Loyola Marymount University presents

The Fourth Annual
Undergraduate Research Symposium
Friday, March 23, 2012

What will you discover?
March 23, 2012

“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 Fourth Annual Undergraduate Research Symposium! This event has become a campuswide tradition celebrating the very best in faculty-mentored undergraduate research and creative activity 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 nearly 300 students from all five undergraduate colleges and schools. We offer you a treasure trove of intellectual gems in which you are invited to sample the diverse offerings. There are 113 posters and 40 oral presentation sessions, including 6 documentary and animated films and a musical performance of composer John Cage’s Europera 5. There is a documentary film on the Massai people of Tanzania, a demonstration of animation techniques in 3-D, papers on house finches, spiders, fruit flies, social networking, and more. We are also pleased to share with you the work of senior Honor’s student, Michael Madrinkian, winner of the Bellarmine Forum Undergraduate Research Award, for his research on an anonymous 16th c. religious manuscript, called The Rych Cheyne, housed in the William H. Hannon Library. His work took him to St. George’s Chapel in London where his archival research led him to establish the probable author of this important document.

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 of the students and faculty participating in the 2012 LMU Undergraduate Research Symposium!

Sincerely,

Rae Linda Brown, Ph.D.
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<td>Student Index</td>
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<td>Acknowledgements</td>
<td>91</td>
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## Schedule of Events

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>11:30am-12:00pm</td>
<td>Symposium Begins: Registration and Welcome Reception</td>
<td>Atrium</td>
</tr>
<tr>
<td>12:00pm – 1:00pm</td>
<td>Oral Presentations (Session I)</td>
<td>1st Floor, Ahmanson Auditorium</td>
</tr>
<tr>
<td>1:15pm – 2:15pm</td>
<td>Oral Presentations (Session II)</td>
<td>1st Floor</td>
</tr>
<tr>
<td>2:30pm – 3:30pm</td>
<td>Oral Presentations (Session III)</td>
<td>1st Floor, 3rd Floor</td>
</tr>
<tr>
<td>3:00pm – 4:30pm</td>
<td>Poster Presentations (Session I)</td>
<td>2nd Floor</td>
</tr>
<tr>
<td>3:30pm – 4:30pm</td>
<td>Oral Presentations (Session IV)</td>
<td>1st Floor, 3rd Floor, Ahmanson Auditorium</td>
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<tr>
<td>4:30pm – 6:00pm</td>
<td>Poster Presentations (Session II)</td>
<td>Atrium</td>
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## ORAL SESSION I
### 12:00pm-1:00pm

<table>
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<tr>
<th>Time</th>
<th>Location</th>
<th>Student Presenter</th>
<th>Project Title</th>
<th>Faculty Mentor</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:00-</td>
<td>1218</td>
<td><strong>Michael Madrinkian</strong></td>
<td>The Lost Text: A History of The Rych Cheyne</td>
<td>Stephen Shepherd</td>
</tr>
<tr>
<td>12:20</td>
<td></td>
<td><em>English</em></td>
<td><strong>Winner:</strong> <em>Bellarmino Forum Undergraduate Research Award</em></td>
<td>English</td>
</tr>
<tr>
<td>12:20-</td>
<td></td>
<td><strong>Jeremy Lins</strong></td>
<td>The Role of Blood in Ancient Greece</td>
<td>Katerina Zacharia</td>
</tr>
<tr>
<td>12:40</td>
<td></td>
<td><em>Classics</em></td>
<td></td>
<td><em>Classics and Archaeology</em></td>
</tr>
<tr>
<td>12:40-</td>
<td></td>
<td><strong>Lauren Walsh</strong></td>
<td>Code-switching: An Expression of Non-conformity</td>
<td>Jennifer Eich</td>
</tr>
<tr>
<td>1:00</td>
<td></td>
<td><em>English &amp; Spanish</em></td>
<td></td>
<td><em>Modern Languages and Literatures</em></td>
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</tbody>
</table>

### Literature: A Lost Manuscript, Blood and Codes

**Best Practices in Elementary Education**

<table>
<thead>
<tr>
<th>Time</th>
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<th>Student Presenter</th>
<th>Project Title</th>
<th>Faculty Mentor</th>
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</thead>
<tbody>
<tr>
<td>12:00-</td>
<td>1222</td>
<td><strong>Hannah Reas</strong></td>
<td>From Stuffed Animals to Successful Futures: How Values Develop Over the Lifetime</td>
<td>Ricardo Machon</td>
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<tr>
<td>12:20</td>
<td></td>
<td><em>Psychology, Dance</em></td>
<td></td>
<td><em>Psychology</em></td>
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<td></td>
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<td><strong>Tonya Warren</strong></td>
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<td></td>
<td></td>
<td><em>Psychology, Art History</em></td>
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<td><strong>Whitney Wozniak</strong></td>
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<td></td>
<td></td>
<td><em>Psychology, History</em></td>
<td></td>
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</tr>
<tr>
<td>12:20-</td>
<td></td>
<td><strong>Yara Cipatlic Hidalgo</strong></td>
<td>Immigrant Children in the United States Education System: Changing Methodologies for Inclusion of Knowledge</td>
<td>Juan D. Mah y Busch</td>
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<tr>
<td>12:40</td>
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<td><em>Liberal Studies &amp; Chicana/o Studies, Mathematics</em></td>
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<td><em>English &amp; Chicana/o Studies</em></td>
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<tr>
<td>12:40-</td>
<td></td>
<td><strong>Katelyn Wirtz</strong></td>
<td>Similarities and Differences In Two Teachers’ Teaching Practices During Math and Science Lessons</td>
<td>Vandana Thadani</td>
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<tr>
<td>1:00</td>
<td></td>
<td><strong>Chloe Dove</strong></td>
<td></td>
<td><em>Psychology</em></td>
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<td></td>
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<td><em>Nicole Froidevaux,</em></td>
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<td><strong>presenters</strong></td>
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<td><strong>Tonya Warren</strong></td>
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<td></td>
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<td><strong>Asha Weisman</strong></td>
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<td><strong>Jonna Crocker</strong></td>
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<td></td>
<td></td>
<td><strong>Greg Smith,</strong> <em>Non-presenting co-authors</em></td>
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<tr>
<td></td>
<td></td>
<td><strong>Psychology</strong></td>
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</tbody>
</table>
The Arts: John Cage (performance), Music Therapy in Uruguay, Cinematic Dreams

12:00-12:20 Auditorium
Alex Salazar
Film Production
Dream Out Loud: a Documentary Film
Glen Gebhard, Michaela Lavick
Film Production

12:20-12:40
Lucia Cash
Communication Studies
Music Therapy - Breaking the Boundaries of Individuality for Effective Communication
Paul Humphreys
Music

12:40-1:00
Marcel Borbón
Music, Art
Steven M. Jones
Music, Business
Chloé Pourmorady
Music
Revisiting John Cage: A Partial Performance of Europera 5
Virginia Saya
Music

ORAL SESSION II
1:15pm-2:15pm

Time Location Student Presenter Title of Project Faculty Menor

Health: Athletic Training and a Medical Invention

1:15-1:35 1218 Daniel Falaleyev Accounting
The OmniCrutch
Fred Kiesner
Entrepreneurship

Kelia McDonald
Natural Science, Spanish
Effect of Training Mode on Post-Exercise Heart Rate Recovery of Trained Cyclists
Silvie Grote
Todd Shoepa
Health & Human Sciences

1:55-2:15 Zakkoyya Lewis-Powell
Athletic Training
College-Age Dancers Have Stronger Bones than Runners and Controls, Despite Low Energy Availability
Hawley Almstedt
Health & Human Sciences

Mindfulness, Choice Theory and Success

1:15-1:35 1222 Melissa Gomez Psychology
Mindfulness as a way of Promoting Resilience in those with Low Self-Esteem
Máire Ford
Psychology

Molly Burns
Political Science, History
The Causes of Recidivism and how Rehabilitation can address them: A case study in the Choice Theory Connections Program
Andrew Dilts
Political Science

1:55-2:15 Marisa Cervantes
Sociology, Spanish
First-Generation Students’ Perceptions of Academic Preparedness at Loyola Marymount University
LaTonya Rease Miles
Director of Academic Resource Center
Anna Muraco
Sociology
### Stereotypes: Social Networking and Media Depictions

<table>
<thead>
<tr>
<th>Time</th>
<th>Location</th>
<th>Student Presenter</th>
<th>Title of Project</th>
<th>Faculty Mentor</th>
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</thead>
<tbody>
<tr>
<td>1:15-1:35</td>
<td>1226</td>
<td><strong>Phil Benavides</strong></td>
<td>Effective Social Media Strategy: Combining Sociology and Business Theory</td>
<td><strong>Robert Winsor</strong></td>
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<td><em>Marketing</em></td>
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<td><em>Marketing and Business Law</em></td>
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<td>1:35-1:55</td>
<td></td>
<td><strong>Dylan Delgado</strong></td>
<td>Media, Communication, and Music: The Connection between Rap/ Hip-Hop and Low-Income Hispanic Youth’s Media Enjoyment</td>
<td><strong>Wenshu Lee</strong></td>
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<tr>
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<td></td>
<td><em>Communication Studies</em></td>
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<tr>
<td>1:55-2:15</td>
<td></td>
<td><strong>Ricky Randle</strong></td>
<td>The Sophisticated Stereotype of the Black Man: Black Masculinity In Criminal Minds</td>
<td><strong>Kyra Pearson</strong></td>
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<td><em>Communication Studies</em></td>
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### Oral Session III

**2:30pm-3:30pm**

<table>
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<tbody>
<tr>
<td>2:30-2:50</td>
<td>1218</td>
<td><strong>Kristen Green</strong></td>
<td>Learn the Past, Watch the Present &amp; Create the Future: An Analysis on the Causes of Refugee Waves &amp; Their Policy Implications in East/West Africa</td>
<td><strong>Cassandra Veney</strong></td>
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<td></td>
<td><em>Political Science, Urban Studies</em></td>
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<td><em>Political Science</em></td>
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<tr>
<td>2:50-3:10</td>
<td></td>
<td><strong>Madeline Mezger</strong></td>
<td>Undemocratic Conduct in the World’s Leading Democracy</td>
<td><strong>Jennifer Ramos</strong></td>
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<td>Political Science</td>
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<td><em>Political Science</em></td>
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<tr>
<td>3:10-3:30</td>
<td></td>
<td><strong>Matthew Rice</strong></td>
<td>Saning’o: a Documentary Film on the Maasai of Tanzania.</td>
<td><strong>Howard Lavick</strong></td>
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<td></td>
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<td>Film Production</td>
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### A New World: 3-D Animation and Computer Design

<table>
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<th>Location</th>
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<th>Title of Project</th>
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<tbody>
<tr>
<td>2:30-2:50</td>
<td>1222</td>
<td><strong>Alex Isaksson</strong></td>
<td>2D in a 3D World</td>
<td><strong>Adriana Jaroszewicz</strong></td>
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<td><em>Animation, Studio Art</em></td>
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<td><strong>Chris Fischer</strong></td>
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<td><em>Animation</em></td>
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<td><strong>Brendan Carley</strong></td>
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<td><em>Animation</em></td>
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<td>2:50-3:10</td>
<td></td>
<td><strong>Jasmine Dahilig</strong></td>
<td>Quo: A Programmable Social Network Status Demultiplexer</td>
<td><strong>John David Dionisio</strong></td>
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<td><em>Computer Science</em></td>
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<td><strong>Andrew Forney</strong></td>
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<td></td>
<td></td>
<td><em>Computer Science</em> &amp; Psychology, Pure Mathematics*</td>
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<td><strong>Tyler Nichols</strong></td>
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### Animation, Chicana/o Studies and Studio Arts

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<tr>
<td>3:10-3:30</td>
<td></td>
<td>Stephanie Troncoso</td>
<td>Streets of Jidai: a Documentary Film</td>
<td>Tom Klein</td>
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<td>Rachel Tamura</td>
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<td>Victoria Giacomazzi</td>
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<td>Chicana/o Studies</td>
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<td>Studio Arts</td>
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### Whose Identity?: The Crisis of Masculinity and Gypsies

<table>
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<th>Student Presenter</th>
<th>Project Title</th>
<th>Faculty Mentor</th>
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</thead>
<tbody>
<tr>
<td>2:30-2:50</td>
<td>1226</td>
<td>Megan O’Malley</td>
<td>Gender Differences in Competition Attitudes: A Developed Country Phenomenon?</td>
<td>Dorothea Herreiner</td>
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<td>Economics,</td>
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<td>Mathematics &amp; English</td>
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<tr>
<td>2:50-3:10</td>
<td></td>
<td>Eli Kallison</td>
<td>The Most Interesting Man in the World and the Crisis of Masculinity: A Rhetorical</td>
<td>Kyra Pearson</td>
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<td>Communication Studies</td>
<td>Analysis of How Beer Sells</td>
<td>Communication Studies</td>
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<tr>
<td>3:10-3:30</td>
<td></td>
<td>Michelle Scott</td>
<td>Niki: a Documentary film of the Roma (gypsy) Community, Hungary</td>
<td>Michaela Lavick</td>
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<td></td>
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<td>Film Production</td>
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### Birds and Spiders

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<th>Project Title</th>
<th>Faculty Mentor</th>
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<tbody>
<tr>
<td>2:30-2:50</td>
<td>3218</td>
<td>Tauras Vilgalys</td>
<td>Changes in Reproductive Timing: An Analysis of California House Finches</td>
<td>Heather Watts</td>
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<tr>
<td></td>
<td></td>
<td>Biology, Biochemistry and Philosophy</td>
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<td>Biology</td>
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<tr>
<td>2:50-3:10</td>
<td></td>
<td>Mikayla Kemp</td>
<td>Female Body Size and Reproductive Output in the Green Lynx Spider <em>Peucetia viridans</em> (ARANEAE, OXYOPIDAE).</td>
<td>Martin G. Ramirez</td>
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<tr>
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<td>Biology</td>
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<td></td>
<td>Kayla Murata</td>
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<td>Biology, Psychology</td>
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<td>Jasmin Takemoto</td>
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<td>History, Jewish Studies</td>
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### ORAL SESSION IV

**3:30pm-4:30pm**

<table>
<thead>
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<th>Time</th>
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<th>Project Title</th>
<th>Faculty Mentor</th>
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<tbody>
<tr>
<td>3:30-3:50</td>
<td>3222</td>
<td>Zily Burstein</td>
<td>Conformal Gravity and Related Tensors</td>
<td>Gabriele Varieschi</td>
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<td>Physics &amp; English</td>
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<td>Physcis</td>
</tr>
<tr>
<td>Time</td>
<td>Name</td>
<td>Course</td>
<td>Title</td>
<td>Instructor</td>
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<tr>
<td>3:50-4:10</td>
<td><strong>Heather Carmody</strong></td>
<td>Biology</td>
<td>The Black Death of Europe and Cholera in 19th Century London: A Comparative Study</td>
<td>Carla Bittel</td>
</tr>
<tr>
<td>4:10-4:30</td>
<td><strong>John Bickhart</strong></td>
<td>Film Production</td>
<td>SHACKLETON: a Documentary Film about the famed Antarctic explorer.</td>
<td>Michaela Lavick</td>
</tr>
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</table>

**Challenging Gender Norms**

<table>
<thead>
<tr>
<th>Time</th>
<th>Name</th>
<th>Course</th>
<th>Title</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:30-3:50</td>
<td><strong>Erika Chavez</strong></td>
<td>History &amp; Spanish</td>
<td>Indian Families of Mexico City: Gender Relations in the Late-Colonial Era, 1725-1816</td>
<td>Margarita Ochoa</td>
</tr>
<tr>
<td>3:50-4:10</td>
<td><strong>Asha Weisman</strong></td>
<td>Psychology, Dance</td>
<td>Gendered Language and Sexism: The Effects of &quot;He&quot; Language in Religion</td>
<td>Adam Fingerhut</td>
</tr>
<tr>
<td>4:10-4:30</td>
<td><strong>Rhiannon Koehler</strong></td>
<td>History, Theater</td>
<td>Beyond Womanhood: Complicity and Action in Nazi Germany</td>
<td>Elizabeth Drummond</td>
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</table>

**Virtual Environments and Cinematography**

<table>
<thead>
<tr>
<th>Time</th>
<th>Name</th>
<th>Course</th>
<th>Title</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:30-3:50</td>
<td><strong>Andrew Forney</strong></td>
<td>Computer Science &amp; Psychology, Pure Mathematics</td>
<td>Can Avatars Pass the Turing Test? Intelligent Agent Perception in a 3D Virtual Environment</td>
<td>Richard Gilbert</td>
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<td>3:50-4:10</td>
<td><strong>Adam Lee</strong></td>
<td>Film Production</td>
<td>The Mirror Motel</td>
<td>Sylvia Morales</td>
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<td>4:10-4:30</td>
<td><strong>Tracy Ip</strong></td>
<td>Film Production</td>
<td>Souvenir: a Documentary Film about the relationship between olfaction and memories</td>
<td>Michaela Lavick</td>
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**Biology: Fruit Flies and Plants**

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<tr>
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<tbody>
<tr>
<td>3:30-3:50</td>
<td><strong>Austin Nguyen</strong></td>
<td>Biology, Biochemistry</td>
<td>Effects of cadmium on some model organisms from lower trophic levels: overlap in analytical techniques and outcomes</td>
<td>Philippa Drennan</td>
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<td>3:50-4:10</td>
<td><strong>Ellie Altomare</strong></td>
<td>Biology</td>
<td>Cadmium Accumulation and Resistance in Drosophila melanogaster</td>
<td>Catherine McElwain</td>
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8
## POSTER SESSION I

**3:00pm-4:30pm**

### Graphic Design ~ Marketing

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<tr>
<td>1</td>
<td>Dol-Anne Asiru</td>
<td>Mirror Mirror: Promoting the Female body through the Exploration of Media Exploitation</td>
<td>Garland Kirkpatrick Graphic Design</td>
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<td>Sarah Godfrey</td>
<td>Man VS. Machine</td>
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<td>3</td>
<td>Kevin Ma</td>
<td>Design; A Catalyst</td>
<td>Garland Kirkpatrick Graphic Design</td>
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<td>4</td>
<td>Samir Naimi</td>
<td>Design; A Catalyst</td>
<td>Garland Kirkpatrick Graphic Design</td>
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<td>5</td>
<td>Louise Santos</td>
<td>Maintaining Luxury Brand Success in an Economic Crisis</td>
<td>Robert Winsor Marketing</td>
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<td>6</td>
<td>Melissa Sweet</td>
<td>How to Open and Operate a Pop-Up Shop</td>
<td>Terry Dobson Michael Dooley Contributing Editor at Print Magazine</td>
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### Political Authenticity ~ Political Science ~ Economics

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<tr>
<td>7</td>
<td>Christopher Bird</td>
<td>The role of contest sequentiality in corrupt government procurement auctions: An experimental investigation</td>
<td>Richard Fox Political Science Dorothea Herreiner Economics</td>
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<td>8</td>
<td>Christian Chavez</td>
<td>Applying Authenticity to Presidential Candidates</td>
<td>Elizabeth Murray Philosophy</td>
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<td>9</td>
<td>Samantha Hay</td>
<td>Supplying the Credible Threat: The ICC and Another Year of Freedom Recession</td>
<td>Jennifer Ramos Political Science</td>
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<td>Elizabeth Hedge</td>
<td>Legalizing Same Sex Marriage in America: The Courts Ability to Enact Social Change</td>
<td>Evan Gertsmann Political Science</td>
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<td>Andrew Smith</td>
<td>Perceptions of the LAPD and the Direction of LA since the 1992 LA Riots</td>
<td>Fernando Guerra Political Science and Chicana/o Studies</td>
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<td>Joseph Wade</td>
<td>Iran Through the American Lens: American Perceptions of Iran and the Influence of Media</td>
<td>Richard Fox Political Science</td>
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### Center for the Study of Los Angeles

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<tr>
<td>14</td>
<td><strong>Chandler Garrison</strong></td>
<td>The L.A. Riots from Then to Now: Perceptions of Fear and Race Relations</td>
<td>Fernando Guerra</td>
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<td><strong>Michael Homans</strong></td>
<td>Angelinos’ Perception of Los Angeles by Generation</td>
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<td><strong>Fatima Murrieta</strong></td>
<td>Education and its Impact on the Political and Socioeconomic Well-being of Angelinos Following the 1992 Los Angeles Riots</td>
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<td><strong>Sarah Palacios</strong></td>
<td>Redistricting L.A.</td>
<td>Fernando Guerra</td>
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### International Affairs ~ International Law/Business

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<td><strong>Ryan Burbank</strong></td>
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<td>Jennifer Ramos</td>
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<td>Amanda Coolidge</td>
<td>Political Science, Women's Studies</td>
<td>Ending Rape as a Policy of War</td>
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<td>Ashley-Emma Noehrbass</td>
<td>History &amp; Modern Languages and Literature, Classics</td>
<td>The Myth of the Medieval Conglomerate: International Mercantile Law in Medieval England</td>
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<td>Maria Dalasio</td>
<td>Marketing, Alec Rosa</td>
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<td>Jennifer Rodriguez</td>
<td>Civil Engineering, Mathematics</td>
<td>Safe Drinking Water for El Espiritu Santo Island, Usulután, El Salvador</td>
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<td>Caitlin Bryson</td>
<td>Psychology &amp; Theater Arts</td>
<td>A Developmental Perspectve on 3D Virtual Marriage: From Courtship and Honeymoon to Companionship and Potential Dissolution</td>
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<td>Laura Fryer</td>
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<td>Courtney Picciolo</td>
<td>Psychology</td>
<td>Working memory training is associated with enhanced verbal memory in kindergarteners at risk for reading problems</td>
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<td>Alexis Hunley</td>
<td>Psychology, African American Studies</td>
<td>Interracial Relationships on College Campuses</td>
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</table>
29 **Raven Jackson**  
*Communication Studies, African American Studies*  
The Learning Brain

Elaine Walker  
*Communication & Fine Arts*

30 **Jane Kim**  
Alexxa Friedenthal  
*Psychology*  
Working Memory Linked to Attention and Literacy Skills in Kindergartners

Judith Foy  
*Psychology*

31 **Georgina Lewis**  
*Psychology & Dance*  
The Correlation between Perceived Social Support and Extraversion

Nora Murphy  
*Psychology*

32 **Hilary Mastrosimone**  
*Psychology*  
English proficiency skills and working memory training in economically disadvantaged kindergartners at risk for reading problems

Judith Foy  
*Psychology*

33 **Aundrey Page**  
Robyn Rutherford  
Lauren Frazier  
Glenn Reyes  
Monica Zandi  
Shannon Oki  
Bailey Moon  
Taunishia Cruz  
*Psychology & Business, African American Studies*  
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Cheryl Grills  
*Psychology*

34 **Beverly Pascual**  
*Psychology & English*  
The interactive effects of attachment style and mindfulness on cognition, emotion regulation, and physiology

Máire Ford  
*Psychology*

35 **Hannah Reas**  
*Psychology, History*  
Neuroticism and Associated Personality Challenges: Examining the Relationship Between Neuroticism, Trait Anxiety and Emotion Regulation

Nora Murphy  
*Psychology*

36 **Sylvana Insúa-Rieger**  
*Psychology, German*  
Evolutionary Motivators: Male and Female Differences in Rating Facial Attractiveness

David Hardy  
*Psychology*
Kristen Trudo  
Psychology,  
English & Theology

The Relationship between the Intensity of Facebook Usage and Self-Concept

Nora Murphy  
Psychology

Monica Zandi, Glenn Reyes, Lauren Frazier  
Psychology & African American Studies

Effectiveness of a Reality Based Therapy Program for Incarcerated Female Adult Offenders at CIW (California Institution for Women)

Cheryl Grills  
Psychology

Sociology ~ Education ~ Urban Studies ~ Environmental Sustainability

Trixie Joy Aquino  
Sociology

The Globalization of Filipina Workers

Stephanie Limoncelli  
Sociology

Addison Duane  
Sociology

The relationship between non-resident fathers and their adolescent daughter's romantic relationships

Anna Muraco  
Sociology

Natalie Hernandez, presenter  
Urban Studies & Spanish, Environmental Studies

Bryon Erwin
Bree Aguinaldo
J.J. Galvez
Molly Navalinski
Michael Kretschmar
Travis Weyman
Janet Torres
Giannina Nurena
Ashley Miller  
(contributing presenters)

Reaching for the S.T.A.R.S. - An Assessment of LMU’s Green Campus Initiatives

Joseph Rasmussen  
Environmental Studies

Tracey Lincoln  
Communication Studies, English

Failing Our Youth, Failing Our Future

Emily Ravenscroft  
Communication Studies

POSTER SESSION II
4:30pm - 6:00pm

Biology ~ Physiology ~ Urban Ecology

Bree Aguinaldo  
Biology, Sociology

Effects of Cadmium Intake on Green Lynx Spiders Peucetia viridians (Aranae, Oxyopide)

Martin G. Ramirez  
Biology

Spencer Calles  
Biology

Salman Ahmad  
Biology

Enumeration of bacteriophage and prokaryotic populations in an urban coastal wetlands (Ballona Wetlands) in Los Angeles County by epifluorescence microscopy

Gary Kuleck  
Biology

Emma Kennedy  
Biology

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Jorrel Sampana  
*Biology,*  
*Psychology*

Robert Arnold  
*Biology*  
Jim McDonald  
*Biology*

Carmela Asinas  
*Biology,*  
*S.T.A.R.*

Walter Au  
Daniel Chu  
Annie Flocken  
Danielle Lee  
Howard Lin  
Katherine Kimura  
Anthony Traboulsi  
*Biology*

Samantha Bates  
Justin De Lannoy  
Kellen Flanigan  
Jennifer Okonta  
Ashley Rosales  
Katherine Russell  
Gregory Trapp  
*Biology & Natural Science*

Michael Cano  
*Biology,*  
*Psychology*

Mindi Catala  
*Biography*  
Justin Aquino  
*Environmental Science*

Shelby Chun Fat  
Shannon Harringer  
Justin De Lannoy  
*Biology*

Mariele Courtois  
*Biology*  
Alex Santiago  
*Biochemistry*

Marla Dallal  
*Biology*

**Patronage and Primary Exports: the Economic Effects of International Sanctions**  
Phillipa Drennan  
*Biology*

**Migratory Behavior of an Irruptive Migrant, *Spinus pinus***  
Heather Watts  
*Biology*

**Heavy metal stress in the hydroponically grown tomato plant, *Lycopersicon esculentum***  
Gary Kuleck  
*Biology*

**Defining Hypoxia Tolerance in Marine Organisms**  
Wesley Dowd  
*Biology*

**Lupine recruitment in the Dunes of the Ballona Wetlands: seed dormancy and germination**  
Philippa Drennan  
*Biology*

**Impact if Irrigation Systems on Arthropod Community Composition of Coastal Sage Scrub along Ballona Wetlands**  
Victor Carmona  
*Biology*

**Alzheimer's in Drosophila Melanogaster: Testing a Model System**  
Mary Catherine McElwain  
*Biology*

**The Characterization of Novel Bacteriophage "Marlex"**  
Yiwen Fang  
Carl Urbinati  
Gary Kuleck  
*Biology*

**Characterization of *Burkholderia tuberum* Nodulation Mutants**  
Michelle Lum  
*Biology*
54  Hilda Delgadillo  
  Chemistry  
  Raymond Totah  
  Chemistry  
  Towards Improving our Understanding of Bacteriophage Diversity: The Isolation and Characterization of SDcharge11 and Bioinformatics Analysis of Contagion  
  Yiwen Fang  
  Biology  
  Carl Urbinati  
  Biology  
  Gary Kuleck  
  Biology

55  Elisabeth Ferris  
  Biology, Chemistry  
  Identifying and Characterizing the Microbial Community of Dune Lupine  
  Michelle Lum  
  Biology

56  Katherine Fu  
  Biology  
  Katherine Wikholm  
  Biology  
  Theodore Medling  
  Biochemistry  
  Discovery of the New Mycobacteriophage, “KatAttack”  
  Yiwen Fang  
  Biology  
  Carl Urbinati  
  Biology  
  Gary Kuleck  
  Biology

57  Daniel Garcia  
  Biochemistry  
  Samantha Hurndon  
  Sarah Patno  
  Kevin Ramirez  
  Biology  
  Analysis of the abundance and distribution of resistance genes in bacteria in the ballona Wetlands  
  Gary Kuleck  
  Biology

58  Abraham Gebreselassie  
  Biochemistry  
  Dong Woo Chang  
  Chemistry  
  The discovery of the mycobacteriophage MePac  
  Yiwen Fang  
  Biology  
  Carl Urbinati  
  Biology  
  Gary Kuleck  
  Biology

59  Genevieve Guerra  
  Biology  
  Lauren Magee  
  Biomath  
  Danielle Mauch  
  Biology  
  An Analysis of Bacteriophage Diversity: The Isolation and Characterization of KenGen and Annotation of Contagion  
  Yiwen Fang  
  Biology  
  Carl Urbinati  
  Biology  
  Gary Kuleck  
  Biology

60  Andrew Herman  
  Biology  
  Saccharomyces cerevisiae Responds to Cold Shock by Changing the Expression of Genes Involved in Nitrogen Metabolism  
  Kam Dahlquist  
  Biology

61  Andrew Heslin  
  Biology  
  Tony Wavrin  
  Biology, Chemistry  
  Alzheimer’s in Drosophila Melanogaster: Testing a Model System  
  Mary Catherine McElwain  
  Biology

62  Katie Hornick  
  Natural Science  
  Katrina Bodewig  
  Biology  
  Aggression and display rates in the Siamese Fighting Fish, Betta splendens  
  Wendy Binder  
  Biology
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<td>Isolating Bacteria Displaying Insensitivities to Multiple Antibiotics from the Ballona Wetlands and Creek</td>
<td>Gary Kuleck, John Dorsey, Chris Leary, Stephanie Kawecki</td>
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<td><strong>Katrina Bodewig</strong></td>
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<td><strong>Nana Kufour</strong></td>
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<td><strong>Nikki Javier</strong></td>
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<td>Effect of food cues on the hypothalamic-pituitary-gonadal axis</td>
<td>Heather Watts</td>
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<td><strong>Mackenzie Kerr</strong></td>
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<td>Contagion: The Freshmen Mycobacteriophage Project</td>
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<td><strong>Lauren Kubeck</strong></td>
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<td>Wolbachia and Sex Ratio Deviation in the Bolas Spider Mastophora cornigera (Araneae, Araneidae)</td>
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<td><strong>Nicole Lata</strong></td>
<td>Natural Science &amp; Pre Medicine</td>
<td>The activation of alveolar macrophages and their lipid accumulation is associated with radiation-induced chronic lung injuries</td>
<td>Weiling Zhao, Wake Forest University, Martin Ramirez</td>
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<td><strong>Courtney McCammon</strong></td>
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<td>Tracking Mammalian Wildlife Between the Loyola Marymount University Campus and the Playa Vista Riparian Corridor using Remove Sensing Cameras</td>
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<td>The role of SGK-1 in Ras-mediated rescue of metabolic defects induced by loss of extracellular matrix attachment</td>
<td>Zachary Schafer, University of Notre Dame</td>
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<td>Method Development of High Performance Liquid Chromatography Techniques in the Characterization of Extrafloral Nectar Sugars</td>
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<td><strong>Jennifer Okonta</strong></td>
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<td>The Effects of Heavy Metal and Rhizobacteria on the Germination and Growth of Dune Lupine</td>
<td>Michelle Lum</td>
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<td><strong>Jacob Pascual</strong></td>
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<td>Discovery of Mycobacteriophage <em>Contagion</em> and comparing it to other Mycobacteriophage.</td>
<td>Yiwen Fang, Carl Urbinati, Gary Kuleck</td>
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<td>Mitchell Petredis, William Gendron</td>
<td>Discovery and Characterization of a Novel Bacteriophage <em>TheRipper</em> and Bioinformatic Analysis of Bacteriophage Contagion</td>
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<td>Expression of Non-skeletal mesenchme Genes in Early Sea urchin Development and the Delta-Notch and TGF-B signaling Pathways involved upstream of mesodermal development</td>
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A number of disparate theories have recently suggested that the effective dimensionality of space at short lengths is less than three. In particular, it may be the case that space-time becomes two-dimensional at the really small scales of the Planck Length. Coupled with the possible ambiguity of spatial resolution at short lengths—a quantum "smearing" effect embodied by non-commutative geometry—it is possible to arrive at a manageable quantum gravity theory. Another recent line of thought is that gravity is itself an emergent phenomenon manifesting from entropy flow, a framework known as "entropic gravity". Combining these two approaches, we explore aspects of entropic gravity in one and two spatial dimensions, defined on a non-commutative background. Potential experimental signatures of this union are discussed, which may be visible in present or future high energy particle experiments and cosmic ray collisions. This study could lead to major advances in the unification of physical theory, which would cause big changes in the way we think about the world.

**2D in a 3D World**
Brendan Carley, Chris Fischer, Alex Isaksson

The toolset for breathing life into inanimate objects has expanded from paper and film into polygons and renderfarms very quickly over the past couple of decades. In analyzing our own experiences transitioning from 2D hand drawn animation to 3D computer animation, we observed that the process of taking the energy and liveliness of 2D to 3D animation can be challenging. While complex 3D packages are just as capable of producing lifelike animation, the learning curve is very steep. Unlike hand drawn animation, 3D movement and timing are driven entirely by graphs and curves, while in 2D they are driven by specific keyframes and the spacing between them. In this research project, we will be discussing best animation practices to manipulate the graphs and curves to produce a lively performance. We referenced articles and Laban based theories to help us better understand details of specific actions and mechanics, and compared books related to both 2D and 3D. Through the examination of animation techniques, acting theories, documents specific to animating in Maya, we will demonstrate that the concepts of traditional two-dimensional animation are transferable to 3D computer animation.

**A Closer Look: The Factors Affecting College Student Obesity**
Maria Dalasio, Jonathan Perkins, Alec Rosa

Late adolescent is a time when lifestyle decisions are still in flux from parent-guided to self-guided, thus it is a crucial time to develop healthy habits. One third of the US population is considered between overweight and obese. We are interested in studying this from a college perspective. In this study, we will analyze obesity in college students based off of a survey forming an econometric model of result. This model will be tested from a variety of regressed variable to determine the factors that ultimately result in obesity. The logistical regression will display the correlation between the factors we will be analyzing and a person's weight. The goal of this study is to make students aware of factors veering away from solely genetics that aid in the growing obesity epidemic.
A Developmental Perspective on 3D Virtual Marriage: From Courtship and Honeymoon to Companionship and Potential Dissolution
Caitlin Bryson

The purpose of this research is to examine the growing trend of online marriages, specifically those between two user-controlled avatars in an online environment. For the purposes of the study, I am examining marriage between avatars in Second Life, a 3D immersive environment. I am conducting a number of online, in-world interviews with subjects who are currently or have previously been married in Second Life. These interviews include in-depth discussions of dating/courtship rituals, engagement, marriage, and divorce (where applicable). The information gathered during these interviews will be organized and coded for analysis. The major focus of analysis will be the comparison of the “timeline” of online marriages (milestones and important events as well as duration) with that of traditional, real-world marriages.

Aggression and display rates in the Siamese Fighting Fish, *Betta splendens*
Katrina Bodewig, Katie Hornick

Communication often involves more than a simple sender-receiver dyad, as more than one individual may detect signals. The presence of additional individuals has been shown to change signalers’ behavior. *Betta splendens* (Bettas) are fish from the family Anabantidae that are found in the waters around the Malay Archipelago of Southeast Asia. Male Bettas are known for their long tails and fins used to display aggression towards other males and to attract receptive females. Females, on the other hand, have smaller fins and very rarely attack other Bettas. The stretching of the fins and opening of the gills enables the male to look twice his resting size and this display is called flaring. In this study, we will look at the differences between male Betta responses to single and groups of male Bettas, to female Bettas, and to another species of fish that is not a natural competitor, goldfish, both in singles and in larger numbers. We expect males to behave increasingly aggressively to larger numbers of Bettas, but to behave differently to increasing large groups of females and goldfish, depending upon perception of attraction and threat.

Alzheimer’s in Drosophila Melanogaster: Testing a Model System
Theresa Graebener, Andrew Heslin, Tony Wavrin

The extensive genetic tools available in Drosophila make it an attractive system for studying human disease. In mammals, Alzheimer’s syndrome is correlated with the appearance of aggregating Aβ42 polypeptide in the brain. Our collaborator at Loyola Marymount University has isolated a polypeptide that prevents aggregation in vitro. We are working to test this polypeptide in vivo in Drosophila melanogaster. The Alzheimer’s model in Drosophila melanogaster compares survival of flies carrying two alternative artificial genes that encode for the aggregation of the polypeptide (Aβ42) and a non-aggregating control polypeptide (Aβ40). The Aβ42 flies have reduced life spans and activity levels compared to the control lines, both those expressing Aβ40 and expressing a transmembrane form of the protein, C99. As a first step to demonstrating effects of the artificially constructed polypeptides in vivo, we have attempted to demonstrate the Aβ42 effects in Drosophila melanogaster that were reported in other labs. In our hands the Aβ42 expressing flies showed only a slight shortening of life span compared to C99 control lines and both lines began to die much earlier and died more rapidly than reported. Over
the summer, we adjusted our experimental parameters. In this paper, we report on experimental conditions, which extend the survival of both the experimental and controls. Under these conditions, the “Alzheimer's flies,” those expressing the Aβ40, show a significant decrease in survival. We are now in a position to test the polypeptides in vivo.

**An Exploration of the Effectiveness of Surgery and Rehabilitation in Growth Plate Fractures**

Keiosha Hunt, Hannah Pinnell, Lauren Weston

Orthopedic injuries are prevalent in high school athletics. During a high school football game, a 14 year old athlete was preparing to catch the ball. While his left foot was planted on the artificial turf field the athlete’s upper body was struck by an opposing player. Upon impact, his tibia and fibula (shin bones) were fractured across the epiphyseal (growth) plate. The athlete underwent surgery to repair the fracture followed by an extensive rehabilitation program. The mechanism of injury, an anatomy overview of the lower leg types of epiphyseal plate fractures, treatment techniques, and complimentary rehabilitation programs will be discussed. Exploration of the unique circumstances surrounding the injury and the process behind repairing epiphyseal plate fractures will be included.

**Analysis of a volumetric night sky radiator**

Jose Davila, Yaurel Gonzales, Ruby Rubio, Sara Tung

The purpose of this thermal analysis project was to design and analyze Night sky radiators. Night sky radiators are used as alternative methods to cool buildings at night, which perform most efficiently in a clear sky and dry climate. It is important to study and improve such methods in order to conserve energy and reduce green house emissions. Night sky radiators primarily rely on radiation to transfer heat to the sky. In this experiment, a scaled down Night sky radiator was created and tested within a test environment that simulated a clear night sky. Thermocouples were setup in various locations in the experiment to collect data. Different mass flow rates were used to gather a larger range of data for analysis. Collected information and data were used to perform energy balance and heat transfer due to radiation of the system. The data and conclusions made will give better insights into developing more effective models of night sky radiators.

**Analysis of the abundance and distribution of resistance genes in bacteria in the Ballona Wetlands.**

Daniel Garcia, Samantha Hurndon, Sarah Patno, Kevin Ramirez

Antibiotic resistance genes (ARG) have been classified as a biological pollutant, which poses both a public health risk and environmental threat. The presence of these genes in coastal wetlands in Southern California has been documented but determining the extent of their influence on human health and ecosystems depends on an assessment of their presence, persistence and dissemination properties as well as the host bacteria which harbor them. As a first step in assessing whether they pose a threat in the Ballona Wetlands, we conducted studies to quantitatively measure their relative abundance. Using replica-plating techniques, six thousand bacteria colonies were screened for multiple-antibiotic insensitivities resulting in approximately 150 strains with 5 or more antibiotic insensitivities being isolated for further molecular probing. Since these strains are more likely to carry ARG, we developed qualitative molecular methods to detect the presence of ARGs within our isolates of interest. A library of different validated tetracycline ARG primer pairs has been constructed to screen DNA from the isolates
and a number of strains have been shown to carry different tetracycline resistance genes. We will report on the results of our testing these isolates, the progress in creating libraries for other common antibiotic resistances and the identification of possible human pathogens harboring multi-drug resistance genes.

**Applying Authenticity To Presidential Candidates**
Christian Chavez

This presentation aims to give an explanation of authenticity through the works of Soren Kierkegaard, Frederick Nietzsche, Jean-Paul Sartre, and Bernard Lonergan, and to apply their notions of authenticity to current political figures. Authenticity is a defining characteristic of leadership, and many Americans would say that authenticity is a desirable trait for political leaders. For this reason this presentation examines the works of these philosophers and their ideas of authenticity in order to gauge to what degree Barack Obama, Mitt Romney, Newt Gingrich, and Ron Paul could be considered authentic. "The Authenticity to Presidential Candidates" is a work which seeks to define and apply notions of authenticity in order to better understand current U.S. presidential candidates.

**"Beet the System!" A Comparative Case study on Youth Organizing Against Food Injustice in Urban Communities**
Taunishia Cruz, Lauren Frazier, Bailey Moon, Shannon Oki, Aundrey Page, Glenn Reyes, Robyn Rutherford, Monica Zandi

The Funders’ Collaborative on Youth Organizing (FCYO) recently launched a new funding initiative that supports youth organizing groups to address the root causes of childhood obesity and food injustice. More specifically, through a cohort based grantmaking strategy that includes funding, networking, and documentation. FCYO’s initiative, known as “ReGenerations: Healthy Communities” will support organizations to develop youth-led campaigns to create systemic change and win policy victories that address childhood obesity. The goals of this initiative are twofold: 1) To significantly reduce childhood obesity by supporting youth organizing with young people from the most affected communities to address the structural and root causes of this epidemic; 2) To connect local youth organizing groups working on food justice issues in order to lay the groundwork for a national network that connects local and national organizing efforts and intersects with other social justice networks. Our poster board presentation will submit a comparative case study analysis of 3 unique youth organizations from across the country that are affiliated with the initiative; results feature data acquired from structured interviews administered by student-researchers from Loyola Marymount’s Psychology Applied Research Center. In highlighting three organizations, our research will reflect and evaluate their distinct but assorted campaign targets such as the school district, the city (as a whole), and local neighborhood(s). Our analysis will exhibit the accomplishments and challenges associated with grassroots youth organizing at these levels. As such, the data will reveal valuable evidence and knowledge pertaining to the nuanced modes of grassroots youth organizing as well as the potential challenges associated with enacting public health policy change through youth led action toward different decision-maker targets in the community.

**Beyond Womanhood: Complicity and Action in Nazi Germany**
Rhiannon Koehler
“Beyond Womanhood: Complicity and Action in Nazi Germany” is a study of women’s roles in Hitler’s Germany. “Beyond Womanhood” builds off of the research done by historians like Gisela Boch, Renate Bridenthal, Atina Grossmann, and Claudia Koonz. Many historians, like Gisela Boch, point to the Nazi regime as one that resulted in the victimization of all women. They argue that because all women are victims of the Nazis, none should be held responsible for the Nazis’ legacy. I argue, however, that complicity and action in the Nazi regime varied for women, and that they should be viewed in light of their individual contributions to society and the regime rather than generalized gendered expectations of action. The ideological framework espoused by leaders of the National Socialist Party (NSDAP) provided many different avenues for women, chief among which was funneling women into the “cult of the domestic.” Upon close examination, I argue that even within the “cult of the domestic” women were able to make autonomous decisions and work politically. Additionally, I discuss the ways in which NSDAP policy intersected with women’s lives, and explore the lives of women who challenged the most prevalent gender norms by working in what was perhaps the most abhorrent public sphere: that of the concentration camp. I conclude that women’s complicity and action should be judged by their choices, actions, and the intersection between their work and their level of their autonomy.

Cadmium Accumulation and Resistance in *Drosophila melanogaster*
Ellie Altomare

The fruit fly, *Drosophila melanogaster*, demonstrates sensitivity to heavy metal exposure that is both variable and selectable. Our lab has demonstrated significant differences in survival of wild-type *D. melanogaster* raised on varied concentrations of Cadmium-enriched food and has measured cadmium levels in treated flies using mass spectrometry. Preliminary data from flies across five generations of exposure indicate that descendants of flies that survived exposure to high levels of cadmium are more likely to survive high exposures, meaning that resistance is selectable. Furthermore, cadmium levels may decline in exposed flies selected for resistance compared to sensitive flies exposed to the same concentrations of cadmium. The cadmium buildup, or lack thereof, in exposed flies may indicate the mechanism of resistance in flies, sequestration or metabolism. The ability of flies to develop resistance to heavy metals may have significant impact on food webs in contaminated environments and may also indicate levels of exposure to higher trophic levels. The local Ballona wetlands are contaminated with heavy metals, particularly cadmium, lead, and copper. We are collaborating with other labs to establish the role of *Drosophila* heavy metal load in predator heavy metal exposure. Interestingly, we have also observed an increase in copper levels in flies selected for cadmium resistance, which will be an area of further investigation.

Can Avatars Pass the Turing Test? Intelligent Agent Perception in a 3D Virtual Environment
Andrew Forney

In his classic 1950s paper, Alan Turing proposed what is widely considered to be the essential question in determining artificial intelligence: An intelligent agent, or “bot”, is said to have passed the Turing test when it is mistaken by a human judge to be a human intelligence in a certain percentage of chat-based interactions. The current research provides the first assessment of this question in a 3D virtual environment. Specifically, it asks whether or not a person operating an avatar can accurately determine whether he or she is interacting with another avatar that is controlled by a human versus machine intelligence. In addition, the present research adds a time dimension to the Turing test. In the original test
situation (and all subsequent implementations) a human judge made a yes or no determination regarding whether he or she was interacting with a human or machine intelligence based upon a fixed time of interaction, whereas the current investigation looks at whether the test can be passed across different amounts of interaction (i.e. from 8 - 12 exchanges). Finally, there is a third advance in the present application of the Turing test: In the 3D environment, the judge is robbed of the initial premise that they may be interacting with a bot versus a human controller, as human versus computer controlled avatars are visually indistinguishable.

Changes in Reproductive Timing: An Analysis of California House Finches
Tauras Vilgalys

House finches breed over a wide geographic range covering much of the United States and Mexico. Historically, this nesting has shown broad synchrony with house finches breeding from March to July. In a number of other bird species, there have been trends to breed earlier in response to changing environmental conditions over recent decades. This study undertakes a detailed examination of the breeding season of Californian house finches examining the trends in reproductive timing over time. Data were taken from historical nest records maintained at the Western Foundation of Vertebrate Zoology from 1882 to 2007. Examining the earliest and latest reported nests across decades, there is no trend in the onset of breeding. However, the breeding season has been terminating earlier in recent years. One possible explanation for this decreasing trend is the temperature inhibition of reproduction. From an analysis of historical temperature data, there appears to be a relationship between increasing temperature and the earlier termination of reproduction. Future research will directly test for an effect of temperature on reproductive termination using live birds and a more thorough comparison of nest records to historical temperature data.

Characterization of Burkholderia tuberum Nodulation Mutants
Marla Dallal

The symbiotic relationship between the family Rhizobiaceae, alpha-proteobacteria, which include many species of rhizobia, and plants of the Leguminosae, has been well-studied and had been the only known bacteria with the capability of forming nodules. Under nitrogen-limiting conditions, capable plants form a symbiotic relationship with a host-specific strain of rhizobia. Rhizobia cause the formulation of nodules on legume plant roots inside which the bacteria can convert atmospheric nitrogen to ammonia, a form that is readily utilized by plants. In return, rhizobia receive organic nutrients such as, carbohydrates and sufficient oxygen, from the plants. Recently it was demonstrated that Burkholderia tuberum, a member of the beta-proteobacteria, can nodulate some legumes. A library of transposon tagged mutants of B. tuberum was generated and screened for exopolysaccharide mutants. Two B. tuberum mutants, discovered to be defective in EPS were determined to have mutations in the genes coding for glutamate synthase (Bt-3) and trigger factor (Bt-5). With these mutants, further investigation will be carried out as to their ability to nodulate plants and form biofilms, both processes of which EPS is involved. The mutants were complemented by expression of the wild-type copy of the genes. Cowpea and cow bean plants were inoculated with both the Bt-3 and Bt-5 mutants and it was observed that no nodules appeared on the plants inoculated with Bt-3, while those inoculated with Bt-5 did produce nodules. Polymerase chain reaction was carried out to amplify the wild-type and cloned into a pJET vector. The genes were sub-cloned into a pLAFR vector and mated with B. tuberum mutants. If complementation has
occurred, the wild-type, EPS producing phenotype should be observed. The complemented mutant can then be used as a control in subsequent studies of nodulation and biofilm formation.

**Charpy Impact and Fracture Toughness Testing of Hydrogen Charged 4340 Steel**
Nour Abisamra, Brent Bates, Jose Davila, Yauriel Gonzales, John Jabbra, Marc Papakyriakou, Ruby Rubio, Sara Tung

The purpose of this research was to study the effect of hydrogen charging on the toughness, as measured through Tensile tests, Charpy Impact tests, and ductile-brittle transition temperature testing of AISI 4340 steel. AISI 4340 steel samples were austenitized, quenched, and tempered at different temperatures for two hours ranging from 257 to 593°C to achieve strength values ranging from 145 to 250ksi. Hydrogen content will be introduced through Cadmium at 0.002mm, 0.02mm, and 0.05mm thickness of coatings. All samples charged and un-charged will be tested by evaluating their properties. The advantage of the Tensile tests and Charpy Impact tests in comparison to conventional static and slow strain rate tests used to assess hydrogen embrittlement is that can be performed quickly and inexpensively. 4340 steel is widely used in the aerospace industry, however, it has low resistance to stress corrosion cracking and its susceptibility to hydrogen embrittlement limits its application. Hence, it is important to perform studies to understand and improve the ability of 4340 steel.

**Cinematography: Capturing the Ineffable Through the Physical**
Adam Lee

Cinematography is a new hybrid art form that combines artistry and craftsmanship. Within this unique combination, cinematography is able to reach past conventional forms of communication. Given social conditioning we are bred to view particular images in certain ways and thus we are able to draw meaning from them. It is my belief that cinematography is able to communicate an “ineffable” emotional significance through its physical representation and interpretation of an image.

**Civil Engineering Design: Water Treatment Facility**
Hannah Thames

Along with two other civil engineering senior students, I am designing a potable water treatment plant to conform to the Surface Water Treatment Rule, the Interim Enhanced Surface Water Treatment Rule, and the Disinfectant/Disinfection By-products Rule. In order to use source water originating from the California Aqueduct, the site layout will be designed on a plot of land in San Bernardino County. All details and layouts of the project will be drawn topographically accurate using the AutoCAD mapping program. The first portion of the system is a train of ultrafiltration membranes for filtration. Membrane technology is the most effective and the most innovative method of filtering water, so its use in this project serves to improve our understanding about the latest technology that is commonly used in newly constructed water treatment plants today. The second portion of the system is a chlorine contact chamber for disinfection. Screens, pumps, chemical feeds, storage tanks, and a backwash system will also be designed for a complete system design. An Initial Environmental Study conforming to the California Environmental Quality Act (CEQA) will assess any potential effects this system will have on its natural surrounding community. A thorough economic analysis of all the equipment, labor, and materials needed for the project will also be conducted. Overall, the project will simulate a fully functional water treatment plant design.
Code-switching: An Expression of Non-conformity
Lauren Walsh

Authors from Spanish-speaking communities in the United States have always had to confront what anthropologist Jane Hill calls an encroaching “white space,” a culturally and historically privileged space that discourages the public celebration of cultural differences. Early Chicano authors such as Tomás Rivera and Ronaldo Hinojosa-Smith chose to write their early works entirely in Spanish, but the younger generations of Chicano and Latino writers, such as Reyna Grande and Junot Díaz, chose to express their non-conformity with the privileged space given to the English language by unapologetically incorporating code-switching between English and Spanish into their novels. This paper focuses on two novels that implement code-switching in various degrees, Viramontes’ Under the Feet of Jesus and Hinojosa’s Mi querido Rafa, to demonstrate how Chicano literature has evolved as a cultural product that pushes back against the “white space” by utilizing Spanish and placing it on an equal level as English in the text. Both authors allow their bilingual culture to manifest itself in the most authentic way—through their characters’ use of Spanish and English—and as a result they create a cultural setting equal to this once dominant and historically advantaged “white space” against which they are constantly fighting.

College-Age Dancers Have Stronger Bones than Runners and Controls, Despite Low Energy Availability
Zakkoyya Lewis-Powell

Osteoporosis is a rising issue amongst postmenopausal women and one of the best ways to combat this disease is to develop a healthy bone mineral density (BMD) as a young adult. It has been shown that BMD and menstrual function are influenced by energy availability (EA). EA is kilocalorie (kcal) consumption minus kcals expended through activity. The inter-relationship amongst bone health, menstrual status, and diet is commonly known as the Female Athlete Triad. The purpose of this research study is to evaluate the influence of EA on BMD in runners, dancers, and controls. We measured BMD at several different sites in 39 subjects (13 runners, 11 dancers, and 15 controls) using dual-energy x-ray absorptiometry (DXA, Hologic Explorer, Waltham, MA). We also measured daily dietary intake using the Block 2005 Food Frequency Questionnaire (Nutrition Quest, Berkeley, CA) and energy expenditure over an average of four days using an accelerometer (Philips Respironics Actical, Bend, OR). The average age of our participants was 19.8±1.1 years. Runners were recruited from a NCAA Division I cross-country team, dancers were actively pursuing a BA in dance, while the controls were normally-active college students. When examining the EA between each group there were no significant differences (Dancers=29.9±17.0 kcals/kg lean mass, Runners=24.2±8.0 kcals/kg lean mass, Controls=31.9±13.7 kcals/kg lean mass). However, an ANCOVA (with BMI as a covariate) revealed that dancers have significantly higher BMD at the anterior-posterior spine (mean=1.06±0.10 g/cm²) than runners (mean=0.94±0.07 g/cm², p<0.05) and controls (mean=0.97±0.09 g/cm², p<0.05). Dancers (mean=0.97±0.13 g/cm²) also have significantly greater femoral neck BMD than controls (mean=0.85±0.10 g/cm², p<0.01) however the BMD of dancers at the hip was similar to the runners (mean=0.88±0.06 g/cm²). On the other hand, groups had similar BMD at the whole body. According to previous research, EA for all groups was below recommended. Our research shows that despite the low EA, dancers have healthy BMD. This implies that the loading nature of dancing has a greater positive influence on bone health than EA and running.

Computational Investigation of Aqueous Chemical Oxidants
Green Chemistry is the concept of performing chemical reactions under less wasteful or hazardous conditions. There are 12 principles of Green Chemistry, one of which is “use a catalyst.” A catalyst serves to reduce the required energy and time necessary to reach the desired products. Currently a focus of catalysis studies has been the oxidation of water. The catalysts employed attempt to mimic photosystem2 of the photosynthesis process using mono- or binuclear metal centers and sunlight, with the intention of producing hydrogen fuel. This mechanism includes a chemical oxidant that serves to accept electrons removed along the steps of the catalytic cycle. Our analysis applies density functional theory calculations to monitor the energy of wave functions along various steps of these catalyst reactions. These calculations provide insight into the functionality of these catalysts, complementing laboratory research techniques. Our preliminary results indicate possible alternatives to the current fashion of using Ce(IV) as a chemical oxidant. These calculations also provide insight into the nature of the underlying physics of such reactions.

Computational Investigation of Metal Ionization Potentials in Gas and Aqueous Phase
Juan Melendez

Water oxidation – splitting H2O into hydrogen and oxygen – presents a possible “ideal” alternative fuel source if it can be powered by sunlight similar to plant photosynthesis. Ruthenium is currently employed in synthetic catalysts for water oxidation designed to mimic the biological process of photosystem II. First principles density functional theory (DFT), MP2, and CCSD(T) calculations were employed to solve the quantum mechanical Schrödinger equation. Individual atoms, both neutral and cationic, were calculated to compare to known experimental values so that the accuracy of the particular level of theory could be investigated, as well as the numerical implementation, i.e., the basis set in which the wavefunction is represented. The calculated ionization energies of twelve different metals in gas phase were compared with experimental values and best agreement between calculation and experiment was found for the DFT calculations in most of the metals. The solution phase ionization energies were also calculated to provide preliminary insight into robustness of calculated values related to water oxidation catalyst studies.

Computational Investigation toward a Predictive Understanding of Ruthenium Water Oxidation Catalyst Design
Brian Lee, Bradley Neddenriep

A computational comparison of key steps along the proposed water oxidation pathway for ten distinct mononuclear ruthenium catalysts is presented. Total energies and optimized structures are determined via density functional theory calculations. These are analyzed for catalyst structural stability, energetic comparisons to experimentally measured voltages in highly acidic conditions, slight changes in the charge and bonding at the active metal site, and other features. A somewhat complex picture emerges with different steps along the oxidation cycle being impacted in divergent ways depending on the nature of the ligand modification. The results reinforce the notion that in such complex mechanisms with relatively large molecule catalysts, a delicate balance between energetic optimization and catalyst stability at multiple steps along the cycle may be critical for practical performance considerations.
In this experiment the power and energy consumption of multiple desktop computers in the College of Science and Engineering lab was investigated. Since the computers were left plugged in and left in the “on” mode every day, much energy went to waste thereby increasing electricity costs. The goal of this analysis was to find and implement a new policy for the computers to follow so that power and energy consumption would be reduced, as well as electricity costs. Using a Watts Up? Pro watt meter, power and energy data was logged over various time frames to be analyzed. The majority of energy saving was found to be at night and on Saturday and Sunday. Typically from the hours of 9 am until midnight, Monday through Thursday, the computers experienced peak usage. All computers fell into the sleep mode from 12 am until 9am, whereby energy consumption was reduced. However, energy consumption was found to be further reduced when going into standby mode rather than sleep mode during these dead hours. The difference in power between standby mode and when the computer was turned off was identified as one watt. Standby mode was able to resume to current work after logging back in and avoided having to restart the system. Hence it was recommended that all the computers in the CSE lab implement the standby mode instead of the sleep mode in order to conserve energy and reduce electricity costs.

**Conformal Gravity and Related Weyl Tensors as an Alternative to Standard General Relativity**

Zily Burstein

To account for recent discoveries that might contradict Einstein’s General Theory of Relativity, scientists posed the highly debated theory of “dark matter” and “dark energy,” claimed to account for the majority of the Universe. Alternatives to dark energy and dark matter either retain and add to Einstein’s theory or completely stray away from this standard. P. Mannheim and D. Kazanas reject the notion of dark matter/dark energy and propose an explanation for these cosmological puzzles using gravitational equations derived from a geometry proposed by Weyl in the early twentieth century, a complex and previously discarded system largely based on tensors. Mannheim and Kazanas solved these derived equations, a solution which preserved Einstein’s Theory of General Relativity at the smaller scale, but which deviated from it at large galactic distances. This new theory is called Conformal Gravity. Using a Mathematica program developed in collaboration with Dr. G. Varieschi, I have been testing Mannheim and Kazanas’ findings for different coordinate expressions of the line element and the related tensors. As of now, we have found that their results do match those obtained by our Mathematica program. After concluding this testing phase of the project, we will use these results as a basis for applications of Conformal Gravity to modern Cosmology, i.e., to study the nature and evolution of the Universe.

**Contagion: The Freshmen Mycobacteriophage Project**

McKenzie Kerr, Paola Lockwood

Bacteriophages, being one of the most abundant organisms on Earth, have an estimated population of $10^{31}$ living phage. These organisms are highly diverse and potentially useful in the fields of bioinformatics and genetic engineering. However, in order to utilize these abundant life forms we need to gain insight into their genetic structure, gene functions, interactions with bacteria, and similarities to other annotated phages.

Our research focuses on mycobacteriophages, whose host bacteria is *Mycobacterium smegmatis*. By studying this phage we can gain information about its DNA and its mechanisms for host infection, which will then provide insights into the characteristics of other mycobacteriophages such as those that infect...
M. tuberculosis and other pathogenic relatives. We, as members of the Howard Hughes Medical Institute (HHMI) Science Education Alliance (SEA) Phage Program, isolated, purified, cultivated, and examined a novel phage, Contagion, discovered in soil on LMU’s campus. Contagion, as we discovered through restriction enzyme mapping, belongs to the phage cluster E. Its siphoviridal morphotype confirms this finding. We are currently sequencing a part of its genome using BLAST, DNA master, GeneMark, Glimmer, and other bioinformatic programs. We will discuss the isolation and characterization of Contagion and detail our progress in using these bioinformatics tools to annotate Contagion’s genome and assess its role in mycobacterial ecology.

Data Encryption Over Elliptic Curves
Alyssa Bowden, Andrew Kimball, Kameryn Williams

The Data Encryption Standard (DES) is a symmetric key encryption algorithm that was published by the National Bureau of Standards in 1977. Symmetric key encryption algorithms transform strings of characters into encrypted strings of the same length, which requires a user-provided secret key. DES and DES-like encryptions are commonly used in electronic financial transactions, secure data communications, and the protection of passwords and PIN’s against unauthorized access. DES has been the model for all successive symmetric key encryption systems, but it has been implemented only over the set {0,1} with addition modulo 2 as the group operation. In this research project, we developed a new simplified version of DES (called E-DES) by replacing the usual operation with elliptic curve addition. Though mathematically more complex, elliptic curves allow smaller key sizes and higher speeds to produce equivalent security. We also developed software that implements the cryptosystem, which allowed us to analyze the security of E-DES and confirm our results through computation. As in the original DES, the structure of E-DES includes an expander function, a key schedule, and an initial and final permutation. E-DES is designed with two Feistel rounds and three substitution boxes (S-boxes), which are the cryptosystem’s main source of security. For E-DES we constructed S-boxes with specific properties that allow them to mimic the behavior of the S-boxes used in the original DES. In this way E-DES has become both a practical and an educational tool.

Defining Hypoxia Tolerance in Marine Organisms
Samantha Bates, Justin De Lannoy, Kellen Flanigan, Jennifer Okonta, Ashley Rosales, Katherine Russell, Gregory Trapp

Hypoxia is one of many natural challenges in the marine ecosystem that are sources of environmental stress for organisms. Hypoxia occurs when oxygen levels fall below the level required to sustain aerobic cellular processes due to oxygen demand exceeding oxygen availability. Expanding hypoxic conditions may result in a significant loss of biodiversity and may also have adverse effects on the organisms that do survive, such as reduced fitness, physiological stress, reduction of suitable habitat, and increased vulnerability to predation. Often an organism’s ability to survive a hypoxic zone is defined by median lethal concentration (LC50) values, which have been commonly expressed in units of oxygen concentrations of water (mg O2/L). However, the partial pressure of oxygen (mm Hg) in the water is a more physiologically relevant value, because oxygen diffuses down gradients of partial pressure. Therefore, calculating partial pressures as a method of examining hypoxia is a more precise and relevant method to determine how organisms thrive in their natural environments. Previously published studies
on hypoxia were reanalyzed in order to determine partial pressure equivalents of reported LC\textsubscript{50} values. Values of temperature, salinity, body mass, and experimental duration were extracted from original publications. Then we estimated the effects of these variables on oxygen tolerance (LC\textsubscript{50} measured in mm Hg). Our results verified that there is a wide range of oxygen pressure tolerances for marine organisms, but partial pressure had greater power than oxygen concentration in separating groups of marine organisms based on their ability to tolerate hypoxic conditions.

**Design: A Catalyst**

Kevin Ma

Graphic design can be an effective tool in overcoming the ongoing discrimination and inequality towards the LGBT community. The ubiquity of graphic communication, its ability to convey messages to a mass audience in a poignant and memorable way suggests that it is the appropriate medium to effect social change in the dissemination of information around gay rights. My self-portrait project “My Blood Is No Different,” is a visual communication campaign that presents an opportunity for the viewer to come face to face with the very real issues in the prejudicial uses of a shared blood supply between homosexuals and heterosexuals. The visual metaphor of blood tears and the vernacular of the red cross are used to communicate both my personal experiences around this issue, and a broader universal message for all homosexual men. My visual strategy is informed by the activist collective Gran Fury who in the 80s graphically educated a broader public about the AIDS pandemic. Their provocative “SILENCE = DEATH” and “Read My Lips” campaigns presented some of the first public images of gay intimacy. My objective is to engage the viewer in a deeper understanding that normalizes LGBT diversity.

**Design: Catalyst**

Samir Naimi

Design has the power to persuade the masses, it evokes emotions, leads movements, infuriates and inspires. In the wrong hands, as in the case of certain propaganda, it can misdirect and manipulate, but when design is used for a worthy cause, it becomes a powerful tool for motivating behavior and leading to progress. I am interested in the potential that design has to positively influence people’s beliefs and catalyze change in the world. Towards that end, my project analyzes the societal influence design has had on the past, present, and in the future.

My project illustrates the power of design as a force for social change, through an analysis of political propaganda campaigns during the 19th, and 20th centuries. For example, the United States war propaganda during the civil war and both world wars. I will also examine current propaganda messaging around the branding of the 'Change we can believe in campaign' of President Barack Obama, as well as look at the impact of graphics in popular culture upon his campaign. I will further explore the positive applications of graphic design and how good design can and has enacted change within society.

Developing Greenroofs for Southern California: A Comparison of Heat Tolerance for Dudleyas and Sedums
Green roofs provide a wide range of ecological benefits in urban settings by increasing energy efficiency, preventing stormwater runoff, and reducing urban heat island effects through evapotranspiration. In developing greenroofs for southern California it was found that the native Dudleyas had greater survival during the summers than the industry-standard Sedums. This study further investigated the response of both Dudleyas and Sedums to heat-stress. Whole pieces of tissue collected from plants in greenroof mesocosms at LMU were subjected to dry heat from 20°C to 55.6°C for 1 hour. Tissue samples were subsequently cut into 3-cell-thick sections and placed in 1% neutral red solution in a 7.5 pH 0.2M phosphate buffer (w/v) for 10 minutes and then rinsed in buffer for 10 minutes. Stained cells were counted using a bright-field microscope. The ratio of stained cells to unstained cells showed the reaction of each species to increased temperatures and heat-stress. Neutral red is a vital stain and is not taken up by dead cells. At temperatures below 40°C both showed very high staining ratios. As the temperatures were increased above 40°C a decline in the number of stained cells was observed. At temperatures above 52°C both Dudleyas and Sedums showed a marked decline in cells stained as only a few cells survived. The Sedums showed a steeper decline of stained cells than the Dudleyas. The Sedum tissue had fewer cells stained at each temperature interval between 40°C and 52°C. This suggested that the Dudleya cells can withstand higher temperatures and heat stress.

**Discovery and Characterization of a Novel Bacteriophage TheRipper and Bioinformatic Analysis of Bacteriophage Contagion**

William Gendron, Mitchell Petredis

Mycobacteriophage are viruses that infect mycobacteria and in particular the model host, *Mycobacterium smegmatis*. Although bacteriophage are the most abundant entities on the planet, relatively little research has been conducted on them, even though the study of their diversity may reveal useful insights into evolution and microbial ecology. Through the Howard Hughes Medical Institutes’ Science Education Alliance (HHMI SEA) Program, we were able to purify, isolate, and characterize a single, unique phage, named *TheRipper* from the soil of the Loyola Marymount University – Westchester campus in the fall of 2011. To categorize this phage, we used an electron micrograph, PCR, and restriction enzymes to determine that *TheRipper* is a B4 cluster phage, whose members are lysogenic siphoviridae with cloudy plaques and non-contractile tails. Currently, as part of group project we are conducting bioinformatic analysis using programs such as BLAST, DNAMaster, and Phamerator to accurately map the genetic structure of the bacteriophage *Contagion* and carry out comparative analysis with other known phage genomes. We will discuss the isolation and characterization of *TheRipper* and describe our preliminary bioinformatics findings with *Contagion* in the context of its significance to evolution and microbial ecology.

**Discovery of Mycobacteriophage Contagion and comparing it to other Mycobacteriophage.**

Vishal Bhula, Jacob Pascual

Bacteriophage are the most abundant life form on the planet and are of great significance because of their role in many genetic and evolutionary processes. It is difficult to even find two phage that are nearly
identical in gene content and genome structure. Due to their abundance, diversity, and relatively small genomes, an analysis of their genomes can reveal a great deal about genetic evolution. Despite their abundance, however, relatively little genomic analysis has been undertaken. To expand our understanding of mycobacteriophage, bacteriophage that infect mycobacteria, we, as a part of the Howard Hughes Medical Institute (HHMI) Science Education Alliance (SEA) Phage Program, began a year-long research project to isolate and purify a single phage, from soil samples collected at LMU. During the fall, we isolated and characterized the phage Zoolander, which we discovered to be lysogenic, incorporating its own DNA into the bacterial host's genome. We also isolated and characterized Zoolander's DNA, and identified it as belonging to the C cluster of phages based on enzyme restriction mapping. When the semester came to a close, we selected one of the group’s phage, Contagion, a lysogenic E cluster phage, for sequencing over the winter break. Now, as part of a class project, we are collectively using bioinformatics and algorithms, such as GeneMark, BLAST, ARAGORN, SDfinder and Glimmer, to begin a comparative genomic analysis of Contagion’s genome and gain further understanding of phage DNA and the phage’s role in ecology and evolution. We will discuss the isolation and characterization of Zoolander and our preliminary findings on the bioinformatic analysis of Contagion.

**Discovery of the New Mycobacteriophage, “KatAttack”**  
Katherine Fu, Theodore Medling, Katherine Wikholm

Research in the most abundant life-form on Earth, bacteriophage, a virus that infects bacteria, is essential to understanding their role in evolution of bacteria. Phages have numerous applications in food processing and phage therapy. However, as significant as their role is in bacterial evolution, relatively little research has been done on bacteriophages. As a result, we are undergoing a yearlong research project to investigate the characteristics of a specific phage within Loyola Marymount University's campus. In fall 2011, a mycobacterial phage, named “KatAttack” was isolated and purified from its host bacterium, *Mycobacterium smegmatis*. This was done using plaque streaking, PCR, gel electrophoresis, and restriction digest. Currently, our research focus has shifted from purifying the phage to analyzing a specific phage’s genomic DNA. Analyzing the pattern of bands seen in the gel electrophoresis of genomic DNA cut by certain restriction enzymes we categorized our phage into Cluster A. Bioinformatic analysis of the phage’s genome allows us to identify the encoded genes as well as the relationship between our phage and those in the phage genome database. Using specialized programs such as BLAST and DNA Master, we can take a more intimate approach into the purpose and function of bacteriophage genes. We will be describing our progress in deciphering the genomic content of “KatAttack” and evaluate its evolutionary importance and role in ecology.

**Divergence of Nitrous Oxide and Hyperbaric Oxygen Induced Antinociceptive Effects in Mice**  
Christine Dupic

The antinociceptive effects of N₂O and HBO₂ have in common sensitivity to antagonism by κ-opioid receptor blockers, antiserum against dynorphin and inhibitors of nitric oxide synthase (NOS), guanylyl cyclase and cyclic GMP-sensitive protein kinase. These shared attributes suggest that N₂O and HBO₂ might have similar mechanisms of antinociceptive action. The present study was conducted to further compare these effects in an effort to differentiate between their mechanisms of action. The antinociceptive responsiveness of male NIH Swiss mice to N₂O and HBO₂ was assessed using the acetic acid-induced abdominal constriction test. Different groups of mice were pretreated systemically with either vehicle, the CB1 antagonist AM 251, the angiotensin-converting enzyme (ACE)-inhibitor captopril and the GABA antagonist SR-25531. Control (vehicle-pretreated) mice responded to N₂O and HBO₂ with a
robust antinociceptive effect. The HBO2-induced antinociceptive effect was sensitive to antagonism by captopril in a dose-dependent manner but resistant to antagonism by AM 251 and SR-95531. The N2O-induced antinociceptive effect, on the other hand, was sensitive to antagonism by AM 251 but was resistant to antagonism by captopril and SR-95531. These results suggest that, while N2O- and HBO2-induced antinociceptive effects both seem to involve an NO-cyclic GMP-protein kinase, G-dependent release of dynorphin that activates \( \kappa \)-opioid receptors, there are mechanisms that differentially modulate the antinociceptive responses, notably involvement of angiotensin converting enzyme (ACE) and CB1 but not GABA mechanisms.

**Dream Out Loud**  
Alex Salazar

Life is a rush. Everyday people travel millions of miles getting from one place to another - their reasons vary. But what most people tend to forget to ask is WHY. We move, but what do we move towards? We forget why we were originally moving and forget the dreams that drive us. Millions of people wake up every day, passing by the beauty around them, passing by people, trapped in routine. We forget to look around. We forget to look at ourselves and we lose sight of what matters most to us. Not all dreams are of a perfect life. It can be just a moment, or an experience. After all, it's those kinds of moments and experiences that define us. The purpose of this film was to ask questions about the audience's own dreams and inspire them to pursue what they've always wanted. If even one individual is inspired, the film is an enormous success. The documentary, “Dream Out Loud”, was shot while abroad in Europe.

**Dynamic Experimental Analysis of the Transmission of Nanoparticle Suspensions**  
Brian Higgins

The optical properties of nanoparticle suspensions in liquids have garnered significant interest recently for their potential use in applications ranging from biomedical imaging to solar energy harvesting. Although previous investigations have provided useful insight into the spectral properties of such suspensions they have been primarily limited to experimental investigation at room temperature. As these suspensions will be used in systems with significant variations in temperature it is important to understand the effects of temperature on the optical properties. Furthermore, the primary spectrometric technique used has considered only transmittance and not the effects of scattering. Here we investigate the effects of temperature on the response of TiO2, Ag, and Au nanoparticle suspensions in water utilizing an integrating sphere and heated cuvette. The optical properties of nanoparticle suspensions were acquired and the properties were tabulated and plotted to display the effect of temperature.

**Education and its Impact on the Political and Socioeconomic Well-being of Angelenos Following the 1992 Los Angeles Riots**  
Travis Amick, Gabriella Castro, Brendan Hughes, Fátima Murrieta
In April of 1992, urban unrest manifested itself in destructive riots throughout the most segregated and impoverished areas of the City of Los Angeles after the acquittal of the police officers charged with the brutal beating of Rodney King. Through this research endeavor, based on educational attainment, Angelenos’ perspectives about race relations, quality of life, violence, crime, and LAPD efficiency in their communities will be analyzed using Microsoft Excel and SPSS. By examining how Angelenos from different education levels (below high school, vocational education, college graduate, and post graduate) perceive these aspects of life in the City of Los Angeles, we can better understand the immense impression the LA riots left on Angelenos over the span of 15 years. Our findings will highlight the city’s need for an improved and more comprehensive education system, and an increase of local initiatives to strengthen the social and economic well-being of Los Angeles communities.

Effect of food cues on the hypothalamic-pituitary-gonadal axis
Nikki Javier

Organisms have evolved to assume reproductive readiness when conditions are opportune for breeding. This timing is achieved by physiological responsiveness to environmental cues such as temperature, water, and social cues. Specifically, environmental cues can stimulate the hypothalamic-pituitary-gonadal (HPG) axis in preparation for reproduction. In the first part of this study, we conducted a literature review to evaluate the extent to which mammals and birds are responsive to food cues to stimulate reproductive development. Our review indicates that changes in food availability (either quality or quantity) can affect luteinizing hormone (LH) secretion and gonad size across taxa. It is hypothesized that food cues are transduced to the HPG axis via their effects on the GnRH system, as is the case for photic cues. However, we found no studies that had examined the effects of food cues on the gonadotropin-releasing hormone (GnRH) system of the hypothalamus. Therefore, in the second part of this study we utilize immunocytochemistry to evaluate GnRH response to a food cue in a songbird, the pine siskin (Carduelis pinus). Here, we focus on female pine siskins, which show greater gonadal development in response to a preferred food (seeds) compared with a control diet.

Effect of Training Mode on Post-Exercise Heart Rate Recovery of Trained Cyclists
Kelia McDonald

During exercise the sympathetic nervous system controls body function, but after exercise the sympathetic nervous system withdraws and the parasympathetic nervous system takes over to restore the body to a resting state. The rate at which this happens is measured by heart rate recovery or heart rate variability post-exercise. PURPOSE: The goal of this study was to compare recovery heart rates of anaerobically trained and aerobically trained cyclists. METHODS: Anaerobically trained track cyclists (n=11) and aerobically trained road cyclists (n=15) underwent a maximal oxygen uptake test and heart rates were recorded at 1 and 2 minutes after exercise. HR_{Rec} was calculated by \((HR_{max}-HR_{min1/2})/(HR_{max}-HR_{resting})\) to obtain a relative change and as a simple difference between max HR and HR at minutes 1 and 2. RESULTS: The road cyclists showed faster HR_{Rec} at both minutes (25±12 bpm at minute 1, 64±11 bpm at minute 2) than the track cyclists (22 ± 8 bpm at minute 1, 52 ± 15 bpm at minute 2), but only the difference at minute two was statistically significant (p=0.028). CONCLUSIONS: Training mode showed statistically significant effects on the speed of heart rate recovery in trained cyclists. Greater variability in recovery heart rate at minute two than minute one suggests that heart rate should be monitored longer than one minute of recovery for a better analysis of post-exercise autonomic shift.
Effective Social Media Strategy: Combining Sociology and Business Theory
Phil Benavides

With 1 out of every 6 people in the world using social networks, it is clear that social media has become an essential aspect for any person, business, or organization. Unfortunately, even though people may be aware of this fact, due to a fundamental misunderstanding of social networking and its purpose, businesses and organizations have failed to harness the power and full potential of these networks. There is no “Social Media 101” handbook that can be referenced to find the answer, and when marketers began to dig through their traditional methods to find an answer, only to be met with failure, it became obvious that it could not be found in any business textbook. Using a combination of in-depth interviews from current digital marketers along with secondary network data, I discovered the key to social media could be unlocked through sociology.

Social networking is the digital world of our social lives, with the ability to communicate and connect with one another. In order for it to be used by a business or organization, I realized I had to find a balance between sociological and business theory, not only to be easily understood, but to be applicable and measureable as well. This study sought to create a visual method to justify and quantify which social networks would be most effective to accomplish an organization’s strategy or goal. The result created a method to rank and eliminate networks based on criteria while visually showing its effectiveness and cost.

Effectiveness of a Reality Based Therapy Program for Incarcerated Female Adult Offenders at CIW (California Institution for Women)
Lauren Frazier, Glenn Reyes, Monica Zandi

The rate of recidivism for adult female offenders in 2010 was 58%, after their 3rd year of release. This presentation explores the effectiveness and potential differences in psychological change as one advances through the Choice Theory® Connection Program, a reality- therapy based non-controlling, behavioral psychology designed for female offenders. The aim of CT is to learn how to recognize and choose external and internal acts which enhance life-satisfaction, and limit those which produce destructive intra-and interpersonal relationships. This study examined 2 cohorts of offenders with psychosocial problems; cohort 1 (n=58) were new to CT, while cohort 2 (n=38) had completed 70 hours of training. Participants completed 8 measures at pre- and post- CT treatment. The variables assessed included control and relationships with others, emotion regulation, stress, body responsiveness, anxiety, mindfulness, depression/happiness, and well-being. Correlation analysis, paired and independent sample t-tests, pre- and post- mean scores, Cohen’s d values and t-scores for the paired and independent sample t-tests, were used in analysis. Scale totals and subscales were assessed for significant differences. Mean comparisons provide evidence on the psychological change as one advances in CT. Cohorts differed in pre-training scores on the following 6 scales: emotion regulation; depressive symptoms; well-being; mindfulness and stress. Yet in each case, Cohort 2 showed less psychological change and greater resiliency. Significant improvements in emotion regulation, mindfulness, and stress were revealed for both cohorts at post-analysis. These results provide evidence toward the potential efficacy and promise of using Choice Theory to reduce stress, and increase mindfulness and emotion regulation with female offenders in correctional facilities.

Effects of Cadmium Intake on Green Lynx Spiders Peucetia viridians (Aranae, Oxyopide)
Aguinaldo Bree, Theresa Graebener, Austin Nguyen
The effects of heavy metals and other human contaminants have become an important consideration for environmental restoration and conservation. The effects of cadmium on growth and photosynthetic acclimation rates were investigated in the radish plant *Raphanus sativus* L. Plants were raised post-germination on nutrient solutions containing various concentrations of cadmium (0, 10, 20 μM CdCl₂) in sand culture. Plant height was measured throughout growth. Cadmium-treated plants were observed to have stunted growth rates in early exposure to cadmium, with higher growth in later vegetative stages. Leaf areas, measured at 20 days post-germination, were insignificantly largest in the lower cadmium concentration, likely due to a biostimulatory phenomenon, hormesis. Cadmium contents in the root and shoot systems were analyzed by mass spectrometry to investigate accumulation and transport of this heavy metal. Light response curves of plants from each cadmium concentration showed a decreased photosynthetic saturation as cadmium exposure increased. Cadmium was observed to significantly reduce photosynthetic acclimination rates in both concentrations of cadmium versus the controls by fourfold in the first change of light conditions from 600 to 400 μmol/m²s, and twofold in the second transition from 400 to 200 μmol/m²s. This reduction of acclimation may have detrimental effects on survival of plants in variable environmental conditions.

**Electric Urban Concept Vehicle**  
Evan DeVore, Angelica Kaprielian, Chase Platon, Juan Villanueva

We began designing this urban concept vehicle last September and are still in the process of modifying the design. Our main research focuses have been on the shape and layout of the frame, the drive train assembly, and the type of propulsion to use. After several iterations, the frame structure is now complete. We were able to optimize the frame to provide high strength, while still minimizing the weight. We are currently researching and designing the drive train assembly, including the steering and braking systems and the rear axle setup. After months of research, we have decided to power our vehicle with an electric motor and three large lithium ion batteries. This propulsion method will provide optimal efficiency and push our vehicle in an innovative, eco-friendly direction.

**Elliptic Curves and Cryptography**  
Megan Ly

In an era of global technology there is a growing need to be able to secure data and information using cryptography. As it turns out, the mathematics of elliptic curves has many applications in cryptography, both to encryption and decryption techniques. Examples of these include key exchanges, digital signatures, and factoring algorithms such as Lenstra’s Elliptic Curve Method. In this poster I will give the necessary background for understanding elliptic curves over finite fields, focusing on the algebraic structure of these geometric objects. I then explain how this structure can be exploited for new methods in cryptography including attacks on encryption via factoring, a one round three-party key exchange, and homomorphic encryption.

**Ending the Policy of Rape as a Tactic of War**  
Amanda Coolidge
Roughly 832,109 women have been raped due to the policy of rape as a tactic of war. Today, UNICEF estimates that 1,000 women and girls are raped each month. Rape is defined by the International Criminal Tribunal for Rwanda as a “physical invasion of a sexual nature committed on a person under circumstances which are coercive” and is classified as a war crime. The attacks on women’s bodies are meant to humiliate them, their families, and their communities. It is implemented during wartime to ensure that reconciliation between two communities will never be reached. Women are taken from their homes and dragged into rape camps, which are publicly known. There is no concrete solution yet proposed by the international community to prevent mass rape occurring in the future. This thesis will compare the genocide in Bosnia (1990s- tool of ethnic cleansing) to what is happening in the Democratic Republic of Congo (2000s- rebel and government warfare). This thesis will look specifically at the events that led to a failed government, how and why rape was used, and the United Nations’ response. This information will be compiled through secondary sources for the time period between 1990-2010. This thesis’s contribution will be to prove that by restructuring the tools that the United Nations already possesses, such as peacekeepers, to focus on pre-conflict intervention instead of post-conflict intervention, will serve to ensure that countries do not reach a point where mass rape becomes a realistic and beneficial tactic.

Energy Storage in Multi-functional Nanoparticle Dispersions
Sergio Gonzalez

The research project’s aim was to test different nanoparticle dispersions to measure the transient heat transfer effects. Applications for this technology are currently being created for improved electricity generation and heat storage from solar heat. By effectively increasing the amount of heat captured and the amount of time it can be stored, nanoparticle dispersions hold bright potential in improving the amount of energy we can capture and utilize from the sun. The research involved testing different nanoparticle dispersions to see which ones were most effective in carrying out these goals. The variables changed in the experiment were the size and volumetric concentrations of silver nanoparticles used. The dispersions were heated with an electrical power supply in a vial placed within an insulating Styrofoam apparatus. Temperatures were measured with thermocouples at various locations. After reaching a fixed temperature, the heater was turned off and the dispersions’ heat storage capacity over time was measured. Results reveal that particle size and volumetric concentration does influence the transient performance. Greater concentrations of smaller nanoparticles absorb and retain heat more effectively than larger nanoparticles at low concentrations. In conclusion, a great deal was learned on the thermodynamic and heat transfer characteristics of silver nanoparticles. The importance of surfactants and well dispersed nanoparticles for experimentation was also noted.

Effect of Tidal Changes on Water Storage and Quality in the Ballona Wetlands
Trent Burdin, Jenny Ching, Mackenzie Domann, Matt Fumo, Patrick Hodgkiss, Ben Horten, Cassandra Jacobsen, Shelby Kohalmy, Andres Lopez, Jeff Mandrell, Terrance Melemai, Brittany Moore, Kyle Peerless, Nathan Specht, Dustin Tagawa, Ricardo Tan, Christian Velasquez

The Programming for Engineering Education Community (PEEC) assisted in the Ballona Wetlands research effort conducted by the Center for Santa Monica Bay Studies. This project fulfills the PEEC program’s dedication to community service as well as using hands on engineering skills to solve real-world issues. The research effort consisted of collecting hydrologic and water quality data from the wetlands’ tidal channels that lead to Ballona Creek. Water velocities as well as cross-sectional data points
were collected and analyzed. The areas of selected cross-sections were calculated by using the data captured during the field effort and numerical integration. In addition to the calculations of the overall areas, the areas of the selected cross-sections were also calculated at a multitude of specific heights. These results were then grouped, graphed and coupled with regression analyses to determine reliable relationships between cross-sectional areas and water levels. The approach also facilitates the analysis of changes in storage or mass of water and pollutants. The PEEC group recommends that additional cross-sectional areas be measured to improve the technique proposed in this research project. It is also the PEEC group’s hope that this initial effort, in conjunction with Loyola Marymount University’s mission statement, will lead to a better understanding, appreciation, and service opportunities to help preserve the Ballona ecosystem.

English proficiency skills and working memory training in economically disadvantaged kindergartners at risk for reading problems
Judith Foy, Maribel Lopez, Hillary Mastrosimone, Erica Medina

Children with limited English proficiency are at risk for reading problems (Rampay et al., 2009) and may be deficient in working memory, which links with reading (e.g., Ardila, 2002). Until recent advances in computer technology (e.g., Cogmed), working memory training was not effective. Dahlin (2011) recently reported that Cogmed is associated with significant improvements in reading comprehension in older children (e.g., Dahlin, 2011). We examined the effects of Cogmed training on early reading in economically disadvantaged kindergartners at risk for reading problems (88% Spanish-English bilinguals). Kindergartners with low working memory (n = 24) were randomly assigned to receive free Cogmed training at the beginning of the school year or mid-year. The children received Cogmed training by staying after school for 40 minutes, five days a week for five weeks. Kindergartners (n = 24) at a comparable school, who received no Cogmed training, were matched with children who received Cogmed training based on age, gender, socioeconomic status, and working memory scores at the beginning of the school year. English proficiency was significantly correlated with working memory (Digits Backward subtest, r = .37, p = .009; and Nonword Repetition subtest, r = .36, p = .006). English proficiency was positively correlated with Cogmed start indices (r = .71, p = .015) and negatively correlated with Cogmed indices of improvement in training (r = -.69, p = .02). These findings suggest that kindergarteners who are at risk for later reading problems and have low English proficiency skills may benefit from working memory training.

Enumeration of bacteriophage and prokaryotic populations in an urban coastal wetlands (Ballona Wetlands) in Los Angeles County by epifluorescence microscopy
Salman Ahmad, Emma Kennedy, Jorrel Sampana

In understanding population dynamics of microbial populations, it is necessary to be able to directly count the number of viruses, bacteria, and other microorganisms from environmental samples. The environmental samples we are working with are from the Ballona Wetlands. To our knowledge, this is the first study of its kind which explores bacteriophage and other microbe temporal and spatial dynamics in a natural, urban coastal wetlands system. This is a method-development project in which we are modifying and improving a previously published procedure to work with samples from a wetland environment. Serial-diluted samples fixed with 0.02-um filtered formaldehyde and mounted onto 0.02 um pore-size Anodisc membrane were stained with SYBR Green I, a fluorescent dye which stains DNA, and mounted onto glass slides. They were examined and enumerated on an epifluorescence microscope.
using computer software. We hope to develop this as an efficient way to accurately estimate the relative numbers of microorganisms in the various environmental niches within the Ballona Wetlands so that the flux in abundance ratios of viruses to bacteria, as well as microorganisms can be compared. It is anticipated that this project will reveal fundamental information that is a foundation to examine and understand microbial population dynamism in an urban coastal wetlands ecosystem. We intend to present preliminary findings on the effectiveness of the methods we developed as well as preliminary enumeration data and its significance in the Ballona Wetlands.

Evolutionary Motivators: Male and Female Differences in Rating Facial Attractiveness
Chelsea Cowley, Sylvana Insúa Rieger, Paige Vaughn

Some theories of motivation rely on evolutionary factors. Based on previous studies, we examined the effect of eight motivational factors (altruism, appearance, commitment, legacy, physical, wealth, social exchange, and mental) on judging facial attractiveness. Participants (21 male and 32 female LMU undergraduates) viewed photos of faces from various ethnicities. The participants were asked to rate the attractiveness of each face on a scale of one to ten. Before each face was shown on a computer monitor, participants read a statement that related to one of the eight motivators either in a low/negative context (e.g., indicating low physical fitness) or high/positive context (e.g., indicating high physical fitness). A control condition involved no statement prior to the photo. Results showed effects in five of the evolutionary motivators (Mental, Commitment, Altruism, Social Exchange, and Legacy). In these, attractiveness ratings were higher in the high/positive context. This finding supports the viability of these evolution-based motivation factors. Gender did not interact with any of the motivating factors. However, there was a main effect of gender in altruism, social exchange, and physical fitness; females always provided lower ratings. One explanation for this finding suggests that females may be evolutionarily more selective when judging possible mates.

Expression of Non-skeletal mesenchyme Genes in Early Sea urchin Development and the Delta-Notch and TGF-B signaling Pathways involved upstream of mesodermal development
Jazmin Sevilla

Echinoderms and chordates are both deuterostomes, which makes sea urchins a critical model organism for studies related to evolution and development. In terms of developmental studies, sea urchins have been favored because they develop quickly, many optically clear embryos can be produced from a single set of parents and their genes are relatively simple to manipulate. *Lytechinus variegates,* the model organism being used in this experiment, has recently had its genome sequenced and its GRN is still being worked on. Fertilized eggs will divide until a blastula is formed. Eventually, the cells of the blastula sea urchin will become specified and will give rise to the mesoderm, endoderm, and ectoderm. Because sea urchins are deuterostomes, the archenteron will invaginate resulting in the formation of the anus before the mouth. This process is called gastrulation and eventually stops at the prism stage. After the prism stage, the embryo continues developing until it becomes a feeding, pluteus larva. Specification occurs early in sea urchin development and the GRN helps us to better understand the mechanisms of cell specification. The genes being studied in this experiment are Prox, GataC, Ese, and Gfi. Past experiments have observed that Prox, GataC, and Ese are expressed in the oral mesodermal region of the blastula and that Gfi is expressed in the aboral mesodermal half. Double In Situ Hybridizations were performed to show the boundaries among these oral genes and the aboral gene, Gcm. Nodal signaling plays a key role in restricting these genes to their designated expression domains during various stages of development. In this experiment, the drugs DAPT and SB431542 (SB) are used to manipulate signaling pathways in
order to contribute to the current knowledge of Nodal and Delta-Notch signaling during sea urchin development. SB disrupts Nodal signaling by preventing the ALK 4/5/7 receptor from sending signals to the Smad proteins, which ultimately prevents them from entering the nucleus and acting as transcription factors (Figure 1). DAPT works to disrupt Delta-Notch signaling by preventing the Notch intercellular domain (NICD) from being cleaved and therefore entering the nucleus (Figure 2). With these drugs, we are able to see the importance of the boundaries established by these genes and the effects that Nodal and Delta-Notch signaling have on the spatial expression of these mesodermal genes.

F

Failing Our Youth, Failing Our Future
Tracey Lincoln

Over the past century, the education system in the United States has gone from being top ranked to being ranked at the bottom of the leading education systems in the world (Programme for International Student Assessment, 2009). We can find the main reasons for this rapid decline embedded within the rhetoric surrounding and supported by the terms, actions and actors involved in the problem. Terms such as 'Dropout Factories' and the ‘Achievement Gap’ are used as rhetoric to describe the main viruses that are attacking the education system. With this in existence, and the fate of the future of our youth in limbo, a few questions arise—what characteristics make a child ‘worthy’ of a great education according to the actions and lack of action presented by the education system in the United States, and what will it take to eliminate the rhetoric that uplifts these stipulations? After researching all of the terms associated with this issue, and the ideologies that influence it, it is clear that students are not failing to meet their potential; it is the facilitating adults who are holding them back from reaching their full potentials. Again, when we fail at providing all of our youth with a valuable education, we are dooming ourselves, and our futures.

Female Body Size and Reproductive Output in the Green Lynx Spider *Peucetia viridans* (ARANEAE, OXYOPIDAE)
Mikayla Kemp, Mikayla Mowzoon, Kaylal Murata, Jasmin Takemoto

In this study, we sought to determine the relationship between female size and various measures of reproductive output in the green lynx spider *Peucetia viridans*. A total of 221 *P. eucetia viridans* females were collected with their egg sacs from Kenneth Hahn Recreation Area on seven sample dates between September and December 2011. Female size [carapace width (mm)], female weight (mg), and the following egg sac parameters were recorded: egg sac mass (mg), silk mass (mg), egg mass (mg), and number of eggs. These measures were used to calculate the average egg weight; the egg sac mass per offspring; the residual index (a measure of female body condition); and the relative clutch mass (an indicator of female reproductive effort). While the analysis of the fall 2011 data is not complete, we have found that clutch mass declined through the season, probably reflecting more limited prey availability for females as fall progressed. At the same time, the percentage of silk in the egg sacs doubled near the end of the season, perhaps to provide better insulation for the enclosed eggs with the onset of winter.

Fifteen Years of Adaptation: Analyzing Angelinos’ Sentiments in the Aftermath of the 1992 Los Angeles Riots
Erin Golightly, Fátima Murrieta
The 1992 Los Angeles (LA) riots were among the most violent and destructive societal cataclysms in urban America. This research examines how opinion regarding the 1992 LA riots has progressed in the past 15 years across the greater Los Angeles metropolitan region. A cross comparison study regarding Angelinos’ sentiments, based on their income and educational attainment, to their quality of life and riots and disturbances in their communities will be mapped and analyzed using Geographic Information Systems (GIS) software. GIS captures data, then manages and displays it as maps and charts to find relationships, patterns, and trends that will reveal how Angelenos’ lives have transformed following the LA riots. Furthermore, this study is paramount, as the findings will highlight what initiatives government officials and community organizations should undertake to improve the welfare of the City of Los Angeles.

First-Generation Students’ Perceptions of Academic Preparedness at Loyola Marymount University
Marisa Cervantes

Previous studies on first-generation students have characterized them as disadvantaged and at a lower level in their courses coming into college compared to their peers (Hudley et al. 2009 and Reid & Moore 2008). In my previous research, I have found that the experiences of Loyola Marymount University first-generation students do not always correlate with the existing literature, since many of these students attended private high schools or have taken steps to prepare for college. In this current study, I surveyed twenty-nine first-generation LMU students and asked about their perceptions of their college academic preparation. The results were in accordance with my hypothesis, i.e., first-generation students do feel academically prepared at LMU. As a contribution to the fields of higher education and the sociology of education, further research needs to be done on the growing community of first-generation students not only at large institutions, but small private ones, as well.

Formation of unimolecular G-quartet from N9-modified guanine derivatives
Joanna Demos

DNA G-quadruplexes represent a new, promising target of anticancer therapies. Our group is interested in studying the structure of these quadruplex conformers through the synthesis of various model compounds. Several N9-benzylguanine derivatives were synthesized via a key coupling reaction involving N2-acetylguanine and benzyl bromide derivatives. Our hope was that the guanine derivatives would exhibit self-assembling properties to form G-quartets. N^9-(3,5-bis(pent-4-enyloxy)benzyl)-guanine, N^9-(3,5-bis(hex-5-enyloxy)benzyl)-guanine, N^9-(3,5-bis(hept-6-enyloxy)benzyl)-guanine, and N^9-(3,5-bis(oct-7-enyloxy)benzyl)-guanine were synthesized from the coupling reaction of 2-N-acetylguanine or 2-N-isobutyrylguanine and 3,5-di-substituted benzylbromide derivatives followed by amide deprotection. The self-assembling properties of these derivatives to form G-quadruplexes were examined by the addition of various metals.

From Stuffed Animals to Successful Futures: How Values Develop Over the Lifetime
Hannah Reas, Tonya Warren, Whitney Wozniak

This project assesses the development of personal values in the individual members of the Psychology Capstone Seminar over the course of the lifetime through artistic representations of those values and how happiness levels have respectively changed over time. It was our belief that values would be defined by more materialistic representations in an individual’s younger years, when outside social influences are
most prominent and effective, and that the happiness levels at these ages would thus decrease. Conversely, when values were more abstract and self-actualizing, individuals rated themselves as happier. After asking our classmates to create drawings that represented what their reflections on their values at those age ranges, our findings were consistent with these hypotheses, and we believe this was due to the attitude of contentment and self-acceptance that has been achieved at this time in life. This presents a hopeful outlook that the values that have been constant over time are guiding their decisions and the people that they will become. The next step in developing this research project is to present the same methodology to a different population. This semester’s service component of the Capstone seminar will allow us to complete similar observations with children who have come from disadvantaged backgrounds through our integration of class work and service placements. A comparison of the two groups will almost certainly reveal differences, based on very contrasted life experiences, but will also hopefully reveal important similarities.

G

Gender Differences in Competition Attitudes: A Developed Country Phenomenon?
Megan O'Malley

A recent field of literature suggests that men are more competitive than women in patriarchal societies, as shown in decision experiments. The main results from this field of literature are based on experiments performed with college students in the United States. This paper relies on the same type of subjects (college students) but in the context of a developing country. In this paper we present the results from a decision experiment run in southern India with the support of an Honors Summer Research Grant. The experiment was setup akin to Niederle & Vesterlund (2007), where participants engage in a gender-neutral addition task for several rounds and make decisions based on payment preferences. We examine how competitiveness is affected by confidence levels, risk as measured by the Dave et al. 2010 task, personality characteristics, as well as various demographic information. We confirm the typical gender differences in risk attitudes with males making more risky choices than females, but risk attitudes are not related to choices of payment schemes. Contrary to previous results, most of the typical differences between male and female behavior do not emerge. This work is important because it looks specifically at college students in a developing country and the trends seen in the United States are not replicated. This finding suggests that the gender gap in competitive preferences may not be present for all educated people and that it may depend largely on the type of environment in which the subjects live.

Gendered Language and Sexism: The Effects of “He” Language in Religion
Asha Weisman

Sexism is an ongoing social problem and often appears in the language we use. For example, sexism occurs in a frequent and covert manner when the allegedly generic "men" is used in daily conversation to refer to people in general. The use of the generic "he" may become particularly problematic when used in a religious context in reference to a deity by which many people govern their lives. Referring to God in a masculine form may leave women feeling excluded. Furthermore, such language implies a hierarchy in which a masculine God is the most powerful, suggesting that masculinity dominates over femininity or that men dominate over women. The current research was designed to examine the potential effects that gendered religious language has on men and women's attitudes toward themselves and toward women in general. Participants (N = 279), who were recruited through the Human Subjects Pool at Loyola Marymount University and through contacts known to the researchers, completed an online study
regarding religion and worldviews. Participants were randomly assigned to one of two conditions in which they were exposed either to prayers referring to God as male or in a gender-neutral manner. Participants then completed several questionnaires measuring attitudes toward women, self-esteem, and identification with one’s gender. In contrast to prediction, gendered language did not predict any of the outcomes. This fact in itself is significant. It is hypothesized that this possibly occurred because sexism in religious language is so engrained in American culture that it is impossible to see outside of this context.

“Geologic Seepage of Light Alkanes in Los Angeles”
Roger Baril

Geologic seepage of light alkanes (C2-C5) was studied above oil and natural gas deposits in Los Angeles. Microseepage measurements were carried out in parks located in the Baldwin Hills and macroseepage measurements were made at the La Brea Tar Pits. Seepage was measured using aluminum flux chambers and 2 L stainless steel canisters and quantified with gas chromatography using flame ionization detectors (GC-FID). Flux was determined by simultaneously taking a reference sample of ambient air at the time of deployment of the flux chamber and using the reference as a background concentration. Chambers were deployed over different areas of the parks near the Inglewood oil fields, including areas over fault lines. Maximum fluxes of 103 ppb hr⁻¹ m⁻² for ethane, 242 ppb hr⁻¹ m⁻² for propane, 358 ppb hr⁻¹ m⁻² for n-butane, 173 ppb hr⁻¹ m⁻² for i-butane, 218 ppb hr⁻¹ m⁻² for n-pentane, and 262 ppb hr⁻¹ m⁻² for i-pentane were observed for the microseepage studies, while macroseepage flux rates were approximately three orders of magnitude greater. The observed fluxes suggest that natural emissions from oil and natural gas deposits could be an underestimated part of the global and regional (LA) hydrocarbon budgets.

Heavy metal stress in the hydroponically grown tomato plant, Lycopersicon esculentum
Walter Au, Daniel Chu, Annie Flocken, Danielle Lee, Howard Lin, Katherine Kimura, Anthony Traboulsi

Increasing levels of the heavy metal, zinc, in plants induces oxidative stress causing overt damage at the molecular and cellular level and severe imbalances in ion distribution in plant tissues. We have developed a hydroponic system using tomato plant, Lycopersicon esculentum, to analyze the impact of heavy metal stress. To quantitate the effect of increasing concentrations of zinc, we have modified and utilized an in vitro assay, the comet nuclear assay. This assay involves the isolation of nuclei from plant tissues and the detection of DNA breakage and membrane damage using confocal microscopy. To quantitate the tissue specific levels of zinc in experimental plants, we have used a spectroscopic technique, inductively coupled plasma gas chromatography (ICP-MS). This technique measures the content of 28 different ions in the tissues, allowing us to monitor the absolute levels of zinc and the impact of zinc concentration on other ion species. Our preliminary findings indicate that a) plant growth is increasingly inhibited at higher zinc concentrations; b) nuclear damage occurs when plant roots are exposed to 50 uM zinc; c) the levels of zinc in all three tissues tested (roots, shoots, leaves) is strongly correlated with zinc concentrations in the media; and d) increasing levels of zinc dramatically impact the levels of iron and manganese. Collectively, these results demonstrate the critical impact that heavy metal exposure has on plant growth and development. We will discuss these findings and ongoing progress in examining oxidative stress in plants.

How to Open and Operate a Pop-Up Shop
Melissa Sweet
Many young and/or budding artists have difficulty selling their artwork, primarily because they are solely relying on a website or online store. It is crucial to get the artwork into a physical store, however many artists don’t since the process is difficult, time-consuming, and expensive. Pop-up shops are an easier, low-cost solution to helping artists bridge the gap, and are a more effective way for artists to gain support/customers as opposed to a purely online presence.

My research on pop-up shops include interviews with pop-up shop creators and operators in southern California, as well as artists that have participated in these events and popular culture bloggers. Often times artists and other participants in a pop-up shop see a general increase in online website/portfolio views coinciding with the launch of a pop-up featuring their work, and this is the general basis upon which my thesis is grounded on.

I

Identifying and Characterizing the Microbial Community of Dune Lupine
Elisabeth Ferris

*Lupinus chamissonis* (dune lupine) is a nodulating species of the legume family present in the Ballona wetlands and El Segundo sand dunes near Loyola Marymount University. Legumes such as dune lupine have symbiotic relationships with nitrogen-fixing soil bacteria (Rhizobia) that reside in special root structures called nodules. We are interested in characterizing the bacteria that reside in these nodules as it is the first step towards screening for plant growth promoting bacteria (PGPR) that could be useful in restoration efforts. Nodules were isolated from roots of dune lupine, surface sterilized, crushed, and plated on selective media. To identify the bacterial isolates, the polymerase chain reaction (PCR) was performed on the 16S ribosomal DNA and the products were sequenced and compared to the BLAST database. Five bacteria were identified as *Bradyrhizobium japonicum*, *Rhizobium lusitanum*, *Variovorax paradoxus*, *Methylobacterium tardum*, and *Mesorhizobium* sp. Strains were screened for plant growth promoting properties such as cellulase activity, phosphate solubilization, and ACC deamination. *R. lusitanum* tested positive for both cellulase activity and phosphate solubilization, *V. paradoxus* tested positive for cellulase activity and ACC deamination, and *Mesorhizobium* sp. tested positive for cellulase activity and phosphate solubilization. Sterile plants were inoculated with both individual strains and in combination to determine which bacteria were able to induce nodulation in plants. From this, it was determined that only *B. japonicum* is able to induce nodulation independently while the other bacteria colonize nodules but do not nodulate when inoculated without *B. japonicum*. In addition, genes controlling nodulation and nitrogen fixation are currently being isolated using PCR.

Immigrant Children in the United States Education System: Changing Methodologies for Inclusion of Knowledge
Yara Cipatlic Hidalgo

As a result of the many misconceptions that teachers have of students coming from cultural backgrounds, immigrant students are viewed as lacking interest in school. I claim that it is not the culture of the students but the traditional school curriculum that continues to oppress immigrant students. This is a review of the literature critiquing the banking system specifically in elementary education and ways in which “Funds of Knowledge” can become a methodology for viewing an immigrant student as an asset to the classroom. Funds of knowledge is a way of connecting students’ background experiences with the learning in school. This provides an alternative to how curriculum can use the skills and knowledge that
students acquire coming into the classroom to be actively engaged in the learning process. Alienation is what drives students away from education and by viewing them as contributors they automatically become important. These are the kinds of social injustices that continue to happen in our education system in the United States and finding the methodology to improving it initiates an enhanced learning experience for immigrant students.

**Impact of Irrigation Systems on Arthropod Community Composition of Coastal Sage Scrub along Ballona Wetlands**

Justin Aquino, Mindi Catala

Coastal sage scrub is a low-chaparral community characterized with drought adapted to plant species. This study evaluates the effects of an irrigation system on community structure of arthropods that live in the coastal sage scrub. We placed a total of 10 tanglefoot sticky traps in water irrigated and control sites near bluffs surrounding Ballona Wetlands. Results showed that arthropod diversity, richness, relative abundance, and order representation were higher at the control site than at the irrigated site. Our study documents that anthropogenic impacts, like water irrigation of a coastal sage scrub community, can alter species diversity, richness, and composition in the habitats surrounding the Ballona Wetlands.

**Indian Families of Mexico City: Gender Relations in the Late-Colonial Era, 1725 – 1816**

Erika Chavez

The series of reforms enacted by the House of Bourbon in the eighteenth century have, until very recently, been used to by scholars as evidence that women in late-colonial Mexico lost previously held privileges and abilities, which permitted their active participation in society. This presentation focuses on my analysis of seven previously unexamined litigation files from the National Archives of Mexico, in Mexico City. The files are comprised of legal cases over a variety of crimes, such as adultery, domestic violence, and land ownership, and written in early-modern Spanish; their pages are rich with legal argumentation and commentary as well as mundane details of everyday life in the city. As an administrative center, working with documentation produced by the colonial institutions of Mexico City is a great opportunity to examine the effects of the Bourbon Reforms on society, particularly on gender roles and relations. My research demonstrates that the Spanish monarchical reforms did not have as widespread an effect on social relations as previously imagined. Rather, women in Mexico City continued to actively participate in both the public and private realms of society in a variety of manners. This presentation will focus on the results of my ongoing research to highlight the activities of women and men while engaging the historiography on late-colonial gender relations. It is also an aim of this presentation to emphasize the need for more research to be done in regard to interpreting or reinterpreting the extent of the impact of the Bourbon Reforms on late-colonial Mexican society.

**Integration of Velocity and Depth Measurements to Develop a Flow Rating Curve for an Irregular Spillway**

Colin Griffith, Megan Fairley, Stephen Petrich, Carolina Sanchez, Sophia Zumot

A field surveying effort was conducted over a one year period to develop an equation that relates flow rate to depth for a flowing spillway (dike) in Lancaster, California. The development of the equation, which is the main objective of this project, is quite valuable, because it helps determine flow rate from simple depth measurements under challenging field conditions (e.g., an irregular and weathered
spillway). The project was part of research and consulting work for the Los Angeles County Sanitation Districts, which is the agency that manages the surface water impoundment where the spillway is located. The spillway conveys overflows of recycled water from Piute Ponds to Rosamond Dry Lake within the property of Edwards Air Force Base. The project consisted of surveying the dike and using open channel hydraulic principles to develop a relationship between flow rate and the water elevation over the spillway. Measurements of flow velocity and depth were integrated to calculate flow rates at different depth levels, and regression analyses were conducted to develop the aforementioned equation. This approach represented a significant improvement over previous efforts, which assumed critical flow assumptions at the spillway crest. Regression analyses helped obtain an acceptable flow rating equation that relates flow as a function of depth on the highly irregular spillway. Additional measurements will be performed to improve and verify the equation.

Interracial Relationships on College Campuses
Alexis Hunley

“We all should know that diversity makes for a rich tapestry, and we must understand that all the threads of the tapestry are equal in value no matter what their color” (Maya Angelou). Diversity is an essential component of post-secondary education. By providing students with ample opportunities for interactions with a variety of unique people, having a diverse campus enriches the lives of individuals by expanding one’s capacity for viewing the world from multiple perspectives. This study seeks to tap into the state of race relations on this campus in order to assess how well students at LMU are living up to the university’s commitment to diversity. For this study interracial friendships and dating relationships will be analyzed. Using a variables established by Levin (2007), Fiebert, Karamol, and Kasdan (2000), I predict that: males will report more intergroup relationships than females; students of color (African American, Latino, and Asian American) will report more interracial relationships with White peers than White students will report and that students who report more interracial relationships will report more interracial friendships; participants that report higher levels of intergroup anxiety will report fewer interracial relationships; and that participants that report more interracial relationships will report more interracial friendships. A questionnaire was constructed with several items assessing levels of intergroup anxiety and experience with interracial relations (dating and friendships).

Iran Through the American Lens: American Perceptions of Iran and the Influence of Media.
Joseph Wade

Iran’s development of nuclear weapons and potential as a threat to global security has become a focal point in American news media coverage. There is growing support from the American public for an increasingly aggressive foreign policy. It is important to understand how these perceptions and beliefs regarding Iran are formed in America and what role the media plays in this. To answer this question, research consisted mainly of two parts. This included a survey of 400 students at Loyola Marymount University and a content analysis of American news broadcasts. The survey had three objectives; to identify students’ sources of information and news regarding Iran, to assess different perceptions held towards Iran, and lastly to measure support for specific American policies regarding Iran. The content analysis of America news media was conducted on three major outlets: Fox News, CNN, and MSNBC. The news content analyzed were primetime television broadcast transcripts mentioning Iran over a two year time period. The goal is to provide information on how Iran is being portrayed by the news media in The United States, thus allowing correlations to be made with public perceptions. The preliminary results reveal a dangerous situation, one that can potentially lead the American people to support a war against
Iran based on assumptions, fear and false pretenses. Furthermore, it uncovers a flaw in American news sources’ portrayal of international news and the hazardous impact it can have if the public unquestioningly relies on it for accurate information and political stances.

**Isolation and Characterization of Phages Muus and Ceci11**

Ana Lucia Fuentes, Jaee Tamhane

Bacteriophages, viruses that infect bacteria, are the most abundant microorganisms in nature. Even though we are interested in their role in nature, the focus of this work will be to isolate new phage to characterize them in terms of bioinformatics for Howard Hughes Medical Institute (HHMI) Science Education Alliance Phage. We isolated two distinct lytic phages, Muus and Ceci11, on the host M. smegmatis, from two individual soil samples on the Loyola Marymount University campus in the fall of 2011. Using polymerase chain reaction (PCR), molecular and microscopic analysis, we characterized and categorized the phages into the mycobacteriophage B Cluster, a group of phage characterized by distinctive molecular and morphological features. In the spring as part of a group project, we are analyzing the genome of an E-cluster phage, Contagion, isolated by the laboratory. The analysis includes gene discovery and annotation and comparative genomic analysis against existing phage genomes using bioinformatics tools such as DNAMaster, GeneMark, Glimmer and BLAST. We will present our characterization of the phage Muus and Ceci11 from the fall and our preliminary progress in gene discovery and annotation in Contagion. Finally, we will discuss our preliminary findings from the comparative genomic analysis and its implications for evolution and microbial ecology.

**Isolating Bacteria Displaying Insensitivities to Multiple Antibiotics from the Ballona Wetlands and Creek**

Katrina Bodewig, Katie Hornick, Nana Kufuor

Antibiotic resistant bacteria and genes have been increasingly recognized as biological pollutants with impacts on public health and ecosystem vitality. Water quality research in the Del Rey Lagoon, and initial sampling in the adjacent Ballona Wetlands demonstrated the presence of multi-antibiotic resistant (MAR) bacteria. These aquatic communities receive input of contaminated runoff from Ballona Creek that drains the highly urbanized Ballona Creek Watershed. To determine if the Wetlands act as a sink or source for MAR bacteria, a study was initiated in 2011 to characterize species MAR bacteria entering and leaving the wetlands during tidal flood and ebb flows. A second site was added in Ballona Creek above the tidal prism to determine the structure of the MAR bacterial assemblage in pure runoff that would be diluted in the Ballona Estuary prior to entering the Wetlands on flood tides. Our hypothesis is that natural wetland processes will alter the composition of MAR bacteria between flood and ebb flows. Water samples were collected during eight sampling events in the wetlands and four in the Creek. Bacteria were initially isolated using heterotrophic plate spreads followed by replicate plating on TSA infused with clinical concentrations of eight antibiotics. Resistances were confirmed using Kirby-Bauer disk testing. Preliminary results will be presented comparing the percentage of bacteria resistant to each of the antibiotics, and multiple antibiotics, during the flood and ebb flows in the Wetlands and runoff in the Creek.

**Isolation and Characterization of Cellulase Producing and Phosphate Solubilizing Rhizobacteria**

Salma Soltani, Maria Shibatsuji

Bacteria are often associated with the roots of plants, and those that are beneficial to plants are referred to as plant growth promoting rhizobacteria (PGPR). We are interested in identifying novel rhizobacteria
that may have potential as biofertilizers. Bacteria were isolated from the roots of *Iris* sp. and *Taraxacum* sp. and tested for properties characteristic of PGPRs. As of now, 75 of our isolates have been screened for phosphate solubilization, siderophore production, cellulase activity, and auxin production. We chose six isolates that showed cellulase activity and/or phosphate solubilization for further study and inoculated them on switchgrass in order to further determine their potential as PGPRs. We are currently working on sequencing of the 16S rDNA gene to identify these isolates. Through characterization of the isolates morphology and biochemical characteristics, we seek to isolate plant growth promoting rhizobacteria with potential for agricultural applications.

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**Learn the Past, Watch the Present, & Create the Future: An Analysis on the Causes of Refugee Waves & Their Policy Implications in East/West Africa**

Kristen Green

While one would think people flee their countries and seek refugee status under oppressive rule of a foreign power, the greatest numbers of refugees have actually been after African nations became independent. *Therefore we must ask, what are the root causes of conflict in East and West Africa that have produced large waves of refugees into host countries, and how has that guided subsequent United Nations High Commissioner for Refugees policies?* The largest waves of refugees were during period of 1990-2010, which is the focus of this study. The research method for this study was one of comparing the host countries of Kenya, Tanzania, Ghana and Guinea. These four countries were chosen because they all received large numbers of refugees while producing very little refugees. To illustrate the differences, the two regions will be compared against eight different factors. These factors are each host countries': 1.) colonial & imperial experience 2.) racial/ethnic make up 3.) post-independent government structure 4.) environment  5.) wealth of the host country 6.) social & economic costs 7.) refugee camp policies, and 8.) the UNHCR’s response to refugees in each country. Data was analyzed from UNHCR reports, statistical yearbooks and policy statements. By understanding the differences between the regions we can tailor UNHCR policies and resources to fit these differences instead of giving an “all encompassing” prescription that does not work for both regions. By tailoring policies to fit the needs of these two regions we can reduce the economical and social costs of failed policies.

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**Legalizing Same-Sex Marriage in America: The Courts Ability to Enact Social Change**

Elizabeth Hedge

Can the courts effectively create greater social acceptance of same-sex marriage? Since the success of *Brown v. Board of Education* and the subsequent Civil Rights Movement, many hope that the courts can produce widespread social change. With this rising expectation advocates of same-sex marriage increasingly turn to the courts for their protection. Due to the heightened number of legal cases regarding same-sex marriage, the Supreme Court may make a federal decision in the near future. Each state currently controls the legalization of same-sex marriage and, while some have chosen to allow same-sex unions, others have taken steps to ban them. This paper examines the influence of the courts over the legal and social acceptance of same-sex marriage in the United States today. The courts face two barriers: if they have the ability to create social change and, if they do, whether or not it is in their jurisdiction to use that ability. This paper tackles these barriers with a theoretical analysis and empirical study. The analysis dissects previous theoretical approaches to determine the role of the courts’ in American society. The empirical study, including a content analysis and review of polling data, measures the growth of
social acceptance after the legalization of same-sex marriage in the states of Massachusetts, Maine, and New Hampshire. Understanding the effectiveness of the judiciary may help advocates seek the best method to gain social, political, and legal equality and also provide a clearer illustration of the courts’ ability to create or aid policy-changing litigation.

**Lupine recruitment in the Dunes of the Ballona Wetlands: seed dormancy and germination.**
Michael Cano

*Lupinus chamissonis* is a dicot, perennial shrub that is endemic to sand dunes and other coastal habitat of California. *Lupinus chamissonis* is particularly important to the degraded habitat of the Ballona Wetlands. Though *L. chamissonis* is native to the dunes and preferable to invasive weeds, the wetlands have seen decreased species diversity with the increased dominance of the lupine. An understanding of lupine seedling recruitment is necessary if the resilience of the wetland ecosystem is to be preserved and maintained. This study was aimed at understanding the mechanism of dormancy and dormancy release in *L. chamissonis* seeds. *Lupinus chamissonis* seeds have various mottled color morphs. A frequency distribution of weight showed that seeds ranged from 0.0130 to 0.0550 grams, and weight classes showed no obvious difference in color morph distributions. Water uptake measured by weight increase of seeds, showed that approximately the same number of seeds took up water in each weight class. Most seeds did not increase in weight, consistent with dormancy imposed by an impermeable seed coat. Groups of seeds were subjected to different scarification techniques to abrade the coat and allow water uptake and germination. Methods included mechanical, percussion, and acid scarification. Mechanical abrasion was the most successful technique with approximately 80% germination. Seeds were also subjected to boiling, dry heat, and alternating temperatures, however these techniques did not substitute for physical abrasion. Additional dormancy breaking strategies are being tested including ethylene exposure which could be associated with anoxic soil conditions in the field after rain.

**M**

**Maintaining Luxury Brand Success in an Economic Crisis**
Louise Santos

The marketing mix consists of product development, placement, promotion, and pricing. Marketers must carefully select strategies within these elements that will satisfy the needs and wants of their target market. Within the various pricing strategies, marketers can pursue a premium pricing platform in which the price is set substantially higher to promote an association with luxury and elite reputation for those who can afford such products. Luxury brands such as Mercedes-Benz and Chanel have this very reputation by which consumers clearly identify them with a higher prestige because of the high price that must be paid for their products. This study will explore the impact of the 2008 economic recession on the success of luxury brands and goods in the marketplace. Through examining the psychological motivations associated with luxury product consumption, brand management strategies, and sales trends from the past four years, this study will reveal that luxury brands have not only survived the economic crisis, but have, in fact, thrived.

**Man VS Machine**
Sarah Godfrey
In a culture and society confined by technology, and characterized by updated statuses and Google searches we have lost the indispensable sensation of human touch. My visual design campaign promotes physical intimacy within our society while reexamining our relationship to technology, in a larger attempt to reestablish our shared sense of physical compassion. The campaign I have created attempts to challenge cultural and personal boundaries in order to rediscover the value of physical interaction. Relying on texting, Skype or Facebook to interact with family and friends is expedient but has created a touch-phobic atmosphere that affects and controls the quality of our relationships throughout our lives. Today sixty percent of children under the age of fourteen have personal cell phones while even more use social networks daily to interact with their peers. If newer generations continue down this path of isolation through electronics instead of benefitting from the company of one another, our society will experience a continued lack of human interaction.

Mathematical Analysis of Gene Regulation in *Saccharomyces cerevisiae* in Response to Cold Shock
Nick Rohacz, Katrina Sherbina

DNA microarray technology was used to measure the effect of cold shock on gene expression within *Saccharomyces cerevisiae*, budding yeast. To determine which transcription factors control the response to cold shock, total RNA was purified from the wildtype strain and strains deleted for the CIN5, GLN3, HMO1, and ZAP1 transcription factors during growth at 30ºC (t0); at 15, 30, and 60 minutes into cold shock at 13ºC; and at 90 and 120 minutes during recovery at 30ºC. Four to five replicates were performed for each strain and timepoint. A total of 103 DNA microarrays were competitively hybridized with RNA from the t0 timepoint, labeled with the Cy3 dye, mixed with RNA from each of the other time points labeled with Cy5 dye. Spatial and intensity biases present in the microarray data because the two dyes have different properties were corrected using Loess normalization and median absolute deviation scaling performed with R Statistical Software. We then tested for significant changes in gene expression using a modified ANOVA test. Because we performed hypothesis tests for thousands of genes, we used the Bonferroni and Benjamini and Hochberg corrections to minimize the false positive rate. We found that 1686 genes showed differential expression for at least one timepoint in the wild type strain at a corrected p < 0.05. However the strain deleted for HMO1 had only 39 genes that showed significant differences in expression, suggesting that the absence of HMO1 seriously disrupted the cell’s ability to respond to cold shock.

Mechanical Testing of Bamboo Fiber Composites
Tim Burdiak, Erik Cabral, Jorge Ibarra, Nick Polito

There has been a growing trend in the demand for environmentally sound composite structures known as biocomposites. A biocomposite sandwich is a structure formed by a resin matrix and a reinforcement of natural fibers, which are usually derived from plants or cellulose. This study involves the strength characterization of biocomposite sandwich structures composed of bamboo fibers and organic resins using ASTM standardized test methods. In particular, the strength characteristics of both the laminates and core materials will be analyzed separately, and together as a sandwich structure. Another key aspect of the strength evaluation of the biocomposite involves variations in the specific laminate and sandwich structure processing.
Media, Communication and Music: The Connection between Rap/Hip-Hop and Low-Income Hispanic Youth's Media Enjoyment
Dylan G. Delgado

An overview of research conducted on media, communication and music points to an emerging scholarly focus on rap and hip-hop. However, an important demographic cohort, one that is central to our understanding of youth in Los Angeles, remains little studied: Hispanic youth from low-income families. This research sets out to determine what constitutes media enjoyment of the rap and hip-hop genre as well as to understand how low-income Hispanic youth interpret and reflect what they hear. The first part of the paper, accordingly, answers two research questions: what rap and hip-hop is and what constitutes its fandom. The second part of the paper, following from the theoretical knowledge generated from the first part, proceeds to report a small interview study on low-income Hispanic youth. The focus is to assess how hip-hop and rap either positively or negatively impact this demographic group. In addition to their media enjoyment or the lack thereof, a preliminary research finding indicates how vulnerable Hispanic youth is when it comes to the music they hear. The effect seems to be even greater on these youth when the artist is of or perceived to be of Hispanic decent. The third part of the paper offers in-depth reflection on the connection between communication, music and youth education, with an emphasis on viable outreach social justice projects for low-income Hispanic youth.

Method Development of High Performance Liquid Chromatography Techniques in the Characterization of Extrafloral Nectar Sugars
Julius Doyle, Kenny Morales

Myrmecophytic plants species have specialized glands, called extrafloral nectar (EFN) glands, which secrete sugars and lipids that attract visitations from insect predators (e.g. ants) that in turn protect the plant against herbivorous insects (e.g. caterpillars). Various analytical techniques have been used to study the sugar chemistry of EFN gland secretions, including thin layer chromatography, liquid chromatography and gas chromatography. In this study, we detail a new methodology that uses a High Pressure Liquid Chromatography (HPLC) with a Refractive Index Detector (RID) to evaluate both the identity and concentration of sugars in EFN gland secretions from two species of myrmecophytic plants common to southern California. We also found that chromatography paper is an effective means of collecting EFN gland secretions from plants in the field. By studying the chemical ecology of EFN gland secretions, we seek to further understand the factors in the local environment that contribute to variation in the chemistry of EFN sugars and ultimately how the variation across landscapes (or ecological mosaics) contributes to the co-evolution of myrmecophytic plants.

Methods for Incorporating Economic Uncertainty in Building Simulations: Towards Comparing Baseline and Low Energy Retail Buildings
Michael Eribez

The degrees of accuracy of building energy consumption and cost simulations are highly dependent on the accuracy of the inputs. In reality no single value exists but each parameter has some associated degree of uncertainty. This paper develops a methodology to evaluate economic uncertainty, specifically the capital cost, using OpenStudio, a comprehensive building energy analysis platform. The capital cost is a linear function of a number of inputs, or component cost line items. The uncertainty associated with each component cost is epistemic, and this therefore more suited to interval, rather than probabilistic
The approach involved the development of interval analysis using Monte Carlo sampling, Latin hypercube sampling, and maximum-minimum sampling. The methodology was demonstrated on a representative case study for a benchmark retail building and its corresponding 50% energy savings building. It was shown that for the capital cost the most efficient computational method is the maximum-minimum sampling method, needing only four runs to estimate the cost intervals for the two buildings. These methods quantified the capital costs as intervals, since there was no probabilistic data, to display the difference between the two models with uncertainty. The simulations showed that as more inputs were incorporated with uncertainty, the capital cost interval drastically changed. Since the capital cost function is linear, the maximum-minimum sampling method, which only required two simulations per model, was sufficient for determining the uncertainty of the capital costs as a function of the input uncertainties. However, when the total life cycle cost is calculated, the nonlinear nature of the function, with respect to uncertain inputs would suggest a Latin Hypercube and maximum-minimum combined sampling approach.

**Migratory Behavior of an Irruptive Migrant, *Spinus pinus***

Carmela Asinas

Most studies of migratory physiology and behavior of birds have been from birds that exhibit regular patterns of migration. In contrast, pine siskins (*Spinus pinus*) are nomadic irruptive migrants. Thus, their migration patterns are irregular both spatially and temporally. In this study, we described migratory behavior of ten captive pine siskins. We video recorded the birds’ behavior during the day and night, and recorded locomotor activity using an automated infrared monitoring system. Birds showed high level of nighttime activity. Detailed behavioral analysis revealed distinct differences in their daytime and nighttime behavior. Although pine siskins are presumed to be daytime migrants, this study indicates that they exhibit nighttime migratory restlessness, which is a characteristic of many regular migrants.

**Mindfulness as a way of Promoting Resilience in those with Low Self-Esteem***

Melissa Gomez

Numerous theories suggest that individuals have a fundamental need for social inclusion and belonging (Baumeister & Leary, 1995). Events that threaten our sense of belonging, such as rejection, are sources of social stress and are harmful to our well-being. Although, no one enjoys dealing with social stressors some individuals are able to cope more effectively than others when faced with them. One factor that predicts an individual’s ability to cope with social stressors is his or her level of self-esteem. Relative to high self-esteem individuals, low self-esteem individuals tend to cope more poorly with social stressors and are more vulnerable to the negative outcomes that follow. For example, individuals with low self-esteem tend to exhibit increased rumination in which they pervasively think about the causes and resulting consequences of an event but fail to engage in any active behavior that might dispel the distress that follows. Given that low self-esteem individuals cope poorly with mild rejection and that mild rejection is commonplace in everyday life, the current study investigates a possible technique for promoting resilience in low self-esteem individuals as they cope with rejection. Specifically, the current research investigates whether a brief mindfulness manipulation results in more adaptive coping in low self-esteem individuals. Mindfulness has roots in Buddhist tradition and mirrors Jesuit philosophy. By integrating an appreciation for the present moment as well as a heightened self-awareness, mindfulness connects with the Jesuit principles of conscious contemplation. I hypothesize that a brief mindfulness exercise poses the possibility to serve as protective buffer from physiological reactivity and maladaptive thought processes in response to social stressors and that it may have stronger effects for individuals who are most sensitive to social stressors, such as those who are low in self-esteem.
“Mirror Mirror: Promoting the Female Body through the Exploration of Media Exploitation”
Dol-Anne Asiru

Women have been the subjects of the spectator’s gaze throughout history. From Titian’s *Venus of Urbino* to Eve Arnold’s Marilyn Monroe portraits, the female body will continue to be the object of desire. However, the portrayal and expectation of how women should appear and conduct themselves according to social standards needs to evolve from female stereotypes. The media has capitalized on the 36-24-36 ideal body phenomenon. The notion that the female body should fit into this ideal frame has caused the development of unhealthy and unrealistic expectations. In a recent 2011 New York Times blog post, “Breast implant operations have surged 40 percent in the past decade, with nearly 300,000 women last year opting to increase their breast size.” The cosmetic enhancement phenomenon challenges the idea about what it means to be a natural beauty. I pose the question, is the media setting up all women to fail by creating this unattainable standard? What is the impact of the media when it causes women to depend on packaged “magic solutions” and “quick fixes”? In the end, what truly is fixed?

There have been many campaigns in the past like Dove’s 2004 Real Beauty campaign that have had mixed results. Many critics raised questions about the authenticity of promoting beauty through commercial beauty products. I propose a visual campaign that rethinks the societal constructs of the female identity without commercial gain. Through poster designs, my objective is to promote love and appreciation for the female body. I believe visual design has an immense impact on our growing technological and social media savvy society. Design posters conveying information graphics and illustrations accompanied by a powerful message can achieve the main objective.

To engrain my message, this platform will promote, “No flaws. Only beauty.” The target market for the poster design and campaign is women between the ages of 18-35. Women are complex creatures. Each woman is built differently. There are many aspects of the female body that shapes each woman and her own beauty. The female body is beautiful. It is smooth, rough, dark, light, voluptuous, muscular, short, tall, scarred, and freckled. Ultimately, those who love and have appreciation for themselves can have greater love and appreciation for others. Having positive self-esteem can be a powerful weapon. Having negative self-esteem can be one’s demise.

Modeling the Onset of Cardiac Instability using a Probabilistic Cellular Automata
Kevin McKay

Probabilistic Cellular Automata (PCA) are mathematical models that represent spatially discrete systems as two-dimensional grids of neighboring lattice points. We used a PCA with nearest-neighbor interactions to simulate calcium release inside cardiac myocytes to model cardiac instability, a precursor to heart attacks. The states of the points are either “on” or “off” according to rules that incorporate randomness. The number of “on” states represents the overall activation of the system, and oscillations in this value indicate instability. The amplitude of these oscillations was studied as a function of the strength of nearest neighbor interactions. For small lattice size, there was a steady, gradual increase in amplitude as interaction strength grew. For large lattice size, the amplitude increase was sudden and sharp. Similar patterns were observed with changes in aspect ratio of the lattice. The results suggest that as the lattice became larger and less oblong, a critical value threshold for onset of oscillations became defined. These simulations helped us understand the dynamics of cardiac myocytes under actual conditions of biological variability and can lead to new hypotheses for future trials.
Music Therapy – Breaking the Boundaries of Individuality for Effective Communication
Lucia Cash

The value of music therapy has been acknowledged since the times of Plato. In *The Republic* (380 BC), he stated that music maintains the health of the mind and body. More current research by authors such as Daniel Levitin and Alexandra Lamont have shed light on the biological effects of music, particularly in regards to children. However, there is little research on the effects of music on communication. My work seeks to determine how music can deepen communication and strengthen interpersonal relationships. Furthermore, I have drawn comparisons between an extensive literature review and the results of interviews with Silvia Villegas, the principal of an elementary school in Uruguay, Gustavo Barone, a music therapist, and Mariana Gomez, an expert in autism. Since I gained my primary data in Uruguay, I will also determine whether cultural factors, which extend to the music chosen in therapy, can have an influence on its success.

The interviews conducted showed that the creative nature of the sessions opens up an alternative communication route, which allows access to a depth and range of emotions previously inaccessible. In the case of autistic children, they showed that music therapy allows for the patient to be more engaged in everyday activities, more interested in fellow classmates, and under certain conditions, it has been found to facilitate learning as well.

Neuroticism and Associated Personality Challenges: Examining the Relationship Between Neuroticism, Trait Anxiety, and Emotion Regulation
Hannah Reas, Nicole Snipper

This project examined the relationship between neuroticism, trait anxiety, and emotion regulation strategies. We hypothesized that higher neuroticism would be associated with higher levels of trait anxiety. We also predicted that participants high in neuroticism would have higher levels of expressive suppression (i.e., an emotion regulation technique associated with poor social outcomes). Participants were college students, and received course credit for participation. Participants were primarily Caucasian and consisted of 98 females and 52 males, \(M_{age} = 19\). All participants completed a survey packet, containing questionnaires regarding neuroticism, trait anxiety, and emotion regulation strategies. A subset of participants also engaged in a five-minute interaction with another participant. Following the interaction, partners rated each other on likeability. Results showed a strong positive correlation \((r = .78, p < .05)\) between neuroticism and trait anxiety. We did not find a significant relationship between neuroticism and expressive suppression. However, there was a significant negative correlation \((r = -.19, p < .05)\) between neuroticism and cognitive reappraisal (another emotion regulation technique associated with positive social outcomes). Additionally, we found that higher neuroticism resulted in lower likeability ratings \((r = -.25, p < .05)\). Our findings supported our first hypothesis, revealing the close ties between neuroticism and anxiety. Results were not consistent with our second hypothesis, but point to new possible research about the relationship between neuroticism and cognitive reappraisal. High levels of neuroticism may impair individuals’ abilities to reappraise certain situations. These findings present additional insight on the personality trait of neuroticism.

New series for \(\pi\) via polynomial approximations to arctangent
Colleen Bouey, Erika Meza

Finding approximations to \(\pi\) (the ratio of the circumference to diameter of a circle) and approximations to functions that produce the value in natural ways (e.g., arctangent) is one of the oldest mathematical
problems, and this problem continues to be of interest to modern mathematicians and scientists. For example, approximating $\pi$ is usually one of the first computations performed to test out the accuracy of a super computer. Also, polynomial arctangent approximations have been used recently by the U.S. Census Bureau, because the Bureau stores some of its coordinates in degrees.

Our research focuses on the use of rational functions of the form

$$\left\{ \frac{(t - \beta)^k (t - \gamma)^l}{1 + t^2} \right\}_{m \in \mathbb{N}}$$

for different values of $k$, $l$, $\beta$, and $\gamma$ to produce different families of efficient polynomial approximations to arctangent on the interval $[\beta, \gamma]$, and hence, provide approximations to $\pi$ via known arctangent values. The polynomials produce approximations to $\pi$ that require only the computation of a single square root $\sqrt{3}$; moreover, on the interval $[\beta, \gamma]$, they are more accurate than Maclaurin polynomials and other approximations to arctangent recently studied. We turn the approximations of $\pi$ into series that yield the same number of digits of accuracy as the corresponding polynomial approximations. We provide numerical comparisons of the new series to other well-known ones.

**Niki**  
Michelle Scott

While studying abroad in Bonn, Germany I made a short documentary piece about young people in the Roma (gypsy) community in Szeged, Hungary. Specifically, the project focuses on issues of education discrimination and the recent integration of public schools in Szeged, along with the challenges this presents to Roma children attending these schools. The film follows Niki, a Roma teenager who is emerging from the turmoil of the 2003 integration of Hungary’s public school system. As she struggles to finish the eighth grade and overcome the obstacles left behind after 6 years of terribly subpar education, we explore the challenges facing Hungary’s largest, but least understood minority. The project was filmed in Hungary over a period of two weeks, during which time I worked closely with Niki and organizers of DARTKE, a non-profit organization working with the Roma community to improve education opportunities for Roma children. This story is told primarily through interviews with Niki and her family, as well as discussions with DARTKE coordinators. The finished film touches on universally relevant issues such as discrimination, segregation vs. assimilation, and community. Equal opportunity for education is particularly important if we are to have a future in which all members of society may shape the world we live in. This film raises awareness for the challenges facing Romas, and leads its audience to examine the way we treat those around us in our own communities, around our nation, and throughout the world.

**O**

Optical Property Quantification of Metallic Nanoparticles Under Applied Magnetic Field  
Christopher Felts

The interaction of light with small particles is of great importance to a variety of fields ranging from energy harvesting to medical diagnostics. This project focused on testing optical properties of metallic
nanoparticles under two conditions, with and without an applied magnetic field, by using a ultrasonicator and spectrophotometer. The ultrasonicator, for this experiment, was used to disperse the nanoparticles throughout the solution. After sonicating the nanoparticles with a surfactant chemical solution, the nanoparticles became suspended in the solution and were tested with the spectrophotometer. The spectrophotometer emitted a beam of light, which passed through the solution and recorded the spectral transmittance. This test was done multiple times with and without a magnetic field. The magnetic field was achieved by putting two magnets, with low pull force, on both sides of the solution. After multiple tests, the transmittance was found to be higher for solutions with a magnetic field. This is due to the magnets pulling the nanoparticles out of the solution, making the solution less opaque and easier for light to pass through. The next step of this project will be varying the surfactants that are used to suspend the nanoparticles and varying the properties of the nanoparticles to further understand the optical responses.

P

Patronage and Primary Exports: the Economic Effects of International Sanctions
Ryan Burbank

The United States and other democratic powers frequently find themselves at odds with authoritarian regimes, nations whose foreign and domestic policies often run counter to prevailing liberal democratic principles. With military intervention a costly and controversial action, democratic governments have turned to economic sanctions as a means of bringing about regime change, despite the fact that research has indicated that sanctions are generally not effective. This study examines sanctions from an entirely new angle, one in which economic effects are isolated from political and strategic objectives, thereby allowing us to better understand the impact sanctions have on target populations. Through case studies of Cuba, Iran, Syria, and Iraq over a fifteen year period (1990-2005), we analyze gross domestic product, per capita income, export revenues, and a range of other economic variables, thus allowing us to pinpoint exactly where and to what degree sanctions make an impact. In addition, this study also examines the impact of patron state support on targeted countries, by looking at economic indicators of foreign support such as trade data and the giving of aid and loans. By looking at these variables, we can determine whether or not patron states are able to disrupt sanctions through their economic support. We predict that sanctions will, on average, produce a negative effect on target economies. We also expect to find that patron state support of targeted countries weakens the economic impact of sanctions. Through our study, we seek to empower both academics and policymakers with a better understanding of how sanctions affect economies.

Perceptions of Los Angeles after 1992 Riots by Age Group
Michael Homans, Paige Pardo

The racially charged 1992 Los Angeles riots which left 50 dead, and cost nearly $1 billion in damage had a profound impact on life in Los Angeles, changing everything from government to the demographics of the city. Moreover, race relations could no longer be ignored, and there was increased inquiry concerning Los Angeles residents’ perception of the city as well as how the riots affected quality of life within the city. Because how residents think about the city as a place to live and work in influences collective behavior, it is important to gauge Angelenos’ attitudes toward the city. The attitudinal variables we will measure in our study include resident’s views on topics such as riots and disturbances, race relations, quality of life,
and the LAPD. Assessment of these variables will show whether in the wake of the 1992 riots there has been perceived improvement of the city on behalf of residents. Specifically, our study will examine the relationship between resident’s age and their perception of the city, helping us to identify generational differences in residents' optimism or pessimism regarding the general state of Los Angeles. To evaluate these inquiries, we will use data collected by Loyola Marymount University’s Center for the Study of Los Angeles' cross-sectional phone surveys administered to Los Angeles residents taken on the 5th, 10th and 15th anniversaries of the Los Angeles riots.

**Proposed Water Supply Reservoir on Mill Creek, San Bernardino County CA – A Senior Water Resources Capstone Project**
Zachary Weber

The project involves sizing of an earthen or concrete dam and reservoir on Mill Creek, and water conveyance system for the communities of Yucaipa and Beaumont. The work involves determination of the maximum yield of the reservoir and the probable maximum flood for the design of the spillway. Additionally three different types of routes will be investigated for the transmission conduit. Preliminary design documents will include a site plan, a section of the dam, the spillway cross-section, the most economical pipeline choice as well as pipeline alternative routings.

**Q**

**Quo: A Programmable Social Network Status Demultiplexer**
Jasmine Dahilig, Andrew Forney, Tyler Nichols

The proliferation of social media outlets in the modern era has begotten an increasingly larger variety of channels whereby users may project their thoughts, interests, and even trivialities. With this expansion comes the added benefit of different forums for different types of projection, but also, the added difficulty of projecting a single thought, or status, to multiple sites (such as Facebook, Twitter, and Google+). Quo seeks to bridge this gap between the disparate social media outlets by providing users with a web application whereby a single status may be customized for, then sent to, as many or as few sites as desired—it provides a single place to update multiple aspects of an individual's virtual identity. The present idea is to do so in a way that employs the latest in interaction design tactics and to explore novel methodologies of graphically accomplishing this much needed convenience. Apropos, users of Quo will be able to create and manage their accounts from a centralized location and subsequently direct and customize their updates in a streamline, flexible format.

**R**

**Reaching for the S.T.A.R.S. – An Assessment of LMU’s Green Campus Initiatives**
Bree Aguinaldo, Bryon Erwin, J.J. Galvez, Natalie Hernandez, Michael Kretschmar, Ashley Miller, Molly Navalinski, Giannina Nurena, Janet Torres, Travis Weyman
Sustainability Tracking Assessment Rating System (STARS) is a self-reporting university assessment tool in measuring campus sustainability. It was developed by Association for the Advancement of Sustainability in Higher Education (AASHE) in 2010 and is used by over 260 universities across the nation. A university gathers and reports sustainability efforts in areas of education, research, planning, engagement, administration, and operations. A rating of platinum, gold, silver, or bronze is then given to each university once they submit their data to STARS. This data allows universities to share best practices and internally evaluate their efforts. LMU has recently submitted their data in January 2012 and achieved a rating of silver with a score of 53.69. Individual category scores were 41.38% for Education and Research, 33.95% for Operations, and 70.74% for Planning, Administration, and Engagement. Students from the Green LMU office and the Student Worker team worked over the summer 2011 and fall 2011 semester to research and compile information from various parts of campus. The proposed poster would focus on an overview of our results for the specific categories and a projected outlook of areas in which LMU could improve.

Reducing error in estimating caloric intake: A comparison of two educational modalities.
Joseph M. Derian, Cristen J. Giangarra, Emanuel D. Major, Samantha Valasek, Charlotte N. Vance

The obesity epidemic in America may be due partially to differences between perceived and actual caloric intake. The purpose of the study was to compare two educational modalities designed to reduce error in estimating caloric intake. Following IRB approval, 7 participants (male=5, female=2) (means±SD; age=19.9±1.3; BMI=23.4±2.1) were randomly assigned to one of two intervention groups. All participants took pre- and post-tests gauging portion size and calorie count estimation accuracy. For six days over the next two weeks, both groups submitted emails containing portion size and calorie count estimates for all foods consumed. The text-based group (TBG) received individualized feedback 1x/week while the image-based groups (IBG) attached photos of foods consumed and received feedback 3x/week. T-tests showed all participants significantly overestimated actual caloric intake compared to researcher estimates (8246.9±3394.8 vs. 7812.7±3407.7; p=0.001) and significant improvements in absolute percent error were seen when both interventions were pooled (pre=78.2%±45.3%; post=27.8%±0.2%). A repeated-measures ANOVA showed that while not significant, the IBG (pre=101.2%±49.5; post=27.7%±0.2%), compared to the TBG (pre=47.6%±4.7; post=27.7%±0.0%), saw a greater reduction in absolute percent error in caloric estimates on the test (p=0.129). Additionally, non-significant moderate correlations existed between BMI and pre-test error (r=0.522; p=0.229) as well as between BMI and post-intervention estimation improvement (r=0.524; p=0.315). In conclusion, diet education significantly decreases error in estimating caloric intake, perhaps more so for those with higher BMIs. No significant difference was seen between IBG and TBG for groups. More research is necessary to determine the most effective learning method for nutrition education.

Revisiting John Cage: A Partial Performance of Europera 5
Marcel Borbón, Steven M. Jones, Chloé Pourmorady

John Cage (1912-1992) has been a key figure in the development and evolution of modern music, and since this year marks the centennial of his birth, it is only fitting to present and analyze his work. Through reading John Cage's Silence: Lectures and Writings (1961) and Kyle Gann's No Such Thing as Silence (2010), in addition to studying Conversing with Cage (1988) by Richard Kostelanetz and The Buddha and His Teachings (1988) by Narada Maha Thera, one can become familiar with John Cage's perspectives on music and sound and their foundations in Eastern thought. Europera 5 (1991) is a work structured using
Eastern philosophy such as Zen Buddhism, as well as the Chinese Book of Changes, or *I Ching*, to authorize the many instances of its indeterminacy and chance. In performance, however, *Europera 5* emerges as a collage of musics from the Western tradition of grand opera. As such, the conceptually and intellectually brilliant yet sonorously chaotic fruit of Cage’s ideas, as presented in *Europera 5* and works like it, provoked controversy in musical institutions rooted in conventional approaches. We will perform the conclusion of *Europera 5*, with the understanding that all performances of the work differ due to the allowances of chance.

“Riverview Avenue”
Brendan McNerney

*Riverview Avenue* is a feature length thriller/satire about how the seemingly normal nuclear family can really be just a veneer for the horrible secrets boiling beneath the surface. Jay Davidson, a young teenager intentionally distanced from his own family, finds himself drawn back to their aid when a family of serial killers moves in next door. As if Jay handling the burden of his mother’s infidelity, his father’s alcoholism, and his sister’s rampant relationship problems weren’t enough, he now has to contend with the increasingly suspicious and hostile actions of his new neighbors. It doesn’t help that they seem so perfect and that their beautiful young daughter is exactly his age and seems to be attracted to him. Something has to give and inevitably, as his own family and the serial killers next door start to reveal their true colors, Jay is left to pick up the pieces.

In order to create this work of fiction, I needed an idea. Strangely enough, that seed which would germinate into the tree that is my screenplay turned out to be my parent’s reaction to the fact that my next door neighbors were “harboring” a convicted sex offender. They seemed livid and, like most, imagined the punishments that justice would bestow such a deviant person. I took that idea a bit further and imagined what it would be like if a family, particularly the parents, embraced violent acts of vigilante justice. Then I took those parents and dropped them into the life of a recognizable teenager with problems of his own. A dash of creativity, a dash of generic formula, and you get art. The particular details all come on a need-to-know basis. In one scene, for example, I needed Allie to discover something strange about the killers next door and for the killers next door to have to try and cover up the blood she sees. The solution? Nothing a quick Google search of abstract paintings and Allie’s transformation into an art history major couldn’t fix. It’s the little things that make it feel authentic and that’s how I hope *Riverview Avenue* will ultimately be received: as reality, just stretched a bit.

*Saccharomyces cerevisiae* Responds to Cold Shock by Changing the Expression of Genes Involved in Nitrogen Metabolism
Andrew Herman

Previous studies on the global transcriptional response of budding yeast, *Saccharomyces cerevisiae*, to cold shock have revealed that the response can be divided into early response genes (after 15 minutes to 2 hours of cold temperatures) and late response genes (after 12 to 60 hours of cold temperatures). The late response genes include the environmental stress response (ESR) genes, but less is known about the early response genes and which transcription factors regulate them. We have characterized the early transcriptional response at 15, 30, and 60 minutes of cold shock at 13°C and also the response to recovery after cold shock for 30 and 60 minutes at 30°C using DNA microarrays. Results were analyzed using the program GenMAPP to determine which biological processes were activated in response to cold
shock and recovery. We found that genes involved in nitrogen metabolism change expression during cold shock. The transcription factor Gln3p is an activator of genes regulated by nitrogen catabolite repression. We found that a strain of yeast in which the GLN3 gene was deleted has impaired growth at 15°C. We then performed a cold shock and recovery DNA microarray experiment on the Δgln3 strain to determine the effect of Gln3p on the transcriptional network that responds to cold shock. Stem Cluster analysis has produced 45 unique profiles of gene expression during cold shock for the Δgln3 strain. Analysis suggests that there is a link between genes involved in nitrogen metabolism and the ability of yeast cells to grow at cold temperatures.

Safe Drinking Water for El Espiritu Santo Island, Usulután, El Salvador
Jennifer Rodriguez

Safe drinking water is a crucial necessity for all human life. This is especially true for members of developing communities. A few Loyola Marymount University (LMU) students chose to elaborate a water project on Isla Espíritu Santo because of the relationship that members of the LMU community have developed with the hard-working, well-organized community on the island. Through several Alternative Break and Ignacio Companion trips, members of our university have become aware of the struggles that the community faces as well as been impressed by the level of commitment and organization that the community has towards bettering the lives of all families on the island. The struggles are evident: all of the island’s water, including drinking water, is contaminated with either waste or bacteria, especially Escherichia Coli (E. coli). Our project consisted of first, importing fourteen manufactured filters and distributing them among families in August 2011. LMU students also gave a water awareness workshop to the community. The school received a new pump and over 200 meters of piping which will allow us to return to the community in February 2012 and install an Ultraviolet light purification system. More piping will be replaced and a connection will be added so that the women’s cooperative in the island will have easy access to clean water.

Saning’o
Matthew Rice

What will happen to us if we change our way of life? This major question currently troubles the Maasai of Tanzania. Their traditional way of life may seem unscathed by the outside world, but this simply is not true. Maasai people like Richard Saning’o Ole Soombe are caught in between their beloved roots and a capitalist world. Unfortunately, they are being forced to prove their economic worth in a global economy. I befriended Richard Saning’o this past summer. He allowed me to make a 10 minute documentary film about his fascinating life and culture. Richard Saning’o was given two names at birth. First he was given his Maasai name, Saning’o. Saning’o is a Moran among the Maasai. He is a warrior for the community. Saning’o was also baptized as a Christian and given the name Richard. Richard is currently a student at Moshi University College of Co-operative and Business Studies. This identity is one that he is most familiar with. It is not an identity however that he wishes to be recognized by.

Science and Art of Wine: a physical chemist’s perspective
Jonathan Perkins
The history of winemaking spans thousands of years – much of this time, the art of wine production developed without requiring comprehensive chemical understanding. Modern analytical and production techniques promise to standardize quality for consumers and provide an objective “chemical yardstick” with which to judge wines. However, the complexity of the chemistry involved has some critics claiming that heavy reliance on chemical analysis threatens expression of terroir, or the geographical influence, in wines and may have the negative impact of devaluing the very characteristics that impart a fine wine’s uniqueness. This study provides an overview of some technical and analytical procedures implemented in ‘new world’ wine making. Collectively, the experiments explore the chemistry of wine from a quantitative perspective, as well as attempt to provide consideration of the artistic value of wines, which debatably may not be captured through chemical analysis alone.

**Senior Design: Project Steel Bridge**  
Arkell Burnap

The design of bridges plays a vital role in the transportation of goods and people. The purpose of this project is to design the bridge from top to bottom, which is an exercise in following coding restrictions as well as adaptive thought to satisfy the requirements. The given parameters limit the bridge design to a designated area and span and general design. As such it is up to the engineers to determine the appropriate concrete design and supporting super-structure. The superstructure includes the design of the steel reinforcing, the abutments on the hillsides, the columns, and others.

**Senior Mechanical Engineering Project**  
John-Charles Maddox Laws

This project is part of the senior design project, done with help and guidance from Robert Leedom and Andrea Gonzalez from Northrop Grumman. The end design goal was to design and build a self deploying hinge that would meet strict specifications. Examples of these specifications included ensuring that the design could overcome torque during deployment and withstand the launch, deployment and post-deployment conditions of the atmosphere and space. The design also had to meet highly accurate angular measurements (60 degrees ± 0.05 degrees), requiring the hinge mechanism design to be created as accurately as possible.

The basic elements of our design include the frame, the hinge, the axel, the deployment pins and the boom arm of the satellite itself. Though we were only responsible for the design of the first four parts listed, our design did have to take into account the size and potential torque and forces the boom arm presented. All parts listed are made from 1024 T6 Aluminum, and machined to the proper sizes. The design also includes various bolts that secure the part together, made from stainless steel and varying in size and shape based on their application.

**SHACKLETON**  
John (Jes) Bickhart

The purpose of this research is to identify certain leadership characteristics of the famous Antarctic Explorer, Sir Ernest Shackleton; leadership that kept his crew of 28 for two-and-a-half-years alive while drifting on the frigid ice floes of the Weddell Sea after their ship had been crushed in the ice. By screening my junior thesis documentary on the expedition itself with interviews by the Hon. Alexandra Shackleton (his granddaughter), Dr. Jan Piggott (leading historian on his life), and David L. Mearns (Deep
Sea Wreck Explorer), I intend to educate and inform my audience on what it means to lead and inspire people and share what personal qualities one possesses in becoming a great leader.

Shoot Morphology and Fluctuating Asymmetry in *Jaumea carnosa* in Response to Environmental Stress
Kristen Sheridan

*Jaumea carnosa* is a perennial, prostrate-succulent that is native to California and western North America. Generally found in coastal wetland habitats, *J. carnosa* is exposed to extreme environmental factors such as salinity and water stress. In wetland habitats that are surrounded by urban development, such as the Ballona Wetlands, the presence of heavy metal pollutants is an additional environmental stress. Plants in environments of variable stress (e.g., tidal) often exhibit morphological plasticity. It is also suggested that stressed organisms show fluctuating asymmetry due to developmental instability. Thus *J. carnosa* was chosen to study fluctuating asymmetry as a potential indicator of stress, especially heavy metal pollution, in the Ballona Wetlands. Fluctuating asymmetry was significantly different for leaves of *J. carnosa* measured at eight sites that differed in tidal influence. In the current study we are focusing on the interplay of morphology and fluctuating asymmetry and the environment. Does fluctuating asymmetry correlate with other morphological characters given that *J. carnosa* shows morphological plasticity in response to environmental variables. Leaf length, width, and internode length differed with site and showed a negative correlation with fluctuating asymmetry. Plants grown in mesocosms and subjected to various levels of salt and water stress as well as heavy metal pollutants are being characterized with respect to morphology and fluctuating asymmetry. This will establish if pollutant effects on developmental instability as measured by fluctuating asymmetry can be separated from the morphological plasticity exhibited by this species.

Similarities and Differences In Two Teachers' Teaching Practices During Math and Science Lessons
Jonna Crocker, Chloé Dove, Nicole Froidevaux, Greg Smith, Vandana Thadani, Tonya Warren, Asha Weisman, Katelyn Wirtz,

Teachers are often viewed as one of the most influential variables when it comes to student learning. However, despite their importance, there are few quantitative measures of teaching. This project investigates how measures of teaching can be used to understand classroom teaching practices. In a previous study, measures of teaching were developed to categorize the tasks, questions, and suggestions that teachers give to students (Thadani, Stevens, & Tao, 2009). In the current study we are using these measures to examine the similarities and differences in teaching practices between teachers and across subject domains. Specifically, we are examining whether teachers are consistent with their use of tasks, questions, and suggestions in two subject domains or more consistent within a given subject domain. In this case study, two middle school teachers, each teaching both math and science, were filmed in their classrooms. Their tasks, questions, and suggestions, (referred to as teacher tasks and questions or “TTQ”) were categorized based on rules called “codes”. Two competing hypotheses will be tested: (1) teachers have a general teaching style, or a specific use of TTQs, regardless of the subject domain in which they are teaching; (2) teachers’ use of TTQs will be dependent on the subject domain; that is, TTQs will be more similar within math and science rather than within teachers. This study serves to illustrate how measures can be used to explore teaching practices, and these methods can subsequently be applied to larger samples and a variety of classroom contexts.
Souvenir
Tracy Ip

Souvenir is a documentary that investigates the relationship between olfaction and memories. It personifies this bond by following a perfumer create a scent that would remind her perfectly of her grandmother. In the Fall of 2011 while I was studying abroad in Germany, I discussed with a visiting professor/neuroscientist the importance of the sense of smell. It was from our conversation that the final idea of my documentary surfaced. The connection between olfaction and memories is an overlooked relationship that factors into our daily lives. Awareness of this subconscious link allows a deeper understanding of the reasoning behind the attraction to certain scents. Vanilla, for instance, is a comforting scent that is reminiscent of childhood. This is why it is such a popular fragrance. Through my research, it is shown that these olfaction cues are also the links to memories. If lost, those memories would have no way of being recalled. Due to the structure of the study abroad program in Germany, the documentaries made were of a smaller scale, minimal crew, no extensive lighting, etc. Although they were not the most polished of movies, they felt much more authentic. Each was a passion project that was only visualized because of the perseverance and love of the student creating it.

Spitzer Observations of Stellar Variability in the Mid-Infrared
Alexander Antonow

We used archival mid-infrared data from the Spitzer Space Telescope to search three Infrared Array Camera (IRAC) fields containing exoplanet host stars (Tres-2, Hat-P-1b, and Tres-4) for additional stars that vary in the mid-infrared. We used the Image Reduction and Analysis Facility (IRAF) software to determine photometry for all field stars detected by 2MASS, plus a number of manually selected stars in each field that were not contained in the 2MASS Point Source Catalog. In total, 242 stars in 6447 images were surveyed (62 stars in 1073 4.5-micron images of the Tres-2 field spanning 3.5 hr, 49 stars in 1605 3.6-micron and 4.5-micron images of the Hat-P-1b field spanning 6.0 hr, and 131 stars in 2164 4.5-micron images of the Tres-4 field spanning 8.0 hr). We created light curves for each of the stars and visually inspected these light curves for variability above the level of the noise. We found one star in the Tres-4 field that displayed periodic variability (P = 0.082 days) when phase-folded. We noted that this star was not listed in the 2MASS catalogue. Thus, we found that approximately 0.4% of stars observed in the mid-infrared, down to our sensitivity level (approximately 0.15 mJy at 4.5 microns for a S/N = 5 detection), exhibit variability. This research was conducted within the NASA/IPAC Teacher Archive Research Project (NITARP).

Streets of Jidai
Victoria Giacomazzi, Rachel Tamura, Stephanie Troncoso

The “Streets of Jidai” is an animated film set during Edo-period Japan. It is about a cat who can travel between worlds. It takes a small boy to his final resting place, but not before running into a parade of demons on the way.

Student Values and Performance in Introductory Physics
Raquel Sena
This study explores the potential relationship between a series of physics performance tests and self-declared perceptions regarding the nature of learning and gaining knowledge. In a written survey given to students taking the introductory mechanics course, 16 students reported “Learning and Gaining Knowledge” as one of their core values. The students then proceeded to expand on what this meant to them and their personal motivations for this intellectual development. The surveys were placed in two categories based on student responses, which reflected either intrinsic or extrinsic motivation for learning. The relationship between performance and motivation was analyzed.

Supplying the Credible Threat: The ICC and Another Year of Freedom Recession
Samantha Hay

To what extent does the International Criminal Court (ICC) alter state behavior in the arena of human rights? Corrupt and negligent governments as well as state-sponsored violence and terror have propelled the populations of over eighty nations into regenerating cycles of human suffering – these nations are home to more than half of the world’s population. Why such a reprehensible problem is increasing amidst strong efforts to stop certain state leaders and actors is a considerably perplexing question that many national and international organizations have failed to answer. Understanding that many foreign policy tools and actions, as well as humanitarian efforts, have failed to adequately address such a problem, this paper seeks to analyze the role the International Criminal Court (ICC)—a relatively new development in international criminal law-plays in altering state behavior in the arena of human rights. By conducting a large scale, quantitative analysis of a random sample of African countries this paper seeks to determine if a threat issued by the ICC results in a decrease in human rights abuses within a state. Furthermore, this paper aims to shed light on the overall effectiveness a permanent international court may have in dealing with various war crimes or crimes against humanity. Preliminary analysis show that that International Criminal Court may be effective in addressing human rights abuses-civil, political, and social- under certain conditions.

Temperature Dependent Optical Properties of Nanoparticle Suspensions
Steven Brunter

The optical properties of nanoparticle suspensions in liquids have garnered significant interest recently for their potential use in applications ranging from biomedical imaging to solar energy harvesting. Although previous investigations have provided useful insight into the spectral properties of such suspensions, they have been primarily limited to experimental investigation at room temperature. As these suspensions will be used in systems with significant variations in temperature, it is important to understand the effects of temperature on the optical properties. The responses were analytically modeled using Matlab to understand the individual contributions from variations in particle size, volume fraction, and surrounding medium temperature dependent refractive index changes. These models were then compared to the experimental effects of temperature on the response of TiO₂, SiO₂, Ag, and Au nanoparticle suspensions in water utilizing an integrating sphere and heated cuvette.

Terpene Content and Emission in Common Local Vegetation: California Incense-Cedar (*Calocedrus decurrens*)
Vivian Okonta
Biogenic volatile organic compounds (BVOCs) play a role in the formation of aerosols and ozone, large contributors to pollution in the Los Angeles area. BVOC emission and content within a California Incense-Cedar Tree (*Calocedrus decurrens*) were studied at Loyola Marymount University's greenhouse facility in the summer of 2011. This species was chosen because it is native to California and suitable for urban renewal projects within Los Angeles. In our study, hydrocarbon- and ozone-free air flowed through a branch enclosure system from which BVOC emission was measured by HayeSep-Q adsorbent-filled cartridges. Results were analyzed using a gas chromatograph with a mass spectrometer (GC-MS). Leaves from the California Incense-Cedar tree were collected and freeze-dried to determine BVOC content on a dry mass basis. We identified various BVOCs, focusing on monoterpenes and sesquiterpenes that were emitted and stored within the plant during sampling periods. Results demonstrate that emission of terpene compounds followed a diurnal trend, with peak emissions occurring at the highest temperatures of the day. Twenty-four terpene compounds were identified in emission samples, while 125 compounds were identified in leaf content samples. Compounds such as methyl salicylate (C₈H₈O₃) and several oxygenated terpenes, such as borneol (C₁₀H₁₈O) and camphor (C₁₀H₁₆O), exhibited a higher amount of emission than storage. The majority of sesquiterpene compounds (C₁₅H₂₄), however, were stored within the plants' leaves rather than emitted. Results suggest that although there is potential for high levels of BVOC emission, the California Incense-Cedar tree exhibits a greater amount of BVOC storage than emission.

The activation of alveolar macrophages and their lipid accumulation is associated with radiation-induced chronic lung injuries

Nicole Lata

Lung cancer continues to be the leading cause of all cancer-related deaths in both men and women, affecting over 220,000 Americans each year. Though radiotherapy has proven to be one of the leading treatments for lung cancer, as many as 5-20% of irradiated lung cancer patients develop radiation-induced lung injuries. Within these damaged lung tissues, alveolar macrophages have shown abnormal phenotypic differences, such as a foamy appearance, causing others to suggest that unlike M1 classically activated macrophages, these may be classified as M2 alternately activated macrophages—which may play a pivotal role in the development of lung fibrosis. The objective of our study is to identify the phenotypic differences of these alveolar macrophages seen in radiation-induced chronic lung injury tissue and determine whether they are significant. The lungs of both FVB/N and C57BL/6 mice were irradiated by distributing a single dose to the thoracic cavity using the 137Cs irradiator. 20-24 weeks post-irradiation, immunohistochemistry was performed on lung sections to stain for different protein markers like those of M1 and M2 macrophages, M2 macrophages only, and lipid transporters. We found that lung tissues of FVB/N and C57BL/6 mice post-irradiation showed lung pneumonitis and fibrosis, increase in alveolar macrophages (especially M2 alveolar macrophages around fibrotic regions and blood vessels), increase in lipid accumulation within alveolar macrophages, and decrease of ABCA1 lipid transporters in bronchial epithelial cells but increase in alveolar macrophages. Our data suggests that the activation of alveolar macrophages and their lipid accumulation may be involved in the development of radiation-induced chronic lung injury.

The Causes of Recidivism and how Rehabilitation Can address them: A case study in the Choice Theory Connections Program experience

Molly Burns
While our pledge of allegiance ends with the words “liberty and justice for all,” no country incarcerates more of its citizens than the United States. Moreover, of those who have been released from prison in the US, more than half of prisoners will return to prison. The National rate of recidivism is 52 percent. Women, in particular, are incarcerated and re-incarcerated at an alarmingly high rate. The population of women prisons has risen at a rate of 757 percent between 1977 and 2004. Through group interviews and surveys conducted with seventy-five female inmates at the California Institution for Women (CIW), a correctional facility near Los Angeles, I examined the primary factors that determine a parolee’s likelihood to reoffend and identify what makes certain rehabilitation programs effective in reducing the likelihood of recidivism. In addition to examining general trends in rehabilitative programming, this thesis focuses on the “Choice Theory Connections” program at CIW as a case study. This program, which teaches inmates to be self-reflective, tolerant, and focuses on relationship skills, boasts a 3 percent recidivism rate for the 114 women who have participated and paroled. By understanding both the causes of our high rate of recidivism and also how the Choice Theory Connections program addresses these factors, we can more readily identify system solutions and policy proposals to improve for how prisons treat inmates.

The Characterization of Novel Bacteriophage “Marlex”
Mariele Courtois, Alex Santiago

Bacteriophage, a class of viruses that infect bacteria, are the most abundant biological entities on Earth; their wealth of genomic diversity can provide valuable evolutionary insights as well as insights into potential therapeutic uses. However, making full use of bacteriophage diversity has been limited by the relatively few phage that have been isolated and characterized. To remedy this, we have joined a nationwide consortium of schools conducting year-long research sponsored by the Howard Hughes Medical Institute Science Education Alliance (SEA) Program. During the fall of 2011, we isolated and characterized a mycobacteriophage (Marlex) on the host Mycobacterium smegmatis extracted from soil samples collected from the campus of Loyola Marymount University. To characterize the phage Marlex, we performed restriction digests on its genomic DNA. Researchers at the University of California-Los Angeles photographed Marlex using electron microscopy. Through PCR and molecular analysis, we characterized Marlex into cluster C1, a family of myoviridae phages with contractile tails. In the spring, as part of a class project, we are currently carrying out bioinformatics research to annotate the genome of the phage, Contagion, and compare this phage genome to that of existing, annotated phage genomes…Bioinformatic analysis utilizes a variety of bioinformatics programs including DNA Master, BLAST, Consed, and Apollo. We will describe the isolation and characterization of the C1 cluster phage, Marlex, and our preliminary findings on the bioinformatics analysis of Contagion. We will also discuss the implications of our results and their contribution to microbial ecology and evolution.

The Correlation between Perceived Social Support and Extraversion
Georgina Lewis, Eleni Rodriguez, Katelyn Wirtz

This study examined the relationship between perceived social support and extraversion. The first hypothesis predicted that perceived overall social support would be positively correlated with extraversion. The second hypothesis predicted that the positive correlation between perceived family
support and extraversion would be stronger than the positive correlation between perceived friend support and extraversion. Twenty-three college students in a research methods course served as participants; they were administered two surveys which assessed their social support and extraversion. Results indicated a significant positive correlation between perceived overall social support and extraversion. The findings also indicated a significant positive correlation between perceived family support and extraversion as well as a significant positive relationship for perceived friend support and extraversion. The last two correlations were significant, but in the opposite direction of what was predicted. The positive correlation between perceived family support and extraversion was weaker than the positive correlation between perceived friend support and extraversion. This study suggests that social support may influence an individual’s level of extraversion and that friend’s social support may be more powerful influence than family support on extraversion.

The discovery of the mycobacteriophage MePac
DongWoo Chang, Abraham Gebresellassie

The discovery of the mycobacteriophage MePac Bacteriophages are viruses that infect bacteria, and are the most abundant biological entities on the planet, and yet their diversity is underexplored, hindering our understanding of their roles in ecology and bacteria evolution. In the fall of 2011, as a part of Science Alliance Education (SEA) Phage Discovery program, a nationwide consortium of schools sponsored by the Howard Hughes Medical Institute, we began our own investigation to isolate and characterize new mycobacteriophages, phages that infect mycobacterium species like the pathogenic Mycobacterium tuberculosis. We isolated bacteriophage from soil samples collected on Loyola Marymount University. Using Mycobacterium smegmatis as a host, we purified a new mycobacteriophage, which we named MePac. After phage purification, we characterized it using restriction digest analysis on the genomic DNA. The results indicated that MePac belongs to the C Cluster, (myoviridae), a family of short tailed and lytic phages. In the spring, as part of a class project, we are annotating a segment of the genome of Contagion using the bioinformatics program, DNA Master. We will discuss the isolation and characterization of MePac, and our preliminary findings on the annotation of Contagion and the relevance of our research with respect to evolution and microbial ecology.

The Effect of Orientation on Mussel Body Temperature
Michael Carlone, Matthew Dolan, Terry Rinder

Mussels (Mytilus galloprovincialis) experience extreme variation in temperatures within the intertidal communities of Southern California. The goal of this study was to examine one cause of this temperature variation, specifically the effect of vertical and rotational angle of the mussel in relation to sunlight. We were able to recreate an environment incorporating artificial sunlight in order to test the temperature variance in an individual mussel at various orientations. We found that different orientations changed the amount of time that the individual required to reach the maximum temperature that this species is known to tolerate. We are currently examining patterns of orientation among individuals in the field and determining the effects of orientation on their field body temperatures. We then plan to compare these results to the individual results obtained in the simulated environment. Finally, we produced mussel mimics by filling mussel shells with silicon. Because silicon exhibits similar thermal characteristics to the actual organisms, many researchers use these mimics to estimate field body temperatures. However, we discovered that the live individuals reached elevated temperatures in significantly less time than the silicon-filled mimic. Overall, these results will have important implications for studies examining how temperature variation impacts intertidal populations.
The Effects of Education, Experience, and Country of Origin on Comfort, Trust, and Likelihood of Choosing a Physician
Richelle Haniffa

Previous research has shown a distinct correlation between in-group favoritism and out-group animosity pertaining to consumer decision-making. Consumer animosity is a prevalent measure that is meant to help marketers further understand consumer attitudes towards foreign products and/or services. This study seeks to examine the effects and interaction of prior education, years of experience, and country of origin of a practicing primary care physician on a patient’s trust, comfort, and likelihood of choosing a potential doctor. I believe this study can lend itself to the lack of existing research regarding the impact of cultural animosity and judgment on experience and educational prestige. I have created an online survey that seeks to gather data pertaining to other key covariate variables such as the respondents’ own ethnic identification as well as his or her animosity towards the physician’s ethnic background. The study controlled for the participant’s demographic, and is being conducted using a Univariate ANOVA on a between-subjects design.

The Effects of Heavy Metal and Rhizobacteria on the Germination and Growth of Dune Lupine
Jennifer Okonta

Urban run-off is a source of heavy metal contamination and one of the many negative consequences of our growing and developing cities. Not only does it affect the oceans, beaches, and wildlife, but it can also have a major impact on plants. The purpose of my study is to find out how heavy metals and the root-associated bacterium, *Variovorax* sp., affect *Lupinus chamissonis* (dune lupine) growth. This particular nodulating legume can be found near Loyola Marymount University at the sand dunes of El Segundo and at the Ballona wetlands. Different root assays and germination experiments have been conducted. *Lupinus chamissonis* seeds treated with 250 µM ZnSO₄ or inoculated with *Variovorax* were found to have higher germination rates than untreated seeds. However, I found that higher concentrations of zinc (0.5 – 1.0 mM) inhibited root growth. Future studies will investigate whether *Variovorax* influences the impact high concentrations of zinc has on dune lupine growth.

The Globalization of Filipina Workers
Trixie Joy Aquino

There are 60 million female migrant workers in the world today and most of them come from Asian countries. Among them are Filipina women and the majority of them have one distinctive occupation: domestic work. Filipino immigrant women work as cleaners, caregivers, and domestic helpers in more than 130 countries around the world. Sociological research on globalization and international migration argues that migrant workers are more likely to have connections to both their home country and their destination country today without having to culturally assimilate or choose only one national identity. Assimilation is where a group takes on a self-identity as part of the destination culture. Is this the case for Filipina domestic workers who are in the U.S.? Drawing on data from 10 personal interviews with Filipina domestic workers in the U.S. and secondary research sources, I argue that Filipina workers in the U.S. identify more with American culture and do tend to assimilate more than the globalization research would suggest. Using a snowball sample, interviews are taken from personal contacts from religious and nongovernmental local organizations.
The interactive effects of attachment style and mindfulness on cognition, emotion regulation, and physiology
Beverly Pascual, Christa Scholtz

For centuries Buddhists have recognized the importance of mindfulness, the cultivated awareness of present happenings in both physiological and psychological domains. More recently scientific research studies have demonstrated that mindfulness is associated with various indicators of well-being (Brown & Ryan, 2003; Rasmussen & Pidgeon, 2011). For example, research has shown that intensive mindfulness training can cause a reduction in harmful reactivity to common social stressors (Brown & Ryan, 2003). Thus, mindfulness poses the possibility to serve as a protective buffer in the presence of stressors and could potentially have stronger effects for those who tend to more anxiously anticipate or experience stress. In the current study we investigated the possible buffering effects of a brief mindfulness exercise in the context of a mildly stressful social situation in the laboratory. Participants were brought to the lab and were told that they would be taking part in a variety of activities, including social activities and puzzle activities. During the course of the study participants engaged in a mindfulness exercise. We hypothesized that mindfulness would buffer individuals from the inherent stress of the laboratory situation and we hypothesized that this buffering effect would be stronger for those with an insecure (anxious or avoidant) attachment style, as these individuals tend to find social situations to be more stressful than those with a secure attachment style. In this poster we will present findings on the effects of mindfulness and attachment style on cognitions, emotional regulation, and physiological responses.

The interactive effects of attachment style and rejection on cognition, emotion regulation and physiology
Laura Fryer, Kristen Trudo

Anyone who has ever experienced rejection knows that it is a poignant and painful experience. It leaves us feeling unwanted and unworthy and threatens our confidence in our desirability as a relationship partner. Although rejection is clearly a normatively distressing experience there is much variability in people’s responses to rejection. Whereas one individual may respond to rejection with a mild and fleeting sense of disappointment, another individual may respond to the same rejection with a much greater sense of devastation and dejection. What makes some individuals more vulnerable to the negative effects of rejection? The purpose of this paper is to investigate the role of attachment style as a moderator of the relationship between rejection and emotion regulation, cognitive responses, and physiological responses. We expect that those with a secure attachment style (i.e., those who are confident in others’ regard for them) will cope in a more adaptive way with rejection and conversely we expect that those with an insecure attachment style (i.e., those lack confidence in others’ regard for them and who feel unworthy of love) will cope in a more adaptive way with rejection. To investigate the effects of attachment style on responses to rejection we conducted a laboratory study where attachment style was measured, rejection was manipulated (by giving participants mildly rejecting feedback in the context of a laboratory task) and cognitive, emotional, and physiological responses were measured (as listed above). In our poster we will present findings outlining the different patterns of responses displayed by secure versus insecure individuals in response to rejection.
Findings from the field of cognitive neuroscience are helping to clarify when and how young brains are best able to grasp fundamental concepts. Educators of young children are already beginning to benefit from these exciting discoveries and their implications. My research has focused on the central research question, “What do parents of young children need to know about brain function and development to support positive learning experiences”? We are beginning to identify recent findings from neuroscience publications that can be usefully reworded for lay audiences, specifically for parents of young learners. The research also consists of field work involving both educators and parents of young learners. The goal is to help parents to understand how their learners process new information, what environments stimulate productive learning, and high-risk actions by the parent that could negatively impact development. This research project investigates further what information about the growing, learning brain will be most useful to parents of toddlers and young children as they prepare their learner for school and/or continued work with teachers. The ultimate goal is to understand and maximize the learner’s experience.

The Rych Cheyne is an anonymous, 16th century religious manuscript in the William H. Hannon Library. The structure of the work is highly beneficial in better understanding and identifying the themes of Proverbs and Ecclesiastes. More importantly, however, the magnitude and skill of its composition is aesthetically breathtaking. The manuscript also presents ripe opportunity for historical scholarship on the period. For my Honors senior thesis, I transcribed the 200-page text from Elizabethan secretary hand and compiled a critical edition of the manuscript. In my transcription, I discovered what might be original translations of the Greek Bible, opening up new avenues in Biblical Studies. This summer, I received funding from the Honors Program and the Hannon Library to pursue my research in England, where I examined manuscripts in an attempt to identify the Rych Cheyne's author. My findings abroad have indicated that the author may have been a significant bishop, of whom no publications were previously known to exist. My research was recently noted by the Folger Shakespeare Library, which brought forward a copy of the same manuscript in their collection unknown to the Hannon Library, and has since fostered dialogue between the two institutions. I believe that the implications of my work can make the Hannon Library stand out amongst other major institutions in Southern California and the world. My research also has the potential to change the face of Theological Studies and contribute an entirely new piece of history.

Despite its persuasive purpose, advertising has not received a great deal of critical scrutiny within the field of rhetoric- the study of the art of persuasion. My research pursues a rhetorical analysis of a recent advertising campaign popular with young to middle-aged men, Dos Equis' “The Most Interesting Man in the World” campaign. I contend that the success of this campaign relies on social and historical movements whose genesis was in the first half of the 20th century. In the 1940s and 50s, challenges to hegemonic white masculine privilege began when the civil rights and women’s movement took hold in
American society. This left American males, especially white males, with what sociologists and communication studies scholars call “a crisis of masculinity,” an angst and longing for the social power white men once held. This angst left men susceptible to the promise of their once-held glory. My research builds on studies of media depictions of masculinity by analyzing the rhetorical dimensions of a prototypical advertisement from the Dos Equis campaign to explain how Dos Equis leverages this crisis of masculinity. The ads feature a suave and sophisticated gentleman, grey-haired and matured from his life of outstanding adventure. In the ads, his exploits are chronicled for the audience. I argue that “The Most Interesting Man in the World” advertisements offer men the option of Dos Equis beer as a vehicle to regain what they have lost in decades past. The rhetorical implications of these advertisements are striking; this case study shows how susceptible men are to the influence of patriarchal media. By using methods of textual analysis, I show how the Dos Equis advertisements appeal to a male demographic that is experiencing the crisis of masculinity, why these aspects of the advertisements provide men a solution to escape from the crisis, and ultimately why these ads are successful in selling beer to the men affected by the crisis.

The Myth of the Medieval Conglomerate: International Mercantile Law in Medieval England
Ashley- Emma Noehrbass

In June 2000, the House of Committee on the Judiciary held a meeting on "The Internet and Federal Courts". The oversight hearing was supposed to serve the new choice-of-law posed by the internet. More recently the House of Representative’s debate on the "Stop Online Piracy Act Markup" attracted much media attention. Memorandums have been prepared for case studies such as the following scenario: Fraud is committed by a Pennsylvania resident against a Massachusetts citizen via an online company based in San Diego. In cases as such, which state’s law should apply? When applied to the crimes committed, or taxable income made by online companies, the principles of federal and state laws seem to overlap. Recently, many economists have argued for the creation of a new, universal law to govern the border less internet- a lex pc modeled on the medieval lex mercatoria, a law which supposedly followed the merchant along his journeys to protect them from regional lords. Attempts in trying to create international law, in the ever expanding market economy, lures the means of regulating international commerce on false historical pretenses. The lex mercatoria has been presented as an international law created solely for merchants in medieval Europe. Thus, the study of the medieval merchant has won new attention through current congressional debates. At the center of this research paper stands an argument that wishes to debunk some of the common misconception of the supposed multilateral and independent medieval legal system which has entered contemporary politics.

The OmniCrutch
Daniel Falaleyev

Our goal was to develop and advertise a crutch that would prove to be convenient in storage and transportation, while also being comfortable and easy to use. Ultimately the OmniCrutch is intended to be a stable crutch that will fit in backpacks, under airplane seats, and one that can be stored and stacked in ways to minimize occupied space and maximize efficiency.

The relationship between non-resident fathers and their adolescent daughter’s romantic relationships
Addison Duane
What does effect does a non-resident father have on his adolescent daughter’s romantic relationships in high school? This study proposed that the absence of a father figure would lead young women to pursue more romantic involvement than young women with a strong father figure. I questioned a sample of 96 female high school students from the LA area and Northern California, as well as a few from the Midwest, using an online survey. The majority of my sample had fathers living in the home, and most reported to having less than three romantic relationships in high school. Furthermore, the girls who did not have fathers living in their homes also reported not having more than three romantic relationships. The results do not support my original research question and propose, instead, that girls without father figures may be less inclined to pursue romantic relationships in high school.

The Relationship between the Intensity of Facebook Usage and Self-Concept
Kristen Trudo

Constructs of self-concept were investigated as they related to how invested an individual was in Facebook. One study on these topics indicated that Facebook does not fulfill emotional needs for those trying to adjust to the college atmosphere (Kalpidou, Costin, & Morris, 2011). Further research showed that adolescents’ self-esteem was negatively affected by the response they received from their peers on social networking sites (Valkenburg, Peter, and Schouten, 2006). In the current study, those with lower self-esteem were predicted to have a greater investment in Facebook. Those who thought more about Facebook were predicted to have lower self-esteem and be more self-conscious. Participants were 61 undergraduate students who were active Facebook users. Participants answered questions regarding the intensity of Facebook usage as well as 3 self-concept questionnaires regarding self-esteem, self-monitoring, and self-consciousness. More time spent on Facebook, demonstrated by logging onto the site multiple times throughout the day, indicated greater intensity of Facebook usage. The results showed that Facebook usage was related to self-concept constructs: there was a positive correlation with self-consciousness, $r(59) = .24$, $p = .032$, and a negative correlation with self-esteem, $r(59) = -.25$, $p = .027$. These findings suggest that, for individuals with low-self esteem, Facebook and other social networking sites may prove to be a detriment.

The Role of Blood in Ancient Greece
Jeremy Lins

Blood played an important role in the lives of the ancient Greeks. By examining the role blood played, we can learn much about Greek culture and how that eventually influenced the practices of Christianity. Animal sacrifice offered blood to the gods above (during rituals and oaths) and a tribute to those below in Hades. Blood also played an important role in the various rituals performed for the sake of purifying a community (the pharmakos is an excellent example; this is the idea of a scapegoat). But blood was not only important in religious settings (sacrifice and oaths); it also played an important part in ancient medicine. I will explore the importance of blood in the culture of ancient Greece by examining ancient sources: common myths, such as the story of Iphigenia, which will provide a crucial insight into the purification of a community, ritual evidence from historical and literary texts (Homer’s epics, tragedies), and primary sources on the treatment of blood in medicine (Hippocrates and Galen). I will examine the relationship between blood and wine in these various aforementioned practices (wine was often used as a substitute for blood), and how this relationship of blood and wine crossed into Christianity.
The role of contest sequentiality in corrupt government procurement auctions: An experimental investigation
Christopher Bird

In their efforts to reduce costs associated with public projects, government agencies commonly auction labor and service contracts to the private sector in a process called public procurement. No real-world auction is perfectly efficient, but frequent reports of collusion and bribery highlight corruption inefficiencies that especially plague government auctions. Empirical studies paint a general picture of aggregate losses arising from procurement corruption; however, a game-theoretic approach sheds light on a less obvious—but arguably more significant—effect of corruption: it significantly affects the strategies for all players, not just the corrupt ones. Previous research on auctions typically investigated the effect of one form of corruption across several auction formats. We analyze the effect of different forms of corruption on equilibrium bidding strategies and welfare for one format: the first-price, symmetric, private-value auction. Modeling corruption as a separate, all-pay “bribe” auction of retroactive bid-adjustment privilege. We use regression analysis of data collected from computer-based experimental auctions with human subjects to test whether the time that the bribe contest occurs—before, during, or after contract bidding—affects the final outcome, in terms of winner and taxpayer revenue, of first-price, private-value procurement auctions. We hypothesize that preemptive over-bribing is most severe when bribes are made before the procurement auction, and that this over-bribing effect will lead to lower seller revenue for the auction. Our findings speak to the importance of modeling the exact nature of the relationships that facilitate corruption in auctions and should help guide practical efforts to fine-tune anti-corruption enforcement.

The role of SGK-1 in Ras-mediated rescue of metabolic defects induced by loss of extracellular matrix attachment
Robert J. McMickle

The ability of cancerous cells to survive in the absence of attachment to their normal extracellular matrix (ECM) is one of the fundamental hallmarks of tumorigenesis. Their survival is dependent on the inhibition of anoikis (ECM detachment-induced apoptosis) and the ability to overcome metabolic defects induced by ECM detachment. It has previously been determined by our lab that detachment of immortalized, non-tumorigenic mammary epithelial cells (MCF-10As) causes a deficiency in ATP levels that can be rescued by the stabilization of EGFR and downstream PI3K signaling. Furthermore, Ras, an established oncoprotein, lies downstream of growth factor receptors, integrins, and protein-tyrosine kinase receptors, and ultimately triggers a signaling cascade that may lead to cancer cell growth and proliferation. One critical serine/threonine protein kinase downstream of the Ras and PI3K signaling pathways that requires further understanding is the serum-and-glucocorticoid-regulated kinase-1 (SGK-1). Previous studies have shown that treatment of MCF-10A cells expressing a constitutively active Ras (MCF-RasV12) with the SGK-1 inhibitor GSK 650394 have resulted in decreased ATP levels in detached cells. This data suggests a critical role of SGK-1 in the maintenance of ATP levels of cancerous cells in the detached state. To further investigate these results, we have begun engineering a mammary epithelial cell line that expresses constitutively active SGK-1, and are examining the effects of RNA interference mediated SGK-1 knockdown on cell metabolism. It is our belief that a more complete understanding of
SGK-1 and its significance in promoting the survival of detached cancerous cells may offer a novel target for chemotherapeutic intervention.

The Sophisticated Stereotype of the Black Man: Black Masculinity in Criminal Minds
Ricky Randle

Research within Communication Studies on media depictions of black masculinity identifies dominant stereotypes of black men as uncivilized, malicious, criminal, violent and uneducated. Analyses of televised depictions tend to focus on news coverage of professional athletes and hip-hop artists or fictional images of black criminals. My research adds to this work by turning to televised images of black male law enforcement that the contemporary crime drama has popularized. Specifically, I focus on the character of Derek Morgan in Criminal Minds, a hit crime drama series created in 2005 about a group of FBI profilers in Quantico, Virginia. The series Criminal Minds is produced by The Mark Gordon Company that is in association with CBS Television Studios. By using ideological criticism to closely analyze its depiction of FBI agent Derek Morgan, I demonstrate that Criminal Minds not only creates negative perceptions of black men, but also empowers white masculinity. In addition to analyzing the show, I contextualize Criminal Minds within a larger historical backdrop through including other depictions of law enforcement characters within the recent past. I compare Morgan’s character with the emergence of white violent law enforcement characters during the post-9-11 era such as Bruce Willis in Die Hard IV and Elliot Stabler of Law and Order: SVU. Ultimately, I argue that even though Morgan appears not to fit the stereotypical portrayal of black masculinity because he is a part of the FBI team, this character is only a sophisticated version of the criminalized black male commonly portrayed in today’s media.

Topological Symmetry Groups of Complete Bipartite Graphs
Kathleen Hake

For small molecules, chemists have long used the collection of rigid symmetries of a molecule to predict some of its chemical properties. For example, rigid motions such as rotations and reflections can give insight into the chemical behavior of molecules. The topological symmetry group was introduced in response to the increasing importance of very long and flexible molecules, such as DNA, in which it is not enough to consider rigid motions. The topological symmetry group of an embedded graph is the group of all continuous mappings of space that send the graph to itself; it was first defined as a way to describe the symmetries of molecules. Different embeddings of the same graph will have different collections of symmetries. There are however restrictions on the possible collections of symmetries that come from the abstract structure of the graph. This study focuses on complete bipartite graphs with \( n \) vertices in each set, denoted \( K_{n,n} \), in which vertices can be separated into two disjoint sets where every vertex from one set is connected to every vertex from the other set by an edge. We determine for which \( n \) does \( K_{n,n} \) has an embedding in space whose topological symmetry group is isomorphic to a cyclic group, a dihedral group or a product of the two.

Towards Improving our Understanding of Bacteriophage Diversity: The Isolation and Characterization of SDcharge11 and the Bioinformatics Analysis of Contagion
Bacteriophages infect and consequently lyse (rupture of host’s cell membrane to release the new viral particles) their host, bacteria. These bacteriophages are acquiring more attention in research due to the growing awareness of their importance in ecology and evolution. The target of this research is to discover novel phages through the Howard Hughes Medical Institution Science Education Alliance (HHMI SEA) Phage Discovery Program at Loyola Marymount University. In the fall of 2011 we collected, isolated, purified, and characterized numerous bacteriophages. One of these collected phages was SDcharge11, a lytic phage (ability to only lyse bacterial host) and member of the B1 sub-cluster. This virus is capable of infecting Mycobacterium smegmatis, an exemplary microorganism in exploring phage, and was found on the campus of Loyola Marymount University. Currently, in the spring of 2012, we began collectively analyzing, through division of groups, a single bacteriophage named “Contagion” due to its large amount of DNA. Furthermore, in our present research, we are deciphering its genomic DNA using numerous sources such as DNA Master, BLAST, and GeneMark. We will present our preliminary findings from our fall and spring research as a contribution to the understanding of bacteriophages’ evolutionary process and their potential role within our biosphere.

**Tracking Mammalian Wildlife Between the Loyola Marymount University Campus and the Playa Vista Riparian Corridor Using Remote Sensing Cameras**
Courtney McCammon

The upland Border Habitants of urban wetland systems are likely critical areas that support remnant populations of both native and introduced species of mammals. Loyola Marymount University is situated in a wildlife corridor lying southwest of the Ballona Wetlands, offering resources they would not otherwise be available to resident species. The exploitation of the University’s campus suggests a resilient behavior pattern of resident animals and the possibility of the campus serving as an ecological sink. The study area includes Loyola Marymount University, the adjacent bluff, and the constructed Riparian Corridor on the Playa Vista Property beneath LMU. The aim of this study was to characterize the animal movement patterns onto LMU’s campus and in the surrounding bluff habitat in preparation for future radio-telemetry studies. Presence-absence data were gathered using motion-censored cameras with infrared technology. There were four different “areas” being sampled (University Hall, the Riparian Corridor, LMU, Trail, and Cobora Road) with three strategically placed cameras in each area. Cameras were placed on or around game trails leading to the University’s campus and onto the adjacent bluff. GPS locations were taken of animal trails and holes in the LMU fence in order to find a relationship between trails and entrance onto LMU’s campus. Results showed a range of mammals (foxes, raccoons, possums, feral cats, skunks) moving on and off campus, providing insight to LMU’s relationship with the local wildlife. This study also highlights the importance of Wildlife corridors within heavily urbanized areas, providing a knowledge base for future wildlife research at LMU.

**Uncertainty Analysis of the Energy Usage of Commercial Buildings**
Jeffrey Robertson

Energy simulation tools are widely available, and are used in predicting the energy usage of various buildings. One of the shortcomings of most energy software, however, is that they are unable to account for uncertainty in their simulations. The objective of this project was to devise a method which
incorporates uncertainty into energy simulations, so as to give a more accurate representation of possible outcomes. This was achieved using the Monte Carlo method in conjunction with explicit probability distributions. The results of this project were successful in that they auspiciously conveyed uncertainty in EnergyPlus runs. It is recommended that further research be done on real-world data in order to derive relevant statistical parameters.

Undemocratic Conduct in the World’s Leading Democracy
Madeline Mezger

How can we hold the responsible officials from the Bush Administration accountable for the war crime of torture they condoned during their tenure? What will be the most viable institution to establish democratic accountability, in terms of setting a global precedent for all nations and future generations to come? While scholars and other studies have established the need for officials to answer for these heinous crimes and examined possible individual methods to be exercised, my study will provide the first comparative analysis of the three institutions specified. The eventual outcome and manner that these violations are handled will have a remarkable and immeasurable effect on the future of international law, U.S. status and relations, and most importantly, for the rule of law and democracy. I seek to answer this question by conducting a comparative analysis of three institutions to carry out investigations and necessary prosecutions, weighing the legal, social, and influential viability of each. I examine three institutions for this study: the International Criminal Court (ICC), prosecutions by foreign nations’ courts, and the domestic legal system. I analyze the relevant body of laws for each institution and determine if they obstruct or assist in establishing legal accountability. These are the three most likely, and arguably the only realistic forum for such prosecutions. My conclusions illustrate that while the other institutions may be more valuable in the future, currently, the most practicable and feasible means to hold officials accountable for the war crime of torture is through domestic law.

Wolbachia and Sex Ratio Deviation in the Bolas Spider *Mastophora cornigera* (Araneae, Araneidae)
Lauren Kubeck, Alexandra Reivitis

Bacterial infections of *Wolbachia* are present in some spiders species where they can affect the sex ratio of spider offspring. This study tries to understand whether there is a correlation between the presence of *Wolbachia* in the egg sacs of the bolas spider *Mastophora cornigera* and the sex ratios of the offspring in each egg sac. In a previous project (2008-2010), 13 egg sacs of *M. cornigera* were collected from five sites in Los Angeles and Orange Counties and recorded their sex ratios, in addition to those of 8 previously collected egg sacs. They found that two of the 21 individual egg sacs deviated significantly from the 1:1 male/female ratio; one egg sac was male biased (74:26 M/F) and the other egg sac was female biased (19:42 M/F). The current study seeks to determine whether *Wolbachia* is present in *M. cornigera* and whether this bacterium is correlated with skewed sex ratios in some clutches of spiderlings. Since most clutches from the same mother were not significantly skewed in their M/F sex ratios during the prior
investigation, this study will also determine if the bacterium selects certain egg sacs to have skewed sex ratios. If any egg sacs are found to contain Wolbachia and also have skewed ratios, we will focus on potential mechanisms for deviations from a balanced ratio. Thus far, we have adapted published protocols to the M. cornigera system and are trouble-shooting them to achieve better results.

Working Memory Linked to Attention and Literacy Skills in Kindergartners
Alexxa Friedenthal, Jane Kim

Attention problems, including inattentive behavior, are thought to reflect problems in executive processes such as low working memory. Working memory is a multi-component system that helps with temporary storage of information for short periods of time that is often used to support ongoing cognitive activities. Previous studies have shown that working memory and academic success are linked, and that working memory associates with ratings of inattention by teachers and parents. However, there has been little research relating working memory, inattentive behavior and academic skills in children just starting formal schooling when interventions might be most effective. In this study we examined whether working memory skills are related to problem behaviors reported by the teachers in the classroom and to early literacy skills at the beginning of kindergarten.

In order to examine the relationship between children’s working memory and inattention, we compared WISC-IV Digits Backward scores, as a measure of working memory, in children entering kindergarten (N = 175) with the teacher’s behavioral evaluations on the Children’s Attention and Adjustment Survey - Teacher Form (CAAS) (Lambert, Hartsough, & Sandoval, 1990). The children attended schools with high proportions of low-income children in Southern California. The CAAS assessed several dimensions of behavior including inattentiveness, impulsivity, and hyperactivity in a classroom setting. Early literacy skills were also examined with the DIBELS 6th edition test. A Pearson correlation partialing out the variance due to age demonstrated that Digits Backward scores were inversely related to inattention scores (r = -0.16, p < 0.05) and to measures of early literacy (phoneme awareness: DIBELS Initial Sound Fluency and letter knowledge: Letter Naming Fluency: both r = .28, p = .0001). These results suggest that children who display inattentive behavior in the classroom may have working memory problems, which are also linked with weaker early literacy skills. Programs addressing working memory deficits in early childhood may help the children improve attention skills and facilitate academic success.

Working memory training is associated with enhanced verbal memory in kindergarteners at risk for reading problems
Judith Foy, Courtney Picciolo

Until recently, it was thought that working memory (WM) skills were relatively fixed and insensitive to training. Using new computer technology that allows for intensive, individualized, and challenging training of visuospatial WM (Cogmed), Dahlin (2011) found that Cogmed training was associated with higher reading comprehension skills in children with special education needs (aged 9 to 12 years) compared to children who received standard special education instruction. We examined the relation between Cogmed training and verbal memory (Nonword Repetition: NWR; Wagner et al., 1999, and Story Recall: SNAP; Strong, 1998) in children at significant risk for later reading problems. Economically disadvantaged kindergarteners with low WM (n = 24) were randomly assigned to receive free Cogmed training at the beginning of the school year (T1) or mid-year (T2). They trained 40 minutes after school, five days a week for five weeks. Kindergartners (n = 24) at a comparable school site, who received no Cogmed training were matched with the Cogmed participants on age, gender, SES, and T1 WM. All correlation analyses controlled for age. NWR at T1 correlated significantly
with SNAP scores at T2 ($r = .35, p = .02$). The Cogmed Start Index for the T1 Group correlated significantly with inferential SNAP scores ($r = .59, p < .05$). The number of training days completed correlated with factual SNAP scores ($r = .53, p < .05$), suggesting that Cogmed is associated with improvements in verbal memory in children at risk for reading problems.
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