsibility to enforce laws and not to dole out discipline, a task that is reserved for the school administrators. Better understanding officers’ daily experiences can shed light on how school police officers make decisions that have implications for shaping the experiences of students.

Utilizing 3D Printing Technology and the Plasmodial Slime Mold Physarum polycephalum to Approximate Efficient Transit Networks of Los Angeles
Sophia Deen

The slime mold Physarum polycephalum is a single-celled, multinucleated organism that can be observed without the assistance of magnification. When cultivated under optimal dark and humid environmental conditions, the plasmodium aggregates towards its food source to create the most efficient network by using chemical cues in the environment, called chemotaxis. This study aims to assess the exploration of the slime mold’s foraging specifically on geographic locations of 3D printed maps of Los Angeles. The results from P. polycephalum’s exploration will be used to assess the slime mold’s ability to generate isomorphic solutions similar to Los Angeles’ existing roadway networks. The 3D printed maps, modeled from regional topographic maps, are used to create ‘real-world’ spatial obstacles, such as mountain ridges, during foraging by the plasmodium.

Preliminary data generated by the plasmodium’s exploration on 3D maps has produced novel solutions to mass transit arrangements tested in lab. 95% of the trials concluded that the plasmodium predicted a shorter route than the preexisting networks. The efficiency and effectiveness of the use of P. polycephalum is compared to Tero et al. 2010, to validate the implementation of proportional 3D maps as opposed to extremely disproportional 3D maps used in prior research. Further, slime mold generated transit solutions were generated in three days, compared to the months to years it needed for engineers to design past transit networks. Results of this study aim to suggest novel approaches in transit-modeling by utilizing emerging 3D printing technologies and biological insight.

Utilizing Invasive Tumbleweed (Kali tragus) Brush Piles to Assess Habitat Enhancement at Ascot Hills Park
Jacquelyn Galvez, Nicholas Pilaud, Xiaoya Yuan

Brush piles are natural or artificial structures composed of dead plant biomass, generally woody debris or dried brush. Such structures have long been advocated as a means to enhance wildlife habitat and attract native species. Despite the common nature of brush piles as a wildlife management strategy, the research literature on the measurable effect of these structures remains largely unresolved. This study assesses whether brush piles constructed of prickly Russian thistle (Kali tragus) could function to enhance wildlife habitat and promote the growth of native vegetation, while also mitigating the spread of this invasive thistle. Experimental brush piles constructed from K. tragus in Ascot Hills Park in northeast Los
Angeles, CA are used to address this question. Metrics including brush pile height, temperature, animal burrow, and native plant presence were measured from April 2018 to March 2019 for a total of four seasons. Preliminary data suggests that brush pile construction may have the potential to reduce local temperature fluctuation. During the summer (July 2018), average brush pile temperature remained within 10°F (68-88°F) while average control plot temperature fluctuated within 76°F (60-136°F). However, animal burrow and fecal matter presence appear to have no correlation with brush pile construction. Future research may include assessing differences in insect biodiversity between brush piles and control plots. Overall, this study serves as a preliminary look into whether brush piles can effectively serve as a method to increase local biodiversity of native floral and faunal populations.

Validating the Multicultural Neuropsychological Scale
Mary Schell, Erick Caranza, Sean Lapeyre, Courtney Ferrin

Neuropsychology, which involves the cognitive assessment of individuals with suspected brain damage, has been fraught with challenges with regard to cultural and diversity issues. The Multicultural Neuropsychological Scale (MUNS) is an assessment test of cognitive functioning (memory, attention, etc.) that was developed by Dr. Alberto Fernandez to include universal test items easy to translate into different languages. The purpose of the present study was to administer the MUNS to a sample of English speakers, and to compare performance of English speakers with Spanish speakers from Argentina. Because the MUNS was designed to be culture-free, the expectation was that performance would be comparable between the two groups.

Methods: We recruited seven English-speaking participants so far from the Psychology Human Subject Pool to complete the MUNS. Their performance was compared to six Argentine Spanish speakers (data collected in Argentina). We analyzed data from subtests of attention, visuospatial ability, memory, executive functioning, and language.

Results: Analysis of variance (ANOVA) was used to compare the two groups on MUNS performance. No significant group differences were found on any tests (ps > .16).

Conclusion: As we predicted, no significant differences were found between Spanish speaking and English speaking groups. This suggests that the MUNS may be valid to use across these cultures. The development of a multicultural clinical tool to assess cognitive function will enable clinicians to accurately assess clients of diverse language, culture and education backgrounds. The MUNS potentially contributes a necessary and user-friendly tool for the assessment of diverse and underserved populations.

Vertical Farming: Towers to Sustainability
Alexis Hadjarpour

As we watch the evolution of the human population from hunter-gatherers to complex urban dwellers, the causes of climate change that affect food production make it critical to investigate new and sustainable farming methods that meet the growing demand of food. Vertical farming, a recently proposed approach of modernized farming within city skyscrapers, has provoked much debate amongst scholars regarding its sustainability. Through a close reading of key texts, discourse analysis and reviews of case studies this paper debunks arguments of unsustainability entailing the economic impracticality of constructing and equipping a vertical farm, along with the considerable energy use in operation. Rather, the analysis will argue that vertical farming is sustainable. Environmentally, it allows for the restoration of hardwood forests as conventional farmland is freed. Societally, increased crop yields of locally grown and affordable produce assist food security. Lastly, the industry will ensure economic urban growth with
the installment of jobs across various skill sets. As we see the vertical farm industry expand, the sustainability and benefits of vertical farming will grow more apparent and leave more of the population healthy and satiated.

**Virtual Communities: Contextualizing Mixed Race Community Organization and Development**  
Samuel Johnston

The purpose of this research was to analyze the role that virtual multiracial communities play in the identity development of mixed race individuals and the way that they help challenge Macro structures. In order to understand how these virtual organizations functioned, a cyclic version of Structuration Theory was applied to analyze virtual communities and their impact on Macro structures. Structuration Theory was originally developed to understand how the individual, at the Micro level, interacted with social structures at the Macro level. However, the original theory did not consider the organizations that constitute the Meso level. In order to better understand the role of these communities, Structuration Theory was adapted to account for Micro, Macro, and Meso level interactions. A review of Multiracial organizations and groups both prior to and after the 2000 census, where legal recognition was achieved, revealed several shifts in focus for the community. One of these adjustments was the shift in focus from political advocacy to individual identity development. Post Census groups also began to make use of social media, which inspired another shift in focus to a modern understanding of the multiracial movement as they used new dimensions of public and social space on the internet. Internet communities on social media platforms, websites, and blogs were analyzed to understand the way that multiracial groups foster identity development today. The Internet, as public space, was chosen since many modern movements make great use of the platform in order to adapt to shifting social, legal, and organizational challenges.

**Virtual Reality Filmmaking: Storytelling Through Immersive Motion**  
Andrew York

Filmmaking has continually transformed as new technologies arise and are adapted to tell new stories. Each evolution in filmmaking changes the rule book on how to successfully tell stories. With Virtual Reality Filmmaking on everyone’s lips but minimal content written about it, the purpose of this research is to disseminate the knowledge gained through filming three different types of VR films that utilize varying levels of movement to guide the audience’s eye. Through funding from the Honors Program, we were able to film an original Noir Scene featuring stationary and mobile movement, an original comedy scene that used the actor’s movement to compliment the stationary camera, and a recreation of the opening scene of the Godfather. While the technology is currently unable to seamlessly stitch together quick movement between twenty four separate cameras, knowledge can be gained through analyzing the steps needed undertaken in order to produce a Virtual Reality film and the reactions audiences have when watching the film with varying levels of movement.

**Virtue of What?**  
Joe Coleman, Sam Burton

How should I live my life? What is the best life? These are the questions that Aristotle is concerned with answering in his Nicomachean Ethics. He puts forward as a partial answer to these questions a class of virtue: moral virtue or, more accurately translated, virtue of character. Virtue (aretē) in general, according to Aristotle, is the doing well of some activity, and it is, thus, always defined in relation to some activity; that is virtue is always the virtue of something. Intellectual virtue, for example, is straightforwardly the
virtue of the activities of the intellect. So, we might ask, “what activity is moral virtue the virtue of?” A direct answer to this question is not provided by Aristotle in the Nicomachean Ethics. In my paper, I suggest that we look to two other works of Aristotle in order to find and support an answer. In his On the Soul and On the Movement of Animals, Aristotle works out a framework for understanding motivated animal and human behavior. I argue that the set of activities that Aristotle identifies in these works in order to explain motivated human behavior is the set of activities that moral virtue is the virtue of. This work is the first step of a longer research project, which I hope will ultimately allow me to propose a criterion by which I will be able to evaluate whether a proposed virtue or vice should be considered a moral virtue or vice or not.

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Why We Buy
Brandon Nam

In an age of online media, easy access to information and culture has granted us an unavoidable sensitivity regarding the lifestyles of others. This fact has naturally not escaped the attention of commercial corporations, particularly in the realm of fashion and clothing. Consequently, advertising in these spheres has evolved to be more personal, subtle, and unfortunately, invasive in form. Additionally, brand loyalty has become easier to develop as managers can more directly interact with and receive feedback from consumers. With the growing prevalence of such practices, I intend to observe the interaction between brand loyalty, social media marketing, and the resulting tribalism among respective community members.

Community identity has become much stronger with the advent of social media, and with it the rival ideas of personal and group identity become harder to distinguish. It is important for us to be conscious of the effects of tribalism, as it becomes easy to make decisions overly based on the need to be accepted by others. Conversely, we should understand that it is impossible to act without the influence of others. What is necessary is a critical evaluation of where we each stand in a societal context, and to what degree we are comfortable with being an individual within a larger group structure. To do all this, however, requires we are fully aware of how much others influence us, and how strongly we respond to such influences.

Wind Tunnel Simulation of Design Aerodynamic Wind Loads on the Surfaces of a Model Building with a Flat Roof: Near-Uniform Flow Conditions
Mary Laurance, Erin Crowell, Salma Kamal, Andrei Pineda

Boundary layer wind tunnel testing is important to determine wind loads on structures as they are a critical design condition. Wind tunnel testing using the LMU Research Wind Tunnel was performed on a scale-model building in order to measure the aerodynamic pressures on the model building surfaces in Exposure D, a condition of unobstructed flow. The pressure loads were compared to surface pressures calculated using methods of ASCE 7-10 at 7-16 maximum wind speeds for coastal California for a full-scale building of the same shape and using ANSYS to calculate surface pressures on the surfaces of the cube model. The results showed that surface pressures measured on the model for uniform flow and calculated for the full-scale building using ASCE 7 methods, were within 20% of each other. This study has shown that the design standards and wind tunnel methods can produce similar wind load estimates for an essentially rigid building structure. It has also shown that wind tunnel testing using uniform flow conditions can yield a conservative estimate of design wind loads for Exposure D conditions, and that computational fluid dynamics (CFD) has potential to be used to estimate the wind loads on the surfaces
of a building. While in this study the load estimates varied from ASCE 7 and wind tunnel estimates, future work could refine CFD methods for the calculation of wind loads on building structures.

**Wind Tunnel Simulation of Design Aerodynamic Wind Loads on the Surfaces of a Model Building with a Flat Roof: Obstructed Flow Conditions**

Mary Laurance, Erinn Crowell, Salma Kamal, Andrei Pineda

Boundary layer wind tunnel testing is important to determine wind loads on structures as they are a critical design condition. Modifying, or tripping, the boundary layer in a wind tunnel test is useful to determine how these wind loads on a test building change based on the terrain ahead of the building. Wind tunnel testing using the LMU Research Wind Tunnel was performed on a scale-model building in order to measure the aerodynamic pressures on the model building surfaces in Exposures B and C, conditions of dense and suburban cityscapes, respectively. The pressure loads were compared to surface pressures calculated using methods of ASCE 7-10 at 7-16 maximum wind speeds for coastal California for a full-scale building of the same shape. The results showed that the wind load conditions can be reasonably estimated using the ASCE 7 approach but wind tunnel testing may be recommended to address the effects of terrain and structures located upwind of a new building.

**Wine and Conversation in the Museum Setting**

Samantha Burton

My research attempts to bring my backgrounds in classics, philosophy, and storytelling, and my internship at the J. Paul Getty Villa museum into a dialogue surrounding museum programming that makes ancient art accessible to all. I was part of a planning committee for a public programming event called "Drinking and Thinking," an event held in conjunction with the opening of a new temporary exhibition centered on contemporary artists' visions of Platonic themes. The event invited participants to engage with philosophy professors from Los Angeles-area universities while also participating in a wine tasting of local wines. In doing so, it recreates the setting of the symposium, an ancient Greek drinking party, in which wine acts as a kind of conversational lubricant of philosophical ideas. Through a close reading of Plato's Symposium, I sought to identify the factors necessary to a drinking environment that allowed for participants of the event to change the way in which they perceived beauty. Three factors came to light: liberation, intoxication, and philosophical conversation. I propose that liberation, that is freedom in decision-making, such as how much to drink and the topic of conversation (with the significant caveat that total freedom does not equate total liberation, and that some guidance is necessary), in conjunction with intoxication, which allows one to focus on the topic at hand and lessens attention to the possibility of shame, are necessary conditions for effective philosophical conversation, which is both challenging and pleasurable. Effective philosophical conversation then leads participants in conversation toward beauty and truth. This was seen during the Villa event, after which attendees returned to the "Plato in L.A." galleries and engaged with the art in observably deeper ways.
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Candice Cross
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Julia da Motta
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Titania Davis
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Biology

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Biology and International Relations

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Marketing

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Biology

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Biology

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Anna Yager
Biology

Andrew York
Film and Television
Production

Hyung Jun You
International Relations

Xiaoya Yuan
Chemistry

Z

Maria Lopez Zamudio
Chicana/o-Latina/o
Studies

Samantha Zinn
Sociology
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Brianne Gilbert  
Center for the Study of Los Angeles

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Management Department

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Elmo Johnson  
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Physical Chemistry

Emily Simso  
LMU Center for Urban Resilience

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Mechanical Engineering

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Philosophy

Eric Strauss  
Biology

Ernesto Colin  
Specialized Programs in Urban Education

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Political Science

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Electrical Engineering

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James Landry  
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Jeffrey Phillips
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Computer Science

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Civil Engineering and Environmental Science

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Political Science

John Young
Rhetorical Arts Fellow

Jonas Mureika
Physics

Joseph LaBrie
Psychology

Joshua Cohen
Biology

Joshua Kulmac Butler
Core Curriculum

Joshua Spizman
Finance

Judith Foy
Psychology

Judy Scalin
Associate Dean, CFA

Julian Saint Clair
Marketing

Julio Camarero
USC Pharmacology and Pharmaceutical Sciences

Kam Dahlquist
Biology

Kat Weaver
Associate Provost for Research & Professional Development

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Office of Intercultural Affairs

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Laura Poladian

Rhetorical Arts Fellow

Lei Huang
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LMU Center for Urban Resilience

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Biology

Mitchell Hamilton
Marketing

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Biology
Nancy Pineda-Madrid
Theological Studies

Natalie Schaal
Mechanical Engineering

Negin Ghavami
Psychology

Nhu Nguyen
UH-Manoa, Dept. of Tropical Plant & Soil Sciences

Nicholas Rosenthal
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Nicole Bouvier-Brown
Chemistry

Nora Muphy
Psychology

Omar Es-Said
Mechanical Engineering

Paul Harris
English

Peter Auger
Biology

Priscilla Leiva
Chicana/o Latina/o Studies

Rachel Edwards
Graduate Assistant, Office of Undergraduate Research

Administrative Coordinator, Office of Undergraduate Research

Richard Abrams
Psychology

Ruben Martinez
English

Samir Naimi
Studio Arts: Graphic Design

Sarah Maclay
English

Sarah Mitchell
Department of Chemistry /Biochemistry

Sarah Strand
Health and Human Sciences

Scott Zinzer
Mathematics

Sean Dempsey
History

Shane Acker
Animation

Shannon Taylor
Ignation Leader Institute & Associate Director, Judicial Affairs

Stephen Heller
Chemistry

Steven Neal
Office of Intercultural Affairs

Susan McDaniel
Communication Studies

Tahereh Aghdasifar
Women and Gender Studies

Tatiana Kuzmenko
Biology

Teah Goldberg
Rhetorical Arts Fellow

Tracy Tiemeir
Theological Studies

Vanessa Diaz
Chicana/o-Latina/o Studies

Varieschi Gabriele
Physics

Vincent Coletta
Physics

Wendy Binder
Biology

William McCormack
Health and Human Sciences

Zakkoyya Lewis-Trammell
Health and Human Sciences