The 8th Annual Student Research Symposium

A Showcase of Student Discovery and Innovation
2015 STUDENT RESEARCH SYMPOSIUM
MARCH 6 AND 7, 2015

Celebrating the achievements of San Diego State University students in research, scholarship & creative activity
Gray background indicates rooms being used for Student Research Symposium Sessions.
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March 6, 2015

Dear Colleagues and Guests:

Welcome to the 2015 Student Research Symposium at San Diego State University. This eighth annual symposium is a university-wide effort that highlights the outstanding research and creative endeavors that distinguish SDSU. It is an opportunity to celebrate the innovation and academic scholarship that our undergraduate and graduate students bring to their research and a forum for sharing their discoveries, insights and performances with a broader audience.

More than 400 students are presenting original work that emerged from academic programs across the university, and this year’s symposium includes a new Creative Arts and Performance category. More than 50 awards for excellence will be presented. Ten students whose entries are judged exceptional will represent SDSU at the annual California State University Student Research Competition in May.

Our dedicated faculty and staff have encouraged students in their research and are coordinating this symposium. More than 200 volunteers from our faculty and staff and the greater San Diego community are sharing their time and expertise to evaluate the oral, poster, exhibit and performance presentations. I am grateful for these efforts, which demonstrate SDSU’s commitment to cutting-edge research and creative endeavors.

I hope you will enjoy the symposium and the outstanding collaborative work of our students, faculty and staff. This vibrant exploration of ideas defines us as a leading public research university.

With best regards,

Elliot Hirshman, President
Dr. Chukuka S. Enwemeka
Provost and Senior Vice President, San Diego State University

Dr. Chukuka S. Enwemeka is Provost and Senior Vice President for Academic Affairs, San Diego State University (SDSU), San Diego, CA. Dr. Enwemeka’s leadership experience includes an 11 year tenure as Dean and 10 years as an academic department chairperson.

Before joining SDSU on July 1, 2014, he served as Distinguished Professor and Dean of the College of Health Sciences, University of Wisconsin—Milwaukee from August 2009 to June 2014, and as Professor and Dean, School of Health Professions, New York Institute of Technology, Old Westbury, NY for over six years. From March 1993 to February 2003, he was Professor (with tenure) and Chairman of the Department of Physical Therapy and Rehabilitation Sciences, University of Kansas Medical Center, Kansas City, KS, and from September 1989 to February 2003, he served as Associate Professor of Orthopedics and Rehabilitation, and Associate Director of Physical Therapy, University of Miami School of Medicine, Miami, FL. Dr. Enwemeka also held a joint appointment as Assistant Professor of Physical Therapy, Cellular and Structural Biology, and Physiology at the University of Texas Health Science Center at San Antonio, San Antonio, TX from 1986 to 1989.

He earned his Ph.D. from New York University (NYU), and did his post-doctoral research training at NYU’s Rusk Institute of Rehabilitation Medicine. Dr. Enwemeka received his M.S. and B.Sc. degrees in physical therapy from the University of Southern California, Los Angeles, and the University of Ibadan, Ibadan, Nigeria, respectively. He has authored nearly 100 original research papers, monographs, and book chapters, and has secured millions of dollars in external grant funding. He is a Fellow of the American College of Sports Medicine and a Fellow of the American Society for Laser Medicine and Surgery, and is listed among Who is Who in Science and Engineering, 1991.

Dr. Enwemeka is one of the foremost authorities in the use of low power light for therapeutic purposes. He is known for using near infrared light, emitted by lasers and other monochromatic light sources, to stimulate tissue repair in experimental animal models of soft tissue injury and clinical cases of chronic ulcers that failed to respond to other forms of treatment. In groundbreaking experiments, he and his team demonstrated that certain wavelengths of blue light effectively kill deadly bacteria; suggesting that blue light is a viable alternative to treatment with chemical agents, such as antibiotics.

As an international figure, he held the Presidency of the World Association for Laser Therapy (WALT) from 1998 to 2000, and served as founder and pioneer chairman of the North American Association for Laser Therapy (NAALT) from 2000 to 2006. He has visited thirty-nine countries either as a visiting professor, invited presenter, keynote speaker, visiting scholar, or as an invited guest of other universities.
### SCHEDULE AT A GLANCE

#### Thursday, March 5

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Number</th>
<th>Session Type</th>
<th>Session Title</th>
<th>Presentation Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 am</td>
<td>A–1</td>
<td>Oral</td>
<td>Flow &amp; Transport (Engineering)</td>
<td>Pride Suite</td>
</tr>
<tr>
<td></td>
<td>A–2</td>
<td>Oral</td>
<td>Race, Ethnicity, Culture &amp; Stigma</td>
<td>Park Boulevard</td>
</tr>
<tr>
<td></td>
<td>A–3</td>
<td>Oral</td>
<td>Undergraduate Biotechnology</td>
<td>Tehuano</td>
</tr>
<tr>
<td></td>
<td>A–4</td>
<td>Oral</td>
<td>Health &amp; Medicine</td>
<td>Aztlan</td>
</tr>
<tr>
<td></td>
<td>A–5</td>
<td>Oral</td>
<td>Feminism, Sexism &amp; Gender</td>
<td>Metztli</td>
</tr>
<tr>
<td></td>
<td>A–6</td>
<td>Oral</td>
<td>Identities &amp; Learning of Secondary &amp; Post-Secondary Students</td>
<td>Templo Mayor</td>
</tr>
<tr>
<td></td>
<td>A–7</td>
<td>Oral</td>
<td>Negotiating Identity Roles</td>
<td>Visionary Suite</td>
</tr>
<tr>
<td></td>
<td>A–8</td>
<td>Oral</td>
<td>Language, Learning &amp; Processing</td>
<td>Legacy Suite</td>
</tr>
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#### Friday, March 6

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Number</th>
<th>Session Type</th>
<th>Session Title</th>
<th>Presentation Location</th>
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</thead>
<tbody>
<tr>
<td>8:00 am</td>
<td>B–1</td>
<td>Oral</td>
<td>Ancient &amp; Modern History</td>
<td>Pride Suite</td>
</tr>
<tr>
<td></td>
<td>B–2</td>
<td>Oral</td>
<td>Business Consulting Projects</td>
<td>Park Boulevard</td>
</tr>
<tr>
<td></td>
<td>B–3</td>
<td>Oral</td>
<td>Environmental Health &amp; Risk</td>
<td>Tehuano</td>
</tr>
<tr>
<td></td>
<td>B–4</td>
<td>Oral</td>
<td>Astronomy</td>
<td>Aztlan</td>
</tr>
<tr>
<td></td>
<td>B–5</td>
<td>Oral</td>
<td>Negotiating Relationships</td>
<td>Metztli</td>
</tr>
<tr>
<td></td>
<td>B–6</td>
<td>Oral</td>
<td>Biological Sciences</td>
<td>Templo Mayor</td>
</tr>
<tr>
<td></td>
<td>B–7</td>
<td>Oral</td>
<td>Neurology &amp; Modeling</td>
<td>Visionary Suite</td>
</tr>
<tr>
<td></td>
<td>B–8</td>
<td>Oral</td>
<td>Tinker Foundation Field Research Grant Fellows (Latin American Studies)</td>
<td>Legacy Suite</td>
</tr>
<tr>
<td>11:00 am</td>
<td>B–9</td>
<td>Poster</td>
<td>Mechanical Engineering</td>
<td>Montezuma Hall</td>
</tr>
<tr>
<td></td>
<td>B–10</td>
<td>Poster</td>
<td>Bioanalytical Chemistry</td>
<td>Montezuma Hall</td>
</tr>
<tr>
<td></td>
<td>B–11</td>
<td>Poster</td>
<td>Promoting Success in Education</td>
<td>Montezuma Hall</td>
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<tr>
<td></td>
<td>B–12</td>
<td>Poster</td>
<td>Microbial: Environmental Relationships</td>
<td>Montezuma Hall</td>
</tr>
<tr>
<td></td>
<td>B–13</td>
<td>Poster</td>
<td>Common Experience: Food I</td>
<td>Montezuma Hall</td>
</tr>
<tr>
<td></td>
<td>B–14</td>
<td>Poster</td>
<td>Women’s Health</td>
<td>Montezuma Hall</td>
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<tr>
<td></td>
<td>B–15</td>
<td>Poster</td>
<td>Border/Transborder Concerns</td>
<td>Montezuma Hall</td>
</tr>
<tr>
<td></td>
<td>B–16</td>
<td>Poster</td>
<td>Behavioral Science</td>
<td>Montezuma Hall</td>
</tr>
<tr>
<td></td>
<td>B–17</td>
<td>Poster</td>
<td>Psychology</td>
<td>Montezuma Hall</td>
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</table>
### Schedule at a Glance

#### Friday, March 6 Sessions C, D, E and F

8:00 am – 4:00 pm  
Registration  
Aztec Student Union, Montezuma Lounge

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Number</th>
<th>Session Type</th>
<th>Session Title</th>
<th>Presentation Location</th>
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</thead>
<tbody>
<tr>
<td>1:00 pm</td>
<td>C–1</td>
<td>Oral</td>
<td>Antennas, Signal Conditioning &amp; Underwater Vehicles</td>
<td>Pride Suite</td>
</tr>
<tr>
<td></td>
<td>C–2</td>
<td>Oral</td>
<td>Ecology &amp; Evolutionary Biology</td>
<td>Park Boulevard</td>
</tr>
<tr>
<td></td>
<td>C–3</td>
<td>Oral</td>
<td>Graduate Biotechnology</td>
<td>Tehuanco</td>
</tr>
<tr>
<td></td>
<td>C–4</td>
<td>Oral</td>
<td>Imaging Technology</td>
<td>Aztlán</td>
</tr>
<tr>
<td></td>
<td>C–5</td>
<td>Oral</td>
<td>Language, Philosophy &amp; Truth</td>
<td>Metztli</td>
</tr>
<tr>
<td></td>
<td>C–6</td>
<td>Oral</td>
<td>Analyses of Learning</td>
<td>Templo Mayor</td>
</tr>
<tr>
<td></td>
<td>C–7</td>
<td>Oral</td>
<td>Health &amp; Risky Behaviors</td>
<td>Visionary Suite</td>
</tr>
<tr>
<td></td>
<td>C–8</td>
<td>Oral</td>
<td>Academic Engagement, Achievement &amp; Success</td>
<td>Legacy Suite</td>
</tr>
<tr>
<td>1:00 pm</td>
<td>C–9</td>
<td>Poster</td>
<td>Aerospace Engineering</td>
<td>Montezuma Hall</td>
</tr>
<tr>
<td></td>
<td>C–10</td>
<td>Poster</td>
<td>Analytical Chemistry</td>
<td>Montezuma Hall</td>
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<tr>
<td></td>
<td>C–11</td>
<td>Poster</td>
<td>Biology: Technology</td>
<td>Montezuma Hall</td>
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<tr>
<td></td>
<td>C–12</td>
<td>Poster</td>
<td>DNA/RNA</td>
<td>Montezuma Hall</td>
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<tr>
<td></td>
<td>C–13</td>
<td>Poster</td>
<td>Common Experience: Food II</td>
<td>Montezuma Hall</td>
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<tr>
<td></td>
<td>C–14</td>
<td>Poster</td>
<td>Interdisciplinary</td>
<td>Montezuma Hall</td>
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<tr>
<td></td>
<td>C–15</td>
<td>Poster</td>
<td>Health Care Delivery</td>
<td>Montezuma Hall</td>
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<tr>
<td></td>
<td>C–16</td>
<td>Poster</td>
<td>Relationships</td>
<td>Montezuma Hall</td>
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<tr>
<td></td>
<td>C–17</td>
<td>Poster</td>
<td>Experiences Across the Life Span</td>
<td>Montezuma Hall</td>
</tr>
<tr>
<td>3:00 pm</td>
<td>D–1</td>
<td>Oral</td>
<td>Internal Security, Violence &amp; Conflict</td>
<td>Pride Suite</td>
</tr>
<tr>
<td></td>
<td>D–2</td>
<td>Oral</td>
<td>Business &amp; Market Analysis</td>
<td>Park Boulevard</td>
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<tr>
<td></td>
<td>D–3</td>
<td>Oral</td>
<td>Undergraduate Physical Chemistry</td>
<td>Tehuanco</td>
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<tr>
<td></td>
<td>D–4</td>
<td>Oral</td>
<td>Technology, Social Media &amp; Identity</td>
<td>Aztlán</td>
</tr>
<tr>
<td></td>
<td>D–5</td>
<td>Oral</td>
<td>Fitness, Injury &amp; Daily Disturbances</td>
<td>Metztli</td>
</tr>
<tr>
<td></td>
<td>D–6</td>
<td>Oral</td>
<td>Ethics, Responsibility, Contentment &amp; the Afterlife</td>
<td>Templo Mayor</td>
</tr>
<tr>
<td></td>
<td>D–7</td>
<td>Oral</td>
<td>Graduate Molecular &amp; Micro Biology</td>
<td>Visionary Suite</td>
</tr>
<tr>
<td></td>
<td>D–8</td>
<td>Oral</td>
<td>Influences on Learning &amp; Leadership</td>
<td>Legacy Suite</td>
</tr>
<tr>
<td>3:00 pm</td>
<td>D–9</td>
<td>Poster</td>
<td>Antennas &amp; Material Sintering</td>
<td>Montezuma Hall</td>
</tr>
<tr>
<td></td>
<td>D–10</td>
<td>Poster</td>
<td>Drug Discovery &amp; Development</td>
<td>Montezuma Hall</td>
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<tr>
<td></td>
<td>D–11</td>
<td>Poster</td>
<td>Educational Modalities</td>
<td>Montezuma Hall</td>
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<tr>
<td></td>
<td>D–12</td>
<td>Poster</td>
<td>Biology/Physiology</td>
<td>Montezuma Hall</td>
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<tr>
<td></td>
<td>D–13</td>
<td>Poster</td>
<td>Environment</td>
<td>Montezuma Hall</td>
</tr>
<tr>
<td></td>
<td>D–14</td>
<td>Poster</td>
<td>Health, Motor Skills &amp; Activity</td>
<td>Montezuma Hall</td>
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<tr>
<td></td>
<td>D–15</td>
<td>Poster</td>
<td>Water: Across Disciplines</td>
<td>Montezuma Hall</td>
</tr>
<tr>
<td></td>
<td>D–16</td>
<td>Poster</td>
<td>Aging, Mental Function &amp; Memory</td>
<td>Montezuma Hall</td>
</tr>
<tr>
<td></td>
<td>D–17</td>
<td>Poster</td>
<td>Effects of Culture &amp; Acculturation</td>
<td>Montezuma Hall</td>
</tr>
<tr>
<td>1:30 pm</td>
<td>E–1</td>
<td>Creative Arts</td>
<td>Visual, Performing, Creative Arts &amp; Design I</td>
<td>Montezuma Theatre</td>
</tr>
<tr>
<td>3:30 pm</td>
<td>F–1</td>
<td>Creative Arts</td>
<td>Visual, Performing, Creative Arts &amp; Design II</td>
<td>Montezuma Theatre</td>
</tr>
</tbody>
</table>
### Saturday, March 7 Sessions G, H and I
8:00 am – 10:00 am  
Registration  
Aztec Student Union, Montezuma Lounge

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Number</th>
<th>Session Type</th>
<th>Session Title</th>
<th>Presentation Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 am</td>
<td>G–1</td>
<td>Oral</td>
<td>Alcohol Abuse Across the Lifespan</td>
<td>Pride Suite</td>
</tr>
<tr>
<td></td>
<td>G–2</td>
<td>Oral</td>
<td>Sustainability, Culture &amp; Food</td>
<td>Park Boulevard</td>
</tr>
<tr>
<td></td>
<td>G–3</td>
<td>Oral</td>
<td>Wildfire &amp; Microgravity Combustion</td>
<td>Tehuanco</td>
</tr>
<tr>
<td></td>
<td>G–4</td>
<td>Oral</td>
<td>Novel Molecular Tools for Biology &amp; Medicine</td>
<td>Aztlán</td>
</tr>
<tr>
<td></td>
<td>G–5</td>
<td>Oral</td>
<td>Water, Environment &amp; Culture</td>
<td>Metztli</td>
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<tr>
<td></td>
<td>G–6</td>
<td>Oral</td>
<td>Range &amp; Wetlands</td>
<td>Templo Mayor</td>
</tr>
<tr>
<td></td>
<td>G–7</td>
<td>Oral</td>
<td>Cultural Symbols</td>
<td>Visionary Suite</td>
</tr>
<tr>
<td>10:30 am</td>
<td>H–1</td>
<td>Oral</td>
<td>Cultural Boundaries</td>
<td>Pride Suite</td>
</tr>
<tr>
<td></td>
<td>H–2</td>
<td>Oral</td>
<td>Cancer, Support &amp; Media</td>
<td>Park Boulevard</td>
</tr>
<tr>
<td></td>
<td>H–4</td>
<td>Oral</td>
<td>Undergraduate Cardiac Biology</td>
<td>Aztlán</td>
</tr>
</tbody>
</table>

9:20 am  
I–1  
Creative Arts  
Visual, Performing, Creative Arts & Design III  
Montezuma Theatre

12:00 – 1:15 pm  
Lunch Reception  
Aztec Student Union, Goldberg Courtyard

1:30 – 2:30 pm  
Keynote Address and Awards Ceremony  
Aztec Student Union, Montezuma Hall

**Keynote Speaker:**  
Chukuka S. Enwemeka  
Provost, San Diego State University
Awards will be presented at the Ceremony on Saturday, March 7, to recognize the most outstanding presentations of research, scholarship, and creative activity at the Student Research Symposium. The awards are as follows:

**President's Awards for Research**
President’s Awards of $500 will be given to the ten outstanding presentations in discipline-specific categories. Those receiving a President’s Award will represent SDSU at the California State University (CSU) Student Research Competition on May 1st and 2nd, 2015, at CSU, San Bernardino.

**President’s Award for the Arts**
A President’s Award of $500 will be given to the outstanding presentation in the performance arts or exhibit category.

**Provost’s Awards**
Twelve Provost’s Awards of $150 each will be given to the outstanding poster presentations across all categories.

**Dean’s Awards**
Dean’s Awards of $250 each will be given for oral presentations. Awards will go to the top two presentations in each college. One award will go to the top presentation from the Imperial Valley Campus.

**Scholars Without Borders/International Award**
Scholars Without Borders is an honorary society dedicated to promoting international exchange and service and recognizing scholarly achievement in an international context. This award provides an additional $100 award for presenters who receive President’s or Dean’s award for work conducted internationally.

**The Charles Wei-hsun Fu Foundation Award for Research in Philosophy**
The Department of Philosophy will award $500 to the best oral presentation in Philosophy.

**Library Awards**
Four awards from the Library worth $250 each will be given to the two best undergraduate and two best graduate projects that use library resources and collections, including but not limited to printed resources, databases, primary resources, and materials in all media.

**Undergraduate Research Excellence Awards**
The Division of Undergraduate Studies will award ten undergraduate researchers $150 each in recognition of their scholarly achievement. These students will be selected from both oral and poster presentations.

**Outstanding Compact Scholar Researcher Award**
The Division of Undergraduate Studies will award $250 to the highest scoring oral or poster presentation completed by an undergraduate researcher who is also a member of the Compact Scholars Program. Compact Scholar eligibility must be verified before the award is issued. An additional $250 will be awarded to cover travel expenses for the recipient to present his/her research at another conference and gain more research experience beyond the SRS.

**Research Awards for Diversity, Inclusion, and Social Justice**
Diversity, social justice, and inclusiveness reflect some of the values at the core of our university mission. Four $250 awards will be presented jointly by the Chief Diversity Officer, the Division of Graduate and Research Affairs,
AWARDS

and the Division of Undergraduate Studies for the two best undergraduate and two best graduate student research presentations that exemplify our ongoing commitment to diversity, inclusion, and social justice.

**Women in Engineering Awards**
Faculty in the College of Engineering will award $150 and $100 for the two best engineering presentations by women.

**Creative and Performing Arts Awards**
In addition to the President’s Award for the Arts, other creative and performing arts awards are under development and will be announced at the event.

**A Note About The Awards**
Students receiving one award will not be considered for additional awards unless otherwise specified.
Saturday, March 7, 2015

Reception: 12:00 pm – 1:15 pm, Aztec Student Union, Goldberg Courtyard

Keynote Address and Awards Ceremony: 1:30 – 2:30 pm, Aztec Student Union, Montezuma Hall

Saturday afternoon events are open to all student presenters, mentors, and judges.

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Awards Ceremony
2015 Student Research Symposium

Welcome

Keynote Address

Awards *

- Undergraduate Research Excellence Awards
- Women in Engineering Awards
- Outstanding Compact Scholar Researcher Award
- Research Awards for Diversity, Inclusion and Social Justice
- Library Awards
- Creative & Performing Arts Awards
- Philosophy Award
- Deans Awards
- Provost’s Awards
- President’s Awards

Closing Remarks

* Photos will be taken of each recipient as they receive the award.
Group photos will be taken immediately after the ceremony.
Recipients are encouraged to stay for group photos.
***Friday, March 6, 2015***

**Session A: Oral Presentations**

**Session A-1**

**Oral Presentation:** Flow & Transport (Engineering)  
Friday, March 6, 2015, 9:00 am  
Location: Pride Suite

1. **9:00 am**  
   *In vivo quantification of intraventricular flow during left ventricular assist device support*  
   Vi Vu, Bioengineering (M)

2. **9:15 am**  
   *Jerky Flow in a Constrained Granular Material*  
   Pouya Golshan, Civil Engineering (M)

3. **9:30 am**  
   *Transport Dynamics over Micro-patterned Surfaces: Theory and Experiment*  
   Bowen Ling, Mechanical & Aerospace Engineering (D)

4. **9:45 am**  
   *Spatio-temporal upscaling of reactive transport in porous media for ultra-long time predictions*  
   Farzaneh Rajabi, Mechanical Engineering (D)

5. **10:00 am**  
   *A New Reconstruction Algorithm for Flow and Reactive Transport Simulation in Porous Media on Cartesian Grids*  
   Mehrdad Yousefzadeh, Mechanical Engineering (D)

6. **10:15 am**  
   *Lagrangian coherent structures in an unstable bottom boundary layer under a solitary wave*  
   Daniel Nelson, Aerospace Engineering (D)

**Session A-2**

**Oral Presentation:** Race, Ethnicity, Culture & Stigma  
Friday, March 6, 2015, 9:00 am  
Location: Park Boulevard

7. **9:00 am**  
   *SDSU’s DACA Students and Access to Health Care*  
   Miguel Castaneda, Chicana and Chicano Studies (U)

8. **9:15 am**  
   *Does sample matter? Differences between College and MTurk Participants on Causal Attributions Towards Stigma.*  
   Karen Key, Psychology (U)

9. **9:30 am**  
   *SES Priming Effects on Creativity*  
   Juan Chavez, Psychology (U)

10. **9:45 am**  
    *Think Outside the Stigma: Effect of Sample on Attributional Analysis of HIV*  
    Sierra Cronan, Psychology (U)

11. **10:00 am**  
    *Costa Rica’s National Identity And Its Effects On Policy Attitudes Regarding Ethnic Minorities*  
    Lizet Serrano, Psychology (U)

12. **10:15 am**  
    *Culture and Gentrification in Barrio Logan*  
    Emanuel Delgado, Geography (Masters)

**Session A-3**

**Oral Presentation:** Undergraduate Biotechnology  
Friday, March 6, 2015, 9:00 am  
Location: Tehuano

13. **9:00 am**  
    *Droplet Microfluidics as a Means for High-Throughput Drug Screening in vivo*  
    Carlos Brambila, Bioengineering (U)

14. **9:15 am**  
    *Generation of edited induced pluripotent stem cells as cell models*  
    Samvel Avagyan, Biology (U)

15. **9:30 am**  
    *BlotQuant, Novel Software Specialized for Immuno-blot Data Analysis*  
    Andy Fedoriouk, Chemistry/Biochemistry (U)

16. **9:45 am**  
    *Design and expression of an mCherry-κB fusion protein for in vitro binding and inhibitor studies*  
    Eric Gonzalez, Biochemistry (U)

*Poster presenters are required to stand by their poster during the entire 1-hour and 45 minute discussion period. Each oral presentation is allotted 10 minutes followed by a 5-minute question and answer period. Participants and guests are asked to enter or leave the rooms only between presentations.*

*Please turn off all cell phones and other devices.*

*Student Level: (U)=Undergraduate; (M)=Masters; (D)=Doctoral*
**Session A-4**

**Oral Presentation:** Health & Medicine  
Friday, March 6, 2015, 9:00 am  
Location: Aztlan

19 9:00 am  
*Dental Health Practices, Knowledge and Attitudes among Mexican Migrants*  
Lilly Najera, Public Health (U)

20 9:15 am  
*The Role of Mean LMX and LMX Differentiation in Nursing Outcomes*  
Dustin Abbott, Psychology (U)

21 9:30 am  
*Malnutrition of the Elderly in San Diego Residential Care Facilities for the Elderly (RCFES)*  
Tiffany Chan, Sociology (U)

22 9:45 am  
*Factors Associated with Being Lost to Follow-up at the AntiRetroviral Therapy Centre in Surat, India*  
Apurva Barve, Psychology (M)

23 10:00 am  
*I don’t know if I made the right decision: Uncertainty and fluidity in vaccine decision making and implications for intervention.*  
Lori Thurman, Anthropology (M)

24 10:15 am  
*Examining the relationship between immunization coalitions and California childhood immunization rates.*  
Hannah Summers, Public Health (M)

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**Session A-5**

**Oral Presentation:** Feminism, Sexism & Gender  
Friday, March 6, 2015, 9:00 am  
Location: Metztli

25 9:00 am  
*Identifying Sexism And Societal Good In Spinoza's Theological Political Treatise*  
Courtney White, Philosophy (U)

26 9:15 am  
*Trust and Social Support in LGBT Young Adult Literature*  
Vibiana Tran, English/LGBT Studies (U)

27 9:30 am  
*The Subversive Voice of Third-Wave Feminism as a Play of Aporia in Grunge.*  
Linnea Zeiner, History (M)

28 9:45 am  
*Western Feminist Imperialism in the “war on terror” and the “war on women”*  
Taylor Wondergem, Women’s Studies (M)

29 10:00 am  
*Reclamation of Masculinity in Contemporary Representations of Characters with Disability in Film*  
Fallon Hughes, Women’s Studies (M)

30 10:15 am  
*The Military Hom[o]coming Kiss: Modifying Family Values and Representations within the Military*  
Sakeenah Gallardo

---

**Session A-6**

**Oral Presentation:** Identities and Learning of Secondary and Post-Secondary Students  
Friday, March 6, 2015, 9:00 am  
Location: Templo Mayor

31 9:00 am  
*Observing Mathematical Caring Relations in the Classroom*  
Raymond LaRochelle, Mathematics & Science Education (D)

32 9:15 am  
*The Identity Formation Process of a Hybrid Identity: A Grounded Theory Study*  
Vannessa Falcon, Education (D)
<table>
<thead>
<tr>
<th>Time</th>
<th>Presentation Title</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:30 am</td>
<td>Student experience of world view and the educational alignment in post-secondary education</td>
<td>David Martin, Teaching, Learning, &amp; Culture (D)</td>
</tr>
<tr>
<td>9:45 am</td>
<td>Comparing Levels of Homophily and Intergenerational Closure Between Two-Year and Four-Year Students: A Propensity Score Matching Analysis Utilizing the Education Longitudinal Study of 2002</td>
<td>Aaron Iffland, Education (D)</td>
</tr>
<tr>
<td>10:00 am</td>
<td>Veterans in Postsecondary Education: Factor Analysis and Structural Equation Modeling Using the Community College Survey of Men (CCSM)</td>
<td>Thomas De La Garza, Education (D)</td>
</tr>
</tbody>
</table>

**Session A-7**

**Oral Presentation:** Negotiating Identity Roles
Friday, March 6, 2015, 9:00 am
Location: Visionary Suite

<table>
<thead>
<tr>
<th>Time</th>
<th>Presentation Title</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 am</td>
<td>To Tell or Not To Tell: The Attitudes and Beliefs of Elderly Veterans Who Choose Not to Report Chronic Pain</td>
<td>Chelsea Chapman, Communication (U)</td>
</tr>
<tr>
<td>9:15 am</td>
<td>Expectant First-Time Fathers Discussion Forum: Evaluation of Model</td>
<td>Kaitlyn True, Kinesiology (U)</td>
</tr>
<tr>
<td>9:30 am</td>
<td>The Importance and Struggle of Communication in Finding One's Cultural Identity</td>
<td>Diana DeBolt, Communication (U)</td>
</tr>
<tr>
<td>9:45 am</td>
<td>Work-Life Balance Among Tenured/Tenure-Track Professors: A Comparative Study Between Community College and University Faculty in the Social and Behavioral Sciences</td>
<td>Sandy Somo, Sociology (M)</td>
</tr>
<tr>
<td>10:00 am</td>
<td>Communicating Callings: Construction of Public Health Professional Identity</td>
<td>Jennifer Gehrisch, Communications (M)</td>
</tr>
</tbody>
</table>

**Session A-8**

**Oral Presentation:**
Language, Learning and Processing
Friday, March 6, 2015, 9:00 am
Location: Legacy Suite

<table>
<thead>
<tr>
<th>Time</th>
<th>Presentation Title</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 am</td>
<td>Verbal Learning and Memory in Across Stages of Huntington's Disease: Evidence from the California Verbal Learning Test-II.</td>
<td>Francesca Lopez, Psychology (U)</td>
</tr>
<tr>
<td>9:15 am</td>
<td>The Auditory Kiloword Study: ERP Evidence for Task Specific Effects of Phonological Neighborhood Density during Spoken Word Recognition</td>
<td>Kurt Winsler, Psychology (U)</td>
</tr>
<tr>
<td>9:30 am</td>
<td>Observing Language Changes in Aging and Alzheimer’s Speech Using Information Theory Techniques</td>
<td>Roselene Freeman, Computational Linguistics (M)</td>
</tr>
<tr>
<td>9:45 am</td>
<td>An Agent-Based Model of Linguistic Diffusion</td>
<td>Sara Kazemi, Computational Linguistics (M)</td>
</tr>
<tr>
<td>10:00 am</td>
<td>The impact of Russian-English bilinguals’ language experience on event description</td>
<td>Irina Potapova, Language and Communicative Disorders (D)</td>
</tr>
<tr>
<td>10:15 am</td>
<td>Age and Individual Trajectory Influence Early Predictions of Language Outcomes</td>
<td>Erin Smolak, Language and Communicative Disorders (D)</td>
</tr>
</tbody>
</table>
### Session A: Poster Presentations

**Session A-9**

**Poster:** Engineering, Sciences & Applied Mathematics  
Friday, March 6, 2015, 9:00 am – 10:45 am  
Location: Montezuma Hall

<table>
<thead>
<tr>
<th>Poster #1</th>
<th>Can Sines Be Used To Approximate Stellar Ellipsoidal Variations?</th>
<th>Matthew Garrett, Astronomy (U)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poster #2</td>
<td>Optimal Control of the Quartic Oscillator</td>
<td>Amadeo Candido, Applied Mathematics (U)</td>
</tr>
<tr>
<td>Poster #3</td>
<td>Flow and Vortex Structures Related to Thrombus Formation in the LVAD-Assisted Heart</td>
<td>Claudine Reider, Bioengineering Biomechanics (M)</td>
</tr>
<tr>
<td>Poster #4</td>
<td>Theoretical Design of Nano-Layered, Hyperbolic Dispersion Al/SiO2 with Minimum Losses</td>
<td>Priscilla Kelly, Computational Science (M)</td>
</tr>
<tr>
<td>Poster #5</td>
<td>Strain Rate Effects on Stress Relaxation in Sands</td>
<td>Sharon Macdonald, Civil Engineering (M)</td>
</tr>
<tr>
<td>Poster #6</td>
<td>Biodegradability of Organic Carbon in Low Carbon Environments</td>
<td>Amy Bigelow, Environmental Engineering (M)</td>
</tr>
<tr>
<td>Poster #7</td>
<td>Determination of Seismic Protection Factors for Anchorage of Non structural Components into Concrete</td>
<td>Timothy Johnson, Structural Engineering (D)</td>
</tr>
</tbody>
</table>

**Session A-10**

**Poster:** Catalysis & Supramolecular Chemistry  
Friday, March 6, 2015, 9:00 am – 10:45 am  
Location: Montezuma Hall

| Poster #8 | Water Nucleophilic Attack vs. Radical Coupling Water Oxidation by Optimizing Mono and Binuclear Water Oxidation Catalyst | Ryan Shirey, Chemistry (U) |
| Poster #9 | Preferred binding of κB DNA by the NF-κB p50 homodimer | Lisa Acuna, chemistry (U) |
| Poster #10 | Bifunctional Catalysis for the Selective Oxidation of Water and Organic Substrates | Robert Vasquez, Biochemistry (U) |
| Poster #11 | Synthesis of Functionalized Pyrogallolarene Capsules Targeting New Applications of Supramolecular Chemistry | Kristine Claudine Teppang, Biochemistry (U) |
| Poster #12 | Assessment of UCH-L3 Substrate Selectivity using Engineered Ubiquitin Fusions with Variable Linker Lengths | Peter Suon, Biochemistry (M) |
| Poster #13 | Cyclic Voltammetry Studies of H-bond Complex of a p-Phenylenediamine-Based Urea with 1,8-Naphthyridine Using Platinum and Glassy Carbon as Working Electrodes. | Bryan Tamashiro, Chemistry (M) |
Session A-11

**Poster:** Drug Resistance  
Friday, March 6, 2015, 9:00 am – 10:45 am  
Location: Montezuma Hall

61 Poster #14  
*Modeling the Evolution of Drug Resistance in Malaria*  
Alissa Calderon, Biology (U)

62 Poster #15  
*Structure-Based Analysis of Mammalian Anaplastic Lymphoma Kinase Evolution*  
Monica Tello, Psychology (U)  
Lany Huyhn

63 Poster #16  
*Optimized Synthesis of the Potent Anti-Malarial and Anti-Cancer Natural Product; Lagunamide A*  
Nicole Kohnen, Biochemistry (U)  
Arielle Kanner

64 Poster #17  
*International Evaluation of Screening Questions to Identify Persons with Drug-Resistant Tuberculosis*  
Marthew Wong, Epidemiology (M)

65 Poster #18  
*Performance of a Pyrosequencing Platform in Diagnosing Drug-Resistant Tuberculosis: A Global Study*  
Sophia Georghiou, Global Health (D)

Session A-12

**Poster:** Biology: Cell Molecular  
Friday, March 6, 2015, 9:00 am – 10:45 am  
Location: Montezuma Hall

66 Poster #19  
*Characterization of the Genome Surrounding the Phage-Encoded Shiga-Toxin Gene in Alternative Marine Bacterial Hosts*  
David Collins, Microbiology (U)

67 Poster #20  
*STS-1 -/- cells display enhanced activation upon stimulation with EGF*  
Katharine Moore, Biology (U)

68 Poster #21  
*Identification of B-cell block in an SCNT mouse model*  
Charlene Echeagaray, Biology CMB (U)

69 Poster #22  
*Monitoring Proteolytic Cleavage on the Cell Surface with a Novel Cell-Based Assay*  
Andre Dharmawan, MBIO (M)

70 Poster #23  
*Expression and purification of ANN-predicted phage structural proteins*  
Shr-Hau Hung, Biology (D)

Session A-13

**Poster:**  
Integrated Medicine: Nutrition & Supplements  
Friday, March 6, 2015, 9:00 am – 10:45 am  
Location: Montezuma Hall

71 Poster #24  
*Effects of POP-contaminated fish oil on total antioxidant enzyme capacity and oxidative stress on the reduction of cardiovascular disease risk in rats.*  
Chen Glasheen, Foods and Nutrition (U)

72 Poster #25  
*Effects of Watermelon Powder Supplementation on Hepatic Gene Expression involved in Lipid Metabolism in Atherogenic Diet-Fed Rats*  
Katy Kaufman, Nutritional Sciences (M)

73 Poster #26  
*Preventive effects of watermelon powder on colitis by maintaining the number of intact crypts in atherogenic diet-fed and dextran sodium sulfate-treated rats.*  
Yen-Tzu Tseng, Nutritional Sciences (M)

74 Poster #27  
*Dose response of dried plum on bone density and bone turnover biomarkers in osteopenic postmenopausal women: a randomized controlled trial*  
Pouneh Pouneh, Nutritional Sciences (M)

75 Poster #28  
*The effect of dried plum on lipid profile and liver function enzyme activities in postmenopausal women*  
Arshya Ahouraei Far, Nutritional Science (M)
Session A-14

**Poster:**

International/Cultural Concerns Across Disciplines
Friday, March 6, 2015, 9:00 am – 10:45 am
Location: Montezuma Hall

- **76** Poster #29
  
  **Organizational Factors Related to Culturally-Competent Care**
  
  William Spears, Public Health (U)

- **77** Poster #30
  
  **Characterizing Culturally-Competent Hospital Care**
  
  Kiana Spencer, Kinesiology (U)

- **78** Poster #31
  
  **Exploring the Digital Divide Among Mexican Migrant Workers in North San Diego County**
  
  Hulises Contreras, Public Health (U)

- **79** Poster #32
  
  **A Bi-National Comparison of Environmental Values and Ecotourism Practices within the Tourism Industries of San Diego, CA and Baja California Sur, MX**
  
  Olivia Chavez, Interdisciplinary Studies (U)

- **80** Poster #33
  
  **Bilingual Trainings for first responders to create a more resilient city**
  
  Sara Roldan, Homeland Security (M)

Session A-15

**Poster:**

Influences of Language
Friday, March 6, 2015, 9:00 am – 10:45 am
Location: Montezuma Hall

- **81** Poster #34
  
  **Cross-Language Semantic Interference Effects During Picture Naming in Bimodal Bilinguals**
  
  Natalie Silance, Speech Language and Hearing Sciences (U)

- **82** Poster #35
  
  **SES Effects on Self Reported Language Environment and Peak Language Times**
  
  Lukas Lopez, Psychology (U)

- **83** Poster #36
  
  **Language and Literacy in Young Spanish Monolingual Children**
  
  Laura Alba, Psychology (U)

- **84** Poster #37
  
  **Cognate Status and Acoustic Cues Influence Language Activation in Spanish–English Bilinguals**
  
  Sofia Camacho, Speech, Language and Hearing Science (U)
  Erika C. Lamb, Fernanda Manriquez, Analicia Ochoa, Megan E. Jeong, Carmen Causor

- **85** Poster #38
  
  **ASL-LEX: A resource for investigating effects of sign frequency and iconicity for American Sign Language (ASL)**
  
  Jordan Weber, Speech, Language, and Hearing Sciences: Speech Pathology (M)

- **86** Poster #39
  
  **Investigating relationships between the cognate advantage and measures of development**
  
  Hannah Byers-Straus, Speech, Language, and Hearing Sciences (M)
  Alyssa Carbajal, Irina Potapova

- **87** Poster #40
  
  **Specific Purpose English Communication System for Seniors: A Pilot Study**
  
  Fiona Hay, Speech-Language Pathology (M)
  Stephanie Jacobson, Cindy Alsol, Sim Quinizon, Lucia Trapote, Carmen Causor, Tonya Luoh

Session A-16

**Poster:** LGBT Concerns
Friday, March 6, 2015, 9:00 am – 10:45 am
Location: Montezuma Hall

- **88** Poster #41
  
  **Sexual Orientation and Rotating Night Shift**
  
  Hilda Huambachano, Public Health and Biology (U)

- **89** Poster #42
  
  **A Retrospective Study Examining Dating Violence Perpetration and Dating Beliefs in Young LGB Adults.**
  
  Leslie Leon Aramburo, Psychology (U)
  A. Remington Gonzalez

- **90** Poster # 43
  
  **Neither masculine nor feminine: Exploring Power, Protection, and Consent of Transgendered Populations in Prison**
  
  Marquesa Cook-Whearty, Communication (M)
  Ariana Hernandez, Alexandra Hipp
## Session A-17

**Poster:** Behavioral Health Science  
**Friday, March 6, 2015, 9:00 am – 10:45 am**  
**Location:** Montezuma Hall

<table>
<thead>
<tr>
<th>Poster #</th>
<th>Title</th>
<th>Author(s)</th>
<th>Program Area</th>
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</thead>
<tbody>
<tr>
<td>92</td>
<td>Association between diabetes-related social support and distress among Latinos with poorly controlled type 2 diabetes.</td>
<td>Mayra Hernandez, Psychology (U)</td>
<td>Behavioral Health Science</td>
</tr>
<tr>
<td>93</td>
<td>Correlations Between Disinhibition Subscale of the Three Factor Eating Questionnaire and Activation of Selected Brain Regions</td>
<td>Katherine Fleming, Psychology (U) Laura Gramling</td>
<td>Behavioral Health Science</td>
</tr>
<tr>
<td>94</td>
<td>Rosiglitazone affects contractility rates in neonatal mammalian cardiomyocytes</td>
<td>Megan Malone, Public Health (U)</td>
<td>Behavioral Health Science</td>
</tr>
<tr>
<td>95</td>
<td>Evaluating the Receptiveness of Harvest of the Month in the Classroom Program Among Key Stakeholders</td>
<td>Linda Salgin, Public Health (M)</td>
<td>Behavioral Health Science</td>
</tr>
</tbody>
</table>

## Session A-18

**Poster:** Cancer: Societal & Genetic Influences  
**Friday, March 6, 2015, 9:00 am – 10:45 am**  
**Location:** Montezuma Hall

<table>
<thead>
<tr>
<th>Poster #</th>
<th>Title</th>
<th>Author(s)</th>
<th>Program Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>96</td>
<td>Exploring the Relationship Between Stress, Social Support and Self-Efficacy for Obtaining Cancer Diagnostic Care</td>
<td>Jessica Coleman, Psychology (U)</td>
<td>Cancer: Societal &amp; Genetic Influences</td>
</tr>
<tr>
<td>97</td>
<td>Perceptions of Biospecimen Donation and Biobanking: A Comparison of Cancer Survivors &amp; Cancer Bloggers</td>
<td>Janiel Jones, Psychology (U)</td>
<td>Cancer: Societal &amp; Genetic Influences</td>
</tr>
</tbody>
</table>

## Session B: Oral Presentations

**Session B-1**  
**Oral Presentation:** Ancient and Modern History  
**Friday, March 6, 2015, 11:00 am**  
**Location:** Pride Suite

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Author(s)</th>
<th>Program Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:00 am</td>
<td>Figure Four</td>
<td>Mark Arnold, History (U)</td>
<td>Ancient and Modern History</td>
</tr>
<tr>
<td>11:15 am</td>
<td>Sacred Prostitution in Ancient Mesopotamia: Myth or Reality?</td>
<td>Claudia Mendez, Religious Studies (U)</td>
<td>Ancient and Modern History</td>
</tr>
<tr>
<td>11:30 am</td>
<td>Pious Bodies in Late Antiquity: Empress Theodora and al-Khayzuran</td>
<td>Javier Gonzalez-Meeks, History (M)</td>
<td>Ancient and Modern History</td>
</tr>
<tr>
<td>11:45 am</td>
<td>Monster or Muse?: The Bohemian Influence on Pre-Raphaelite Women in the Victorian Era</td>
<td>Jaymee Hernandez, Art History/Liberal Studies (M)</td>
<td>Ancient and Modern History</td>
</tr>
<tr>
<td>12:00 pm</td>
<td>Why Hitler Was Destined to Lose the Second World War: HMS Richards, the Voice of Prophecy, and Armageddon.</td>
<td>Brenda Schaffner, History (M)</td>
<td>Ancient and Modern History</td>
</tr>
<tr>
<td>12:15 pm</td>
<td>Making the Muslim Monster: Societal Construction of the Monstrous Muslim Terrorist</td>
<td>Mary Clipper, History (M)</td>
<td>Ancient and Modern History</td>
</tr>
</tbody>
</table>
Session B-2
Oral Presentation: Business Consulting Projects
Friday, March 6, 2015, 11:00 am
Location: Park Boulevard

106 11:00 am
DFS Food, LLC
Kashia Lor, Marketing (U)
Rick Bunting, Andrew Coco, Hee Won Hwang

107 11:15 am
Cakes Be We: Quality Cake Systems
Freddie Lucena, Accounting (U)
Caitlin Clark, Stefanie Davis

108 11:30 am
Bass Company Business Consulting Project
Levente Imbuzan, International Business (U)
Ron Weaver

109 11:45 am
Lach Motorsports
Caleb Dalrymple, Management (U)
Derek Forde

110 12:00 pm
Lithyem Small Business Consulting
Chris DeMaio, Management Information Systems (U)
Mauricio Morales, Yiliang Sun, Jesse Cardona

111 12:15 pm
Business Consulting for La Costa Gourmet Final Report
Guillermo Mercado, Accounting (U)
Brooke Granata

Session B-3
Oral Presentation: Environmental Health and Risk
Friday, March 6, 2015, 11:00 am
Location: Tehuancó

112 11:00 am
Environmental Risks Perceptions of Hispanic Community Of National City
Raquel Perez, Anthropology (U)

113 11:15 am
Key Motivators to Adopt Sustainable Practices in the Food Industry
Jessica Sandoval, Management (U)

114 11:30 am
California’s Vineyards and Wineries: An Evaluation of the Wine Industry’s Sustainability Standards
Kyla Krause, Sustainable Tourism Management (U)

115 11:45 am
Measurements of Particulate Matter Air Pollution in Food Courts in San Diego’s Shopping Malls
Ally Lu, Health Science (U)
Dustin White, Kathryn Paras

116 12:00 pm
Air Pollutant Concentrations of Particulate Matter 2.5 & 1 and Noise Levels from Leaf Blowing on San Diego State University Campus.
Katherine Schmarje, Health Science (U)
Salem Bortcosh

117 12:15 pm
Wintertime Characteristics of the Lung-Deposited Surface Area of Nanoparticles, PM2.5 Concentration, and Carbonaceous Material in Mumbai, India
Abigail Crotz, Master of Public Health (M)

Session B-4
Oral Presentation: Astronomy
Friday, March 6, 2015, 11:00 am
Location: Aztlan

118 11:00 am
Analysis of Kepler Observations of Exoplanet HAT-P-7b
Susan Kurth, Astronomy (M)

119 11:15 am
Particle Compositions of Pulsars
Richard Mellinger, Physics (M)

120 11:30 am
A Study of Optical Transients in M31 from the Research-Based Science Education Program
Stephanie Lauber, Astronomy (M)

121 11:45 am
Detailed Modeling of Triple Stars Observed by the Kepler Space Telescope
Joanna Gore, Astronomy (M)

122 12:00 pm
The Radius of the Super-Earth Planet Kepler-9d
Justin Stevick, Astronomy (M)

123 12:15 pm
Exotic Matter in Neutron Stars
William Spinella, Computational Science (D)
**Session B-5**  
**Oral Presentation:** Negotiating Relationships  
Friday, March 6, 2015, 11:00 am  
Location: Metztli

124  11:00 am  
*Parent-Child Acculturation Gaps and Co-Endorsement of Child Internalizing and Externalizing Problems*  
Duyen Trang, Psychology (U)

125  11:15 am  
*Communication and Sexual Behaviors Among Friends with Benefits Partners*  
Ashley Tracas, Psychology (M)

126  11:30 am  
*Dinner Dates: The Nonverbal Performance of Romantic Couples*  
Brianna Quintero, Communication (M)  
Sandra Wang

127  11:45 am  
*Shaken Not Stirred, Navigating Gendered Interactions in a Nightclub*  
Kevin Shufford, Communication (M)  
Kyle Bowe, Jamie McDowell

131  11:30 am  
*Keep your Sox on: SoxB1b is required for regeneration and maintenance of the nervous system in planarians*  
Katrina Cable, Biology (U)

132  11:45 am  
*Dynamic visualization of gene duplications through microfluidic microscopy in Salmonella enterica serovar Typhimurium LT2*  
Polly Parks, Biology (M)

133  12:00 pm  
*Comprehensive Survey of Curated Prophage Genomes for the Characterization of Prophage Composition and Insertion Behavior*  
Hans Kang, Cell Molecular Biology (M)

134  12:15 pm  
*Defects in myosin thick filament assembly and instability of Drosophila indirect flight muscles as a mechanism for myosin storage myopathy*  
Rick Tham, Molecular Biology (M)

**Session B-6**  
**Oral Presentation:** Biological Sciences  
Friday, March 6, 2015, 11:00 am  
Location: Templo Mayor

129  11:00 am  
*Identification of Transcription Factors Involved in Motor Neuron Differentiation and Function in the Planarian Schmidtea mediterranea*  
Carlo Quintanilla, Biology (U)

130  11:15 am  
*Identification of a Group B Streptococcus Bacterial Factor that Promotes Tight Junction Disruption in Brain Endothelium*  
Andres Bermudez, Biology (U)

135  11:00 am  
*Verbal Learning and Memory Changes During Premanifest Stages of Huntington’s Disease*  
Charles Moreno, Psychology (U)

136  11:15 am  
*Age-associated changes in functional networks in Autism Spectrum Disorder*  
Nicholas Ray, Psychology (U)

137  11:30 am  
*Diagnostic Prediction in Autism using Conditional Random Forest of Resting State Functional Connectivity*  
Afrooz Jahedi, Computational Science (M)  
Collen Chen

138  11:45 am  
*Variation in local connectivity patterns across low-motion subsamples in autism: A resting state fMRI study of regional homogeneity*  
Sangeeta Nair, Psychology (M)
**Session B-8**

**Oral Presentation:** Tinker Foundation Field Research Grant Fellows (Latin American Studies)  
Friday, March 6, 2015, 11:00 am  
Location: Legacy Suite

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139 11:00 am  
*Climate Change and Development Initiatives in Napo, Ecuador*  
Laurel Hanscom, Geography (M)

140 11:15 am  
*Translational Gaps: Informing school wellness policies in the US Border Region*  
Benjamin Aceves, Public Health & Latin American Studies (M)

141 11:30 am  
*The Estimation of Age at Death and Season of Death through Dental Cementum Increment Analysis of Archaeological Human Remains from the lower Rio Verde Valley region of Oaxaca, Mexico*  
Roberto Vega, Anthropology (M)

142 11:45 am  
*Negotiating Development: Negotiation between Rural Communities in Mexico and Hydroelectric dams*  
Grecia Perez, Latin American Studies (M)

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**Session B: Poster Presentations**

**Session B-9**  
**Poster:** Mechanical Engineering  
Friday, March 6, 2015, 11:00 am – 12:45 pm  
Location: Montezuma Hall

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144 Poster #1  
*Flame Carbon Particle Generation*  
Kent Kurashima, Mechanical Engineering (U)

145 Poster #2  
*Analysis of the Effect of Carbon Particle Oxidation in the Small Particle Solar Receiver*  
Trent Martin, Mechanical Engineering (M)

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146 Poster #3  
*Prone Surf Vehicle for Paraplegic Surfers*  
Jeffrey Mirich, Mechanical Engineering (M)

147 Poster #4  
*Window Seal and Bellows Structure for a Large Scale Solar Receiver*  
Saranya Nanthan, Aerospace Engineering (M)

148 Poster #5  
*The Effect of Flow Direction and Swirl in a Small Particle Solar Receiver*  
Ryan Contois, Mechanical Engineering (M)

149 Poster #6  
*Carbon Particle Generation via Pyrolysis for Solar Applications*  
Evan Schoening, Mechanical Engineering (M)

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**Session B-10**  
**Poster:** Bioanalytical Chemistry  
Friday, March 6, 2015, 11:00 am – 12:45 pm  
Location: Montezuma Hall

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150 Poster #7  
*Controlling Electroosmotic Flow using Metal Cations in Phospholipid Bilayers*  
Eduardo De La Toba, Chemistry: Biochemistry (U)  
Shane Wells

151 Poster #8  
*Cyclic Voltammetry of 5-Nitroimidazoles with Cysteine Additions*  
Jeffrey Acuario, Chemistry (U)

152 Poster #9  
*In-vivo Quantitative Leukemic Cell Cycle Imaging Using Infrared Reporters*  
Marlo Villanueva, Biology (U)

153 Poster #10  
*Early Diagnosis and Accurate Theranosis of Multiple Sclerosis Based on Sensitive Analysis of Biomarkers Using Nonlinear Laser Methods*  
Alexander Jackson, Chemistry (M)

154 Poster #11  
*Separation of turbidity and chemical absorbance signals from UV-Vis absorbance spectra of Chlorella vulgaris to monitor stability of cultures during storage.*  
Rory Klinger, Environmental Engineering (D)
Session B-12

**Poster: Microbial: Environmental Relationships**
Friday, March 6, 2015, 11:00 am – 12:45 pm
Location: Montezuma Hall

162 Poster #19
*Phenotypic analysis of marine Vibrio spp. isolated from kelp forests offshore San Diego, California*
Tucker Lopez, Environmental Science (U)
Arron Florece, Blaire Robinson

163 Poster #20
*The Effect of Alcohol Consumption on the Gut Microbiome*
Artemisa Zuazo, Biology (U)

164 Poster #21
*Characterizing Unknown Viral Genes from the Human Gut*
Matthew Gallagher, Biology (M)

165 Poster #22
*Macro-organism Influence via Shedding and Induction on Coral Reef Microbial Communities*
Kevin Walsh, Ecology (M)

166 Poster #23
*Genomic assessment of microbes associated with Macrocystis pyrifera versus the water column*
Kristen Aguinaldo, Biology (M)

167 Poster #24
*Microbial Growth Characteristic Database Design and Implementation*
David Fu, computer science (M)
Blaire Robinson

Session B-13

**Poster: Common Experience: Food I**
Friday, March 6, 2015, 11:00 am – 12:45 pm
Location: Montezuma Hall

168 Poster #25
*Assessment of Nutritional Practices Among Preschools and Child-Care Centers in San Diego, CA.*
Keturah Platt, Psychology (U)
ORAL AND POSTER PRESENTATIONS

169 Poster #26
Analysis of Young San Diego Craft Beer Drinkers’ Craft Beer Consumption in Relation to Total Beer Consumption: The Role of Knowledge, Awareness and Drinking Motivations.
Andrew Coco, Marketing (U)

170 Poster #27
Characterizing the small food store environment
Amelie Wagner, Marketing (U)

171 Poster #28
Child eating behaviors, parent feeding practices, and weight perceptions among low-income Latino families.
Alma Behar, Master’s in Public Health (M)

172 Poster #29
Ending on a Sweet Note: The Effect of Musical Genres on Taste Perception
Andrew Fiscella, Psychology (M)
Ryan Hawks

173 Poster #30
Physical Activity and Fruit/Vegetable Consumption Among Pacific Islanders in San Diego. Are They Getting Enough?
Olumide Gbenro, Public Health (M)

Session B-14
Poster: Women’s Health
Friday, March 6, 2015, 11:00 am – 12:45 pm
Location: Montezuma Hall

174 Poster #31
Mental health history and physical activity preferences among midlife Mexican American women
Nataly Aranaas, Psychology (U)

175 Poster #32
Social Contact and Cardiovascular Risk Factors
Margarita Robles, Psychology (U)

176 Poster #33
Comprehensive Analysis of Organic Contaminants in Human Breast Milk
Cuong Tran, Public Health, Environmental Health (M)

177 Poster #34
Breast Milk Contamination and Seafood Consumption of Breastfeeding Mothers in San Diego County
Claire O’Brien, Public Health (M)

178 Poster #35
The Role of Obturator Internus Muscle and Pelvic Floor Function
Christine Plotts, Physical Therapy (D)
Stephanie Johnson

Session B-15
Poster: Border/Transborder Concerns
Friday, March 6, 2015, 11:00 am – 12:45 pm
Location: Montezuma Hall

179 Poster #36
Migration Related Trauma Events Among Recently Deported Latinos Living in Tijuana
Juan Peña, Psychology (U)

180 Poster #37
The Experiences of Men of Color in the Community College Who Live Transborder Lifestyle in The San Diego, CA and Tijuana, Mexico Border Region
Isaac Marquez, Biochemistry (U)
Alex Nelson

181 Poster #38
Health Care Access, Health Satisfaction, and Perceived Quality of Life in Recently Deported Latinos Living in Tijuana
Karen Alvarado, Public Health (U)

182 Poster #39
Does BMI affect body image discrepancy among Mexican-American Women living near the United States Mexico border?
Rosaura Wardsworth, Health Science: Public Health (U)
Myra Hollis, Rosaura Wardsworth

Session B-16
Poster: Behavioral Science
Friday, March 6, 2015, 11:00 am – 12:45 pm
Location: Montezuma Hall

183 Poster #40
Effect of Resources in Childhood on Propensity to Plan and Debt Resolution
Sarah Nakutin, Psychology (U)
184 Poster #41
Understanding E-Sports Legitimacy
Thomas Bourus, Marketing (U)

185 Poster #42
Attribution theory and familiarity's role on stigmatization.
Vito Da Rosa, Psychology (U)
Nathan Echols

186 Poster #43
Internal vs. external recruits for management: Who is more engaged?
Michael Petty, Industrial/Organizational Psychology (M)
Alexa Young

187 Poster #44
Perceptions of employee stress: The impact of supervisor-subordinate discrepancies on perceived supervisor support
Sandra Martinez, Industrial/Organizational Psychology (M)
Mark Reynolds, Ruth Topete

Session B-17
Poster: Psychology
Friday, March 6, 2015, 11:00 am – 12:45 pm
Location: Montezuma Hall

188 Poster #45
The Effect of Cognitive Bias Modification Tasks Versus Exposure on a Behavioral Test of Contamination Fears
Riley Johnson, Psychology (U)

189 Poster #46
The Effects of Ambient Sounds vs. Lyrical Music on Attention
Whitney Oleman, Psychology (U)
Jacob Melendez, Danielle Hunt, Stephanie Sanz, Jason Sibal

190 Poster #47
Sleepiness, Anxiety, and Depression in English- and Spanish-speaking Hispanic Americans
Sandra Challima, Psychology (U)

191 Poster #48
Controllability of Stigmas When Onset is Defined As Responsible or Not Responsible
Zoe Lewis, Psychology (U)
Sarah M. Haydock

192 Poster #49
Contextual Predictors of Foster Children’s Relational Aggression
Kristin Perry, Psychology (M)

Session C: Oral Presentations

Session C-1
Oral Presentation:
Antennas, Signal Conditioning & Underwater Vehicles
Friday, March 6, 2015, 1:00 pm
Location: Pride Suite

193 1:00 pm
Conductive Inkjet Printed Ultra-Wideband (UWB) Planar Monopole Antenna on Low Cost Flexible PET Substrate Material
Daria Lane, Electrical Engineering (M)
Alejandro Castro

194 1:15 pm
S- and C-Band Antennas in MIMO Arrangement on Bent Ground Plane for a Conducting Cylindrical Surface
Tavis Hall, Electrical Engineering (M)

195 1:30 pm
Frequency Tunable Dualband Printed Antenna for Wireless Communications
Rafid Damman, Electrical Engineering (M)

196 1:45 pm
The Application of Multivariate Empirical Mode Decomposition with Canonical Correlation for EEG Artifact Removal
Siddhi Tavildar, Electrical Engineering (M)

197 2:00 pm
Remotely Operated Underwater Vehicles
Jeffrey Sadural, Computer Science (M)
Session C-2

**Oral Presentation:** Ecology & Evolutionary Biology  
Friday, March 6, 2015, 1:00 pm  
Location: Park Boulevard

198 1:00 pm  
*Comparison of Marine Viral Metagenomes Associated with Giant Kelp and Rhodolith Algae under Increased Carbon Dioxide*  
Marc Turner, Biology (U)

199 1:15 pm  
*Intraspecific variation in cranial and mandibular morphology of the extinct pontoporid river dolphin Parapontoporia sternbergi from the upper Pliocene San Diego Formation, southern California, USA*  
Bridget Borce, Geological Sciences (U)

200 1:30 pm  
*Measuring success: combining ethology and ethnography to explore habitation progress in moor macaque monkeys (Macaca maura)*  
Katherine Hanson, Anthropology (M)

201 1:45 pm  
*Taxonomic revision of the assassin fly genus Acronyches (Diptera: Asilidae)*  
Allan Cabrero, Evolutionary Biology (M)

202 2:00 pm  
*Altered microbial abundance and community composition affect development in gametophytes of giant kelp, Macrocystis pyrifera*  
Megan Morris, Biology/Ecology (M)

203 2:15 pm  
*Environmental influences on the bacterial community structure associated with competing corals and algae*  
Eric Hester, Bioinformatics & Medical Informatics (M)

Session C-3

**Oral Presentation:** Graduate Biotechnology  
Friday, March 6, 2015, 1:00 pm  
Location: Tehuanco

204 1:00 pm  
*Expression, purification, and crystallization of the antigen binding fragment of the genomically-encoded precursor to the murine anti-sphingosine-1-phosphate antibody*  
Elinaz Farokhi, Biochemistry (M)

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Session C-4

**Oral Presentation:** Imaging Technology  
Friday, March 6, 2015, 1:00 pm  
Location: Aztlan

210 1:00 pm  
*PlanTracker: Radiation Oncology QA and Modern Informatics*  
Daniel Zaks, Medical Physics (M)

211 1:15 pm  
*3D nano-cavities with hyperbolic dispersion from Al:SiO2 layers: an approach for optical mode confinement.*  
Carla Bacco, Physics (M)

212 1:30 pm  
*Studying the Effects of Lung Tumor Motion in Imaging and Stereotactic Body Radiation Therapy Using a Novel 4-D Positron Emission Tomography Phantom*  
Dima Soultan, Medical Physics (M)
<table>
<thead>
<tr>
<th>Session C-5</th>
<th>Oral Presentation: Language, Philosophy &amp; Truth</th>
</tr>
</thead>
</table>
| 213  1:45 pm | Far-field seismic spectral responses resulting from complex rupture behaviors
Yongfei Wang, Geophysics (D) |
| 214  2:00 pm | Non-Spherical Models of Neutron Stars
Omair Zubairi, Computational Science (D) |
| 215  2:15 pm | A comparison of demons image registration algorithms to monitor longitudinal changes in knee cartilage: Data from the OsteoArthritis Initiative (OAI)
Uyen Hoang, Computational Science (D) |

Session C-6
Oral Presentation: Analyses of Learning
Friday, March 6, 2015, 1:00 pm
Location: Metztli

| 222  1:00 pm | Surveying for the future: Which mode of survey administration is best suited for social science research?
Alexander Hyland, Psych (U) |
|-------------|-----------------------------------------------------|
| 223  1:15 pm | Project AWARE Program Evaluation
Dezmon Monroe Robinson, Interdisciplinary Studies (U) |
| 224  1:30 pm | Early Alert Practices Among 100 Community Colleges
Amalia Cristiano, History (U) |

Session C-7
Oral Presentation: Health & Risky Behaviors
Friday, March 6, 2015, 1:00 pm
Location: Visionary Suite

| 228  1:00 pm | Examining Knowledge of HIV/AIDS Among SDSU Students
Rachael Wax, Public Health (U) |
|-------------|-----------------------------------------------------|
| 229  1:15 pm | Association between HIV Risk Perception and Condom use in a Sub Saharan Military Population
Adepeju Sanni, Epidemiology (M) |
### Session C-8  
**Oral Presentation:**  
**Academic Engagement, Achievement & Success**  
Friday, March 6, 2015, 1:00 pm  
Location: Legacy Suite

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Presenter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:30</td>
<td><em>Influence of Mental Health Indicators on Associations between Structural Stigma and Cigarette Smoking in Non-heterosexual and Heterosexual Young Adults</em></td>
<td>Cheryl Ann Valdez, Epidemiology (M)</td>
</tr>
<tr>
<td>1:45</td>
<td><em>Exploring the Influence of Social Norms, Risk and Social Identity on Youth Smoking Behavior</em></td>
<td>Jazmyne Sutton, Communication (M) Anuja Majmundar</td>
</tr>
<tr>
<td>2:00</td>
<td><em>The Role of Peer Victimization and Bullying in the Relationship between Sexual Orientation and Substance Disorders</em></td>
<td>Tenaya Siva, Epidemiology (M)</td>
</tr>
</tbody>
</table>

### Session C-9  
**Poster Presentations**  
Friday, March 6, 2015, 1:00 pm – 2:45 pm  
Location: Montezuma Hall

| Poster #1  | *SDSU Water Tunnel* | Tom Hackleman, Aerospace Engineering (U) Marlon Gerson |
| Poster #2  | *Control of Lagrangian Mixing in Fuel Injector Flows into Supersonic Cross Stream* | Josue Quinonez, Aerospace Engineering (U) Jastine Ortiz |
| Poster #3  | *Introduction of Controlled Delamination in Carbon-Epoxy Composite Laminate Specimens for Bolted Joint Tests* | Gabriela Sanz-Douglass, Aerospace Engineering (M) Nicola Giorgi |
| Poster #4  | *Post buckling Analysis and Optimization of Frame-Stiffened Stitched Composite Panels* | Gabriela Sanz-Douglass, Aerospace Engineering (M) Nicola Giorgi |
| Poster #5  | *Investigation of the influence of the subgrid-scale stress on non-intrusive spatial pressure measurement* | Rachel Rybarczyk, Aerospace Engineering (M)         |
| Poster #6  | *Nonlinear Aeroelastic Analysis of Flapping Micro Air Vehicles* | Enrico Santarpia, Aerospace Engineering (D)         |
| Poster #7  | *Pattern Formation in Granular Systems* | Kevin Joiner, Computational Science (D)              |
Session C-10
Poster: Analytical Chemistry
Friday, March 6, 2015, 1:00 pm – 2:45 pm
Location: Montezuma Hall

245 Poster #8
High-Resolution Gas-Phase Infrared Spectroscopy of Hydrocarbon Free Radicals
Stuart Mayberry, Chemical Physics (U)

246 Poster #9
Cyclic Voltammetric Studies of Nitroimidazoles in Aqueous Solution with Additions of Cysteine.
Ghazwan Darzi, Chemistry (U)

247 Poster #10
Iodine Speciation in the Marine Environment
Jennifer Gonzales, Geological Sciences (U)

248 Poster #11
Nicotine Detection By Ultrasensitive Laser Methods for Second-Hand Smoke Studies
Zarina Munshi, Chemistry (M)

249 Poster #12
Applications of Precise In-Situ Measurements of Stable Water Vapor Isotope from Advanced Laser Spectroscopy
Joshua Miu, Ecology (M)

250 Poster #13
Standoff Detection of Ammonium Nitrate Improvised Explosive Devices (IED) Using Ultrasensitive Multi-Photon Laser Methods
Jeffrey Gilmour, Chemistry (M)

Session C-11
Poster: Biology: Technology
Friday, March 6, 2015, 1:00 pm – 2:45 pm
Location: Montezuma Hall

251 Poster #14
Optimization of a QPCR Assay for the Detection of Phage-encoded Shiga Toxin Gene in Environmental Samples
Tess Condeeff, Biology (U)

252 Poster #15
CRISPR Technology for Regenerative Applications: Inducing genomic instability in human osteosarcoma cells with nuclease-deficient Cas9.
Oscar Munoz, Chemistry (Biochemistry) (U)

253 Poster #16
Advancing CRISPR-Cas Technologies for Effective Gene Perturbations in the Ascidian Ciona intestinalis
Karl Garcia, Cellular and Molecular Biology (U)

254 Poster #17
In Vivo Reprogramming of Muscle cells into an Endoderm Lineage Within the Vertebrate Model
Danio Rerio
Zachary Achen, Biology (U)

255 Poster #18
Comprehensive screen for antibodies to replace the four Yamanaka factors
Nadja El-Mecharrafie, Cell and Molecular Biology (M)

256 Poster #19
Genomic Editing of a Single Nucleotide Polymorphism (SNP) Associated with Progressive Supranuclear Palsy (PSP) Using CRISPR-based Technology on Human Isogenic iPSCs
Jordan Dizon, Cellular and Molecular Biology (M)

Session C-12
Poster: DNA/RNA
Friday, March 6, 2015, 1:00 pm – 2:45 pm
Location: Montezuma Hall

257 Poster #20
Characterization of the novel RNA methyltransferase Mettl14
Alicia Zamudio Montes de Oc, Biology, Psychology (U)

258 Poster #21
Examining Double Strand Break Repair in Vivo
Markel Farley, Microbiology (U)

259 Poster #22
Dynamics of bacteriophage lysis
Krystina Kezikava, Biology (U)
260 Poster #23
*MyVariant.info and its application to discover novel genetic variants in rare mendelian disease.*
Adam Mark, Bioinformatics and Medical Informatics (M)

261 Poster #24
*Genome Binning to improve the quality of genomes identified from Metagenomes*
Bhavya Nalagampalli Papudeshi, Bioinformatics and Medical Informatics (M)

262 Poster #25
*Investigation of LEF-1 Flexibility vs DNA Binding Activity*
Ariana Pientka, Chemistry (M)

263 Poster #26
*A nonparametric approach in covariate-modulated local false discovery rate for genome-wide association studies*
Rong Zablocki, Computational Statistics (D)

Session C-13
**Poster:** Common Experience: Food II
Friday, March 6, 2015, 1:00 pm – 2:45 pm
Location: Montezuma Hall

264 Poster #27
*Feasibility of a Prolonged Nightly Fast among Overweight/Obese Postmenopausal Women*
Zena Aladdin, Public Health (U)

265 Poster #28
*Exercise and Nutrition Goal Setting Outcomes Among San Diego County Families: Are some goals easier to accomplish than others?*
Juan Cabrales, Psychology (U)
Marisa Alvarez

266 Poster #29
*Weight Perception and feeding practices among Latina mothers of overweight and obese children*
Antonio Mixquitl, Accounting (U)
Cynthia Alba

267 Poster #30
*Activation of Selected Brain Regions Correlates with Hunger Subscale of Three Factor Eating Questionnaire*
Laura Gramling, Psychology (U)

268 Poster #31
*Examining correlations between different obesity indices and perceived stress among Native Hawaiian and Pacific Islanders in San Diego*
Adrian Bacong, Public Health (M)

269 Poster #32
*Association between acculturation and intuitive eating among Latina women*
Amanda Gonzales, Public Health: Health Promotion & Behavioral Science (M)

Session C-14
**Poster:** Interdisciplinary
Friday, March 6, 2015, 1:00 pm – 2:45 pm
Location: Montezuma Hall

270 Poster #33
*Human Impacts on California Mussels: A 9,500 Year Old Record From San Miguel Island, California*
Chyna Lee, Anthropology (U)

271 Poster #34
*Religious Fundamentalism and Conflict in Iraq and Syria*
Amanda Singh, Internat’l Security & Conflict Resolution (U)
Andrew Nguyen

272 Poster #35
*Sonderkommando: Behind the Ashes*
Danelle Paul, Computer Science (U)

273 Poster #36
*Variation and comparison of stature on a historic skeletal collection from India: A practice in methodology.*
Shawn Vineyard, Anthropology (U)
Arysa Gonzalez

Session C-15
**Poster:** Health Care Delivery
Friday, March 6, 2015, 1:00 pm – 2:45 pm
Location: Montezuma Hall

274 Poster #37
*The Effects of Age and Mental Health Status on the Likelihood of Hiring a Healthcare Advocate*
Symone McKinnon, Psychology (U)
275 Poster #38  
*The Effects of Comorbidity and Mental Health Status on the Likelihood of Hiring a Healthcare Advocate*  
Timothy Little, Psychology (U)

276 Poster #39  
*A Conversation Analytic Investigation on How to Improve Nurse-Physician Communication and Shared Leadership*  
James Hennessy, Communication (M)

277 Poster #40  
*Risk Factors Associated with Symptoms of Depression in Nursing Students*  
Serena Dubuque, Nursing (M)  
Linda M. Kucinski, Maia Edwards

278 Poster #41  
*Fall Reduction on a Medical Surgical Unit through Purposeful Rounding*  
Hannah Marro, Nursing (M)

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Session C-16  
**Poster:** Relationships  
Friday, March 6, 2015, 1:00 pm – 2:45 pm  
Location: Montezuma Hall

279 Poster #42  
*The Effect of Pre-Marital Cohabitation and Ethnicity on Marital Quality*  
Cinthia Sierra, Psychology (U)

280 Poster #43  
*The Role of Empathy in Violent Intimate Relationships*  
Salvador Rubalcaba, Psychology (U)

281 Poster #44  
*An Overview of Happy Long Term Marriages*  
Erika Meza, Psychology (U)

282 Poster #45  
*Empathy and Relationship Quality*  
Nicole Meda, Psychology (U)  
Julia F. Hammett

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283 Poster #46  
*Stress and Life Satisfaction among College Students*  
Shelley Condon, Psychology (M)  
Wiston Rodrigues, Liz Hartman

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Session C-17  
**Poster:** Experiences Across the Life Span  
Friday, March 6, 2015, 1:00 pm – 2:45 pm  
Location: Montezuma Hall

284 Poster #47  
*The Role of the Severity and Frequency of Maltreatment has on Children’s Social Problem Solving skills.*  
Aleena Gordon, Psychology (U)

285 Poster #48  
*Examining Parent Motivation in Child Mental Health*  
Raiyah Harris, Psychology (U)

286 Poster #49  
*The effect of age and comorbidity on the likelihood of hiring a healthcare advocate for a person with dementia*  
Breanna Holloway, Psychology (U)

287 Poster #50  
*The Shifting Perception of Age and Need for Healthcare Assistance*  
Bianca Ayscue, Psychology (U)  
Heather Kirchhoff

288 Poster #51  
*Effects of Educational Attainment on Self-Rated Health*  
Jennifer Rener, Sociology (M)

289 Poster #52  
*Exposure to Adverse Childhood Experiences Predicts the Development of a Substance Use Disorder Later in Life*  
McKenzie Gregory, Public Health (M)
Session D: Oral Presentations

Session D-1

Oral Presentation:
Internal Security, Violence & Conflict
Friday, March 6, 2015, 3:00 pm
Location: Pride Suite

290 3:00 pm  
Questioning the Genetics of Crime  
Yi-Lin Chung, Sociology (U)

291 3:15 pm  
Socio-economic Conditions and Violent Resistance Among the Kurds  
Alex Nelson, International Security & Conflict Resolution (U)

292 3:30 pm  
The Mechanisms in Social Movements ‘Turned Violent’: The Case of Paraguay  
Sierra Marcelius, Internat’l Security & Conflict Resolution (U)

293 3:45 pm  
Bogdan Matuszynski, International Security & Conflict Resolution (U)

294 4:00 pm  
The Politics of Water Security in Jordan: International and Domestic Dimensions  
Ross Hanshaw, Internat’l Security & Conflict Resolution (U)

295 4:15 pm  
The Politics of Street Mobile Food Vending in Immigrant Communities  
Karen Calderon, Political Science (M)

296 4:30 pm  
Colombian Process of Democratization  
Andrea Arango, Political Science (M)

Session D-2

Oral Presentation:  
Business & Market Analysis  
Friday, March 6, 2015, 3:00 pm  
Location: Park Boulevard

297 3:00 pm  
Navigating Master Limited Partnerships (MLPs) and Real Estate Investment Trust’s (REITs)  
Chris Huffstetler, Management and Entrepreneurship (U)

298 3:15 pm  
A Proposal to Increase Customer Awareness, Engagement and Retention Rates at City Pools  
Jesse Robles, Financial Services (U)

299 3:30 pm  
Aztec Recreation Center Membership Research Report  
Derek Forde, Marketing (U)  
Khang Nguyen, Jorge Soto-Ibarra, Colin Brown, Nirit Revzin

300 3:45 pm  
Atéssa Benefits, Inc  
Mariel Demesa, Financial Services and Economics (U)  
Wolfgang Kohl, Douglas McRae, Jesse Robles

301 4:00 pm  
International Market Research TriCal Incorporated  
Whitney Fee, Finance (U)  
Chris Huffstetler

302 4:15 pm  
Sales for Social Impact: AZAB  
Caitlin Clark, Management (U)  
Tony Disarufino, Jamie Vandertuyn, Austin Anderson, Carisse Platt

303 4:30 pm  
India’s Companies Act of 2013: A Governance Shift into the Sunlight  
Sarah Alvy, Management (M)  
Japneet Bajwa
### Session D-3

**Oral Presentation:**
Undergraduate Physical Chemistry  
Friday, March 6, 2015, 3:00 pm  
Location: Tehuanco

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Presenter(s)</th>
</tr>
</thead>
</table>
| 304   | 3:00 pm                                                              | **Gravitational Redshift of Deformed Neutron Stars**  
Alexis Romero, Physics (U) |
| 305   | 3:15 pm                                                              | **Fluorescent Nucleotides**  
Dillon Burns, Chemistry (U) |
| 306   | 3:30 pm                                                              | **Numerical Design for Fabrication of Optical Couplers for Subwavelength Silicon Microcavities**  
Evan Chicoine, Physics (U) |
| 307   | 3:45 pm                                                              | **Ball Milling As an Approach to Molecular Encapsulation of Pyrogallol[4]arene**  
Sara Journey, Biology (U) |
| 308   | 4:00 pm                                                              | **Explicit vibrational analysis of the alkyne-vinylidene isomerization on a heterocyclic ruthenium catalyst**  
Babgen Manookian, Chemistry (U) |
| 309   | 4:15 pm                                                              | **Vitamin K Electron Transfer Analysis Using Cyclic Voltammetry In non-aqueous Solvents With Glassy Carbon, Platinum, And Gold Working Electrodes**  
Eric Lopez, Chemistry (U) |
| 310   | 4:30 pm                                                              | **A Theoretical Study on the Isomerization of the Cyclooctatetraenyl Radical**  
Gerardo Soriano, Chemical Physics (U) |

### Session D-4

**Oral Presentation:**
Technology, Social Media & Identity  
Friday, March 6, 2015, 3:00 pm  
Location: Aztlan

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Presenter(s)</th>
</tr>
</thead>
</table>
| 311   | 3:00 pm                                                                                                                             | **War Games: The Therapeutic Effects of Paintball on Active Duty Soldiers and Veterans**  
Ian Brazill, Communication (U)  
Darron DeVillez |
| 312   | 3:15 pm                                                                                                                             | **Women Playing Fantasy Football a Qualitative Study: Strategies of Inclusion and Experiences of Exclusion**  
Dennis Gulyas, Communication (U)  
Christopher A. Rosario |
| 313   | 3:30 pm                                                                                                                             | **#BreakingNews: Assessing Flow, Incidental Learning, and Credibility during the Active News Search on Twitter**  
Gichuhi Kamau, Journalism and Media Studies (M)  
Holly Trusiak |
| 314   | 3:45 pm                                                                                                                             | **A Double-Edged Sword: How Technology Use Positively and Negatively Affects Familial and Personal Relationships**  
Scott Plambek, Communication (M)  
James P. Hennessy |
| 315   | 4:00 pm                                                                                                                             | **Navigating Around Entertainment’s Glass Ceiling: Asian Americans on YouTube**  
Alison Yeh, Communication (M) |
| 316   | 4:15 pm                                                                                                                             | **A Feminist Analysis of Video Gaming in the Blogosphere**  
Monica Murtaugh, Women’s Studies (M) |
| 317   | 4:30 pm                                                                                                                             | **The Internship Selfie Project: A Visual Analysis of Higher Order Thinking Skills in Immersive Out-of-School Time High School Internship Experiences**  
Lisa Johnson Davis, Education (D) |
## Session D-5
### Oral Presentation:
**Fitness, Injury & Daily Disturbances**  
Friday, March 6, 2015, 3:00 pm  
Location: Metztli

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>318 3:00 pm</td>
<td>Group Differences in Head Motion May Confound Anatomical Connectivity Findings from Diffusion Weighted MRI</td>
<td>Seraphina Solders, Psychology (U)</td>
</tr>
<tr>
<td>319 3:15 pm</td>
<td>The Effects of Exercise Induced Fatigue on a Static Balance Test</td>
<td>Ryan Byron-Fields, Kinesiology (U)</td>
</tr>
<tr>
<td>320 3:30 pm</td>
<td>Impact of dietary nitrate supplementation via spinach on cycling performance and blood pressure.</td>
<td>Andrew Gehr, Foods and Nutrition (U)</td>
</tr>
<tr>
<td>321 3:45 pm</td>
<td>The BTrackS balance test does not elicit a learning effect when utilized to measure changes in postural sway over time</td>
<td>Jenna Rubin, Rehabilitation Sciences (M)</td>
</tr>
<tr>
<td>322 4:00 pm</td>
<td>Inclusive Fitness: Adapting the Physical and Mental Environment in Fitness to Welcome Persons of All Abilities</td>
<td>Kathleen McCarty-Baker, Kinesiology, Rehabilitation Sciences (M)</td>
</tr>
<tr>
<td>323 4:15 pm</td>
<td>A Comparative Analyses of Two Osteological Collections: Lower-limb fractures due to occupational stress and daily life between 1898 and 1925</td>
<td>Sydney Garcia, Anthropology (M)</td>
</tr>
<tr>
<td>324 4:30 pm</td>
<td>Sleep Disturbances and Older Adults: Assessing the validity of the PROMIS Sleep Disturbances scale in a retirement community population</td>
<td>Kelsie Full, Public Health, Health Behavior (D)</td>
</tr>
</tbody>
</table>

## Session D-6
### Oral Presentation:
**Ethics, Responsibility, Contentment & the Afterlife**  
Friday, March 6, 2015, 3:00 pm  
Location: Templo Mayor

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>325 3:00 pm</td>
<td>The Fallacy of Failure</td>
<td>Andres Jaramillo, Business Management Administration:Entrepreneurship (U)</td>
</tr>
<tr>
<td>326 3:15 pm</td>
<td>Lukács on Historical Materialism</td>
<td>Tyler Holsclaw, Philosophy (U)</td>
</tr>
<tr>
<td>327 3:30 pm</td>
<td>The Economics of Ethics</td>
<td>William Riekstins, History (U)</td>
</tr>
<tr>
<td>328 3:45 pm</td>
<td>The Methodology of Contentment</td>
<td>Julia Strobel, Philosophy (U)</td>
</tr>
<tr>
<td>329 4:00 pm</td>
<td>Belief, Acceptance, and Epistemic Responsibility</td>
<td>Josh Cangelosi, Philosophy (M)</td>
</tr>
<tr>
<td>330 4:15 pm</td>
<td>Moral and Epistemic Luck: A Necessary Pair?</td>
<td>Brandon Edwards-Schuth, Philosophy (M)</td>
</tr>
<tr>
<td>331 4:30 pm</td>
<td>Minimal Hybrid Theism and the Afterlife</td>
<td>Todd Clark, Philosophy (M)</td>
</tr>
</tbody>
</table>

## Session D-7
### Oral Presentation:
**Graduate Molecular & Micro Biology**  
Friday, March 6, 2015, 3:00 pm  
Location: Visionary Suite

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>332 3:00 pm</td>
<td>Immune Mechanisms Underlying the Racial Disparities in Prostate Cancer</td>
<td>Tracy Luu, Molecular Biology (M)</td>
</tr>
<tr>
<td>333 3:15 pm</td>
<td>Bacteriophage Translocation Across Epithelial Cells</td>
<td>Sophie Nguyen, Molecular and Cell Biology (M)</td>
</tr>
</tbody>
</table>
### Session D-8

**Oral Presentation:**
Influences on Learning & Leadership
Friday, March 6, 2015, 3:00 pm
Location: Legacy Suite

- **338 3:00 pm**
  *The effects of agreement and discrepancy between espoused and enacted safety norms on safety outcomes.*  
  Jahnina Moss, Psychology (U)

- **339 3:15 pm**
  *Gendered Influences on Occupational Values Among Public Relations Students*  
  Elpin Keshishzadeh, Journalism: Public Relations (U)  
  Courtney White

- **340 3:30 pm**
  *The Role of Transformational Leadership Consensus and Innovation Climate Strength in Predicting Employee Attitudes*  
  Lisa Wright, Industrial/Organizational Psychology (M)

- **341 3:45 pm**
  *Grouping Stigmas by Perceived Benefits of Interventions: A Cluster Analysis*  
  Jacqueline Schnapp, Psychology (M)

### Session D: Poster Presentations

**Session D-9**

**Poster Presentation:** Antennas & Material Sintering
Friday, March 6, 2015, 3:00 – 4:45 pm
Location: Montezuma Hall

- **342 Poster #1**
  *Simulated Design of Printed Ultra-Wide Bandwidth (UWB) Antenna on Flexible PET Substrate Material*  
  Alejandro Castro, Electrical Engineering (U)

- **343 Poster #2**
  *Non Foster Matching of Electrically Small Bowtie Antenna covering 600 MHz to 1100 MHz*  
  Ghanshyam Mishra, Engineering (D)

- **344 Poster #3**
  *Spark Plasma Sintering Novel Tooling Design: Temperature Uniformization*  
  Diletta Giuntini, Mechanical Engineering (D)

- **345 Poster #4**
  *Spark Plasma Sintering of Zirconium Carbide: Densification Behaviors and Mechanical Properties*  
  Xialu Wei, Mechanical Engineering (D)

- **346 Poster #5**
  *A Beam Steering Linear Antenna Array with Novel Simultaneous Frequency Agility and Polarization Reconfigurability*  
  Behrouz Babakhani, Computational Science (D)

- **347 Poster #6**
  *Densification Behavior and Constitutive Modeling of Zirconium Nitride Consolidated by Field Assisted Sintering Techniques*  
  Geuntak Lee, Mechanical Engineering (D)

**Session D-10**

**Poster:** Drug Discovery & Development
Friday, March 6, 2015, 3:00 pm – 4:45 pm
Location: Montezuma Hall

- **348 Poster #7**
  *Progressive New Methods Towards the Total Synthesis of Azaspirene and its Analogs: Promising New Cancer Treatments*  
  Sean Najjar, Chemistry (U)
Session D-11
Poster: Educational Modalities
Friday, March 6, 2015, 3:00 pm – 4:45 pm
Location: Montezuma Hall

349 Poster #8
Development of a Screening Platform to Identify Drugs that Reprogram Pancreatic Cancer Cells
Jaco Van Niekerk, Biology (U)

350 Poster #9
Determining the efficacy of novel compounds aimed at ameliorating Parkinson’s disease
Kevin Green, Biology (U)

351 Poster #10
Cutting-edge synthesis for drug design fragments
Alyssa Kim, Chemistry (U)

352 Poster #11
Characterization of the Membrane Effects of a Synthetic Antimicrobial Peptide
Indrajee Wewaliyadda, Microbiology (M)

353 Poster #12
Small Molecules that are Cytotoxic to PC3 Prostate Cancer Cells
Parima Udompholkul, Molecular Biology (M)

354 Poster #13
Hands on educational outreach program helps students apply subject matter to real life
Raquel Aguilar, Mathematics (U)
Laura Rodriguez, Valerie Gamboa

355 Poster #14
Introduce Hatching and Rearing Mallard Ducks to Increase Students’ Academic Interest and Performance in Math and Science
Heather Padilla, Single Subject Mathematics (U)
Belen Ledesma, Alexandra Varela

356 Poster #15
Video Self-Modeling as a Reading Fluency Intervention for English Learners with Disabilities
Nicole Edwards, School Psychology (M)

357 Poster #16
Assessing Instructional Modalities: Individualized Treatment Effects for Personalized Learning
Joshua Beemer, Statistics (M)

358 Poster #17
Utilizing Random Forests to Evaluate Pedagogy and Inform Personalized Learning
Kelly Spoon, Computational Statistics (D)

Session D-12
Poster: Biology/Physiology
Friday, March 6, 2015, 3:00 pm – 4:45 pm
Location: Montezuma Hall

359 Poster #18
Passage conditions for expansion of human midbrain neuronal progenitors
Carlos Paz, Biochemistry (U)

360 Poster #19
Characterizing the Peripheral Nervous System Gene Regulatory Network in the Ascidian Ciona intestinalis
Sherlyn Gallo, Biology (U)

361 Poster #20
Calcium Transient Regional Variance within the Neonatal Cardiomyocyte
Jacqueline Cuen, Biochemistry (U)

362 Poster #21
Are Brain Regions Important for Emotional Regulation Associated with Problem Behaviors in Children with Heavy Prenatal Alcohol Exposure?
Sophie Haven, Psychology (U)

363 Poster #22
Mechanism of Group B Streptococcal Entry into Brain Endothelial Cells
Brandon Givens, Cell & Molecular Biology (M)

364 Poster #23
Differences in P1 and N170 ERP components for deaf vs. hearing readers
Casey Kohen, Psychology (M)

365 Poster #24
Developing A Decision Tree For Clinical Identification Of Children Affected By Prenatal Alcohol Exposure Ii: Model Validation
Lauren Doyle, Clinical Psychology (D)
**Session D-13**

**Poster: Environment**
Friday, March 6, 2015, 3:00 pm – 4:45 pm
Location: Montezuma Hall

366 Poster #25  
*Comparing Air Pollutant Concentrations of Particulate Matter 2.5 within San Diego Malls and San Diego State University’s Food Courts*  
Kathryn Paras, Public Health (U)  
Ally Lu, Dustin White

367 Poster #26  
*Copper contamination increases consumption of epiphytic algae by estuarine shrimp*  
Alterra Sanchez, biology (U)

368 Poster #27  
*An Ecocentric Analysis of a Potentially Impacted Area Within the Santa Margarita Ecological Preserve*  
Amber Elliott, Environmental Science (U)  
Kelsey Hawkins, Rogelio Avila, David Sevilla

369 Poster #28  
*Particulate Matter Air Pollution in National City*  
Naomi Munroe-Davidson, Public Health (U)

370 Poster #29  
*San Diego Campus’ Student Research: Salton Sea Environmental History Research Project*  
Rene Gomez, History (U)

371 Poster #30  
*Quantifying the Effects of Santa Ana Winds on Wildfires*  
Logan Kiff, Mechanical Engineering (M)

**Session D-14**

**Poster: Health, Motor Skills & Activity**
Friday, March 6, 2015, 3:00 pm – 4:45 pm
Location: Montezuma Hall

372 Poster #31  
*Acoustic Changes Due to Impaired Speech Movements in Children with Cerebral Palsy*  
Tatiana Zozulya, Speech, Language & Hearing Sciences (U)  
Lindsay Kempf, Alyssa Yee

373 Poster #32  
*The Effect of Prompts Designed to Increase Stair Use Among Escalator Users*  
Chase Reuter, Statistics (M)  
Isaac Quintanilla

374 Poster #33  
*Phosphatidylcholine as rapid biomarker of Delayed Onset Muscle Soreness*  
Jake Bernards, Exercise Physiology (M)

375 Poster #34  
*Effects of Adaptive Practice on Motor Learning of Narrow Beam Walking*  
Sarah-Rosabelle Barreyro, Physical Therapy (D)  
Jillian Gerbracht, Heather Lyons, Supamas Tseng, Jeffrey Wood, Antoinette Domingo

376 Poster #35  
*Faith-based interventions for increasing physical activity: a systematic review protocol*  
Maira Parra, Evidence Based Health (D)

**Session D-15**

**Poster: Water: Across Disciplines**
Friday, March 6, 2015, 3:00 pm – 4:45 pm
Location: Montezuma Hall

377 Poster #36  
*Investigating Phage-encoded blaCTX-M1 in Influent and Effluent Samples from Wastewater Treatment Plants*  
Marley Hilleger, Microbiology (U)

378 Poster #37  
*Benefits of understanding factors of water conservation among separate interest groups in a small island tourism community*  
Larina Cassidy, Recreation & Tourism Management (U)

379 Poster #38  
*Water Infrastructure Mapping of Bird Park*  
Julie Ann Alvarado, Environmental Science (U)  
Eddie Alvarez, Tucker Lopez, Joe Graf

380 Poster #39  
*Wastewater Treatment and Reuse Options at SDSU*  
Alessandro Maganuco, Environmental Engineering (M)
381 Poster #40  
*Distribution of Polycyclic Aromatic Hydrocarbons in San Diego Bay Recreational Marinas Using a Non-Targeted Analytical Method*  
Jennifer Cossaboom, Environmental Health (M)

382 Poster #41  
*Storm Model Comparison in Rainbow Creek, San Diego with SWMM 5.1 and HEC-HMS 4.0*  
Alex Smith, Civil Engineering: Water Resources Engineering (M)

383 Poster #42  
*Bringing public good with the collaboration of government and non-government organizations*  
Javier Gonzalez, Public Administration (M)  
Rosa Del Angel

Session D-16  
**Poster:** Aging, Mental Function & Memory  
**Friday, March 6, 2015, 3:00 pm – 4:45 pm**  
**Location:** Montezuma Hall

384 Poster #43  
*Preliminary evidence for validity of an episodic-like memory test*  
Gabrielle Wagner, Psychology (U)

385 Poster #44  
*Spatial Pattern Separation Performance in Older Adult Carriers and Non-Carriers for the Apolipoprotein E Epsilon 4 Allele*  
Carina Hartley, Psychology (U)

386 Poster #45  
*Are Spatial Memory Changes in Older Adults Due to Less Efficient Pattern Separation?*  
Shannon Yandall, Psychology (U)

387 Poster #46  
*Who, When, and Where: Age-Related Differences on a Novel Episodic-Like Memory Task.*  
Emily Van Etten, Psychology (U)

388 Poster #47  
*Signal Detection Theory and Cross-Modal Priming: Sensory Memory in Alzheimer’s Disease*  
Chelsea French, Psychology (M)

389 Poster #48  
*Cognitive Decline Effects on Odor Threshold and Identification in Alzheimer’s disease*  
Ekarin Pongpipat, Psychology (M)

390 Poster #49  
*The Correlates of Odor Recognition Memory and Neuropathology in the Hippocampus for Controls*  
Jordan Zuber, Psychology (M)

Session D-17  
**Poster:** Effects of Culture & Acculturation  
**Friday, March 6, 2015, 3:00 pm – 4:45 pm**  
**Location:** Montezuma Hall

391 Poster #50  
*How Easily Do Biculturals Switch From One Culture To The Other?*  
Joshua Silva, Psychology (U)  
Deirdra Li, Charlene Eivaz

392 Poster #51  
*A Comparison of Asian American and Pacific Islander Cultural Characteristics and Experiences*  
Billy Chan, Psychology (U)

393 Poster #52  
*The Relationships of Machismo and Caballerismo to Alcohol and Tobacco Use among Hispanic American Men*  
Michelle Arrolloado, Psychology (U)

394 Poster #53  
*Assessing an acculturation scale among Native Hawaiian and Pacific Islanders in San Diego*  
Brigette Sosa, Psychology (U)

395 Poster #54  
*Does religiosity buffer the impact of depression among acculturated Latinas?*  
Stephanie Sanz, Psychology (U)

396 Poster #55  
*Reverse Cultural shock, why it matters?*  
Zachary Beck, Psychology (U)  
Sara R. Roldan
Session E: Creative Arts Presentations

Session E-1

Creative Arts:
Visual, Performing, Creative Arts & Design I
Friday, March 6, 2015, 1:30 pm
Location: Montezuma Theatre

397  1:30 pm
Through the Looking Glass: A Neuroscientific Explanation of the Relationship between Creator and Spectator
Julia Cuppy, Musical Theatre (M)

398  1:45 pm
Mutable Typography: Development of the typeface Model Q and its relationship to Umberto Eco’s eponymous philosophical concept
Kathryn Stapko, MFA: Graphic Design (M)

399  2:00 pm
The Design Process of Producing August Strindberg’s “Miss Julie” for Theatre
Nick Pecher, Scenic and Props Design (M)
Anna Marie S. Phillips, Kathryn Rich

400  2:15 pm
How Do New Works Work?: An Examination of Successful New Play Development Practices with Application to Education
Randall Eames, Musical Theatre (M)

401  2:30 pm
Exploring Functional Emotions
Joshua Torbick, Furniture Design (M)

402  2:45 pm
‘Cause If You Liked It Then You Should Have Put A Copyright On It: A Cultural Perspective on Choreography and Copyright
Courtney Kattengell, Musical Theatre (M)

Session F: Creative Arts Presentations

Session F-1

Creative Arts:
Visual, Performing, Creative Arts & Design II
Friday, March 6, 2015, 3:30 pm
Location: Montezuma Theatre

403  3:30 pm
But He Doesn’t Know the Territory: An Exploration of the Musical Theatre Patter Song as Hip Hop Music
Jessica Humphrey, Musical Theatre (M)

404  3:45 pm
Unplugged
Michelle Montrose, Studio Arts (U)

405  4:00 pm
Pre-visualization For Entertainment Lighting Design
Conor Mulligan, Theatre, Television & Film (M)
Chad Shelton

406  4:15 pm
Reclaiming the ‘Top Forty’: Broadway’s Relationship with Popular Music
Bradley J. Behrmann, Musical Theatre (M)

407  4:30 pm
Investigating Shaker Design
Peter Scheidt, Furniture Design and Woodworking (M)

408  4:45 pm
Tracking Projections: Experimenting in Enhancing Fluid Theatrical Design
Gabrielle Heerschap, Theatre Design and Technology (M)
Saturday, March 7, 2015

Session G: Oral Presentations

Session G-1

Oral Presentation:
Alcohol Abuse Across the Lifespan
Saturday, March 7, 2015, 9:00 am
Location: Pride Suite

409 9:00 am
Choline supplementation during early, but not late, postnatal development attenuates hyperactivity associated with prenatal alcohol exposure.
Brandonn Zamudio, Psychology (U)

410 9:15 am
Traumatic Events, Enculturation/Acculturation, Alcohol and Marijuana Use: Investigating Relationships
Rob Grijalva, Psychology (U)

411 9:30 am
Hormonal Birth Control Use Associated with Increased Alcohol Consumption and Intoxication
Tenille Taggart, Psychology (U)

412 9:45 am
Comparing Parent/Caregiver Administration Forms of the Vineland Adaptive Behavior Scales-II in FASD, ADHD, and Control Children
Lauren Gross, Psychology (M)

413 10:00 am
Developing A Decision Tree For Clinical Identification Of Children Affected By Prenatal Alcohol Exposure I: Model Development
Patrick Goh, Psychology (M)

Session G-2

Oral Presentation: Sustainability, Culture & Food
Saturday, March 7, 2015, 9:00 am
Location: Park Boulevard

414 9:00 am
Using Food and Social Value to Understand Motivation of Participation in Community Supported Agriculture in San Diego County
Erica Myerski, Public Administration (U)

415 9:15 am
Sustainable Behaviors of Latinos in California-Mexico Border Communities
Citlaly Cheema, International Business: Arabic and the Middle East (U)

416 9:30 am
Weight Problem Perception and Emotional Eating in Latina College Students
Dyane Acosta, Psychology (U)
Denicka Lopez

417 9:45 am
The relationship between obesity, acculturation, and food security among Latino adults in South San Diego County.
Jessica Hawks, Public Health (D)

418 10:00 am
Predicting Parent Engagement in Family-Based Childhood Obesity Programs
Emily Schmied, Public Health (D)

Session G-3

Oral Presentation: Wildfire & Microgravity Combustion
Saturday, March 7, 2015, 9:00 am
Location: Tehuanco

419 9:00 am
Geographic Tools for Identifying Post-fire Ecological Changes in Chamise Chaparral
Emanuel Storey, Geography (M)

420 9:15 am
Quantifying the Effect of Santa Ana Winds on Wildland Urban-Interface Fires in San Diego County
Robert Davies, Mechanical Engineering (M)

421 9:30 am
Polymethylmethacrylate Combustion in a Narrow Channel Apparatus Simulating a Microgravity Environment
Garrett Bornand, Mechanical Engineering (M)

422 9:45 am
Model and Experiments of Burning Intermediate Thickness PMMA Sheets in Microgravity Opposed Flow
Tirthesh Shah, Mechanical Engineering (M)
**Session G-4**

**Oral Presentation:** Novel Molecular Tools for Biology & Medicine  
Saturday, March 7, 2015, 9:00 am  
Location: Aztlan

**423** 10:00 am  
**A Comparison of Radiation Signature from Spreading Flames in Normal and Zero Gravity Environment**  
Matthew Laue, Mechanical Engineering (M)

**430** 9:15 am  
**Investigation of Treated Wastewater Intended for Drinking**  
Valerie Root, Public Health/Environmental Health (M)

**424** 9:00 am  
**Bacterial Infection and Activation of Human Astrocytes**  
Thomas Weston, Cell & Molecular Biology (M)

**425** 9:15 am  
**A Novel Green Synthesis of Gold Nanoparticles Using Near-UV Irradiation**  
Michael Keogh, Chemistry (M)

**426** 9:30 am  
**Identification of new protein interactions of UNC-45, a myosin molecular chaperone, in Drosophila melanogaster**  
Carmen Carland, Cell & Molecular Biology (M)

**427** 9:45 am  
**Electrochemical Characterization of an Electroactive Ureidopyrimidinone Derivative, Meijer's Four Hydrogen Bond Array Containing a Dimethylaminophenylurea Redox Center**  
Laurie Clare, Chemistry (M)

**428** 10:00 am  
**Synthesis of Nucleoside Triphosphate Analogues: Overcoming the inability of Nucleotide Therapeutics to Permeate Across the Cellular Membrane.**  
Jason Lundy, Chemistry (M)

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**Session G-5**

**Oral Presentation:** Water, Environment & Culture  
Saturday, March 7, 2015, 9:00 am  
Location: Metztli

**429** 9:00 am  
**Water Over The Bridge: Education, Capabilities theory, and Chilean Social Development**  
Trevor Auldridge, Sociology (U)

**431** 9:30 am  
**Race, Socio-economic status, and Environmental Inclusiveness: Mapping the distribution of users of the San Gabriel River**  
Jonathan Navarrete, Statistics (M)

**432** 9:45 am  
**Bringing public good with the collaboration of government and non-government organizations**  
Rosa Del Angel, Public Administration (M)  
Javier Gonzalez

**433** 10:00 am  
**Regional impacts of urbanization on stream channel geometry: Importance of watershed size and channel particle size**  
Kristine Taniguchi, Geography (D)

**434** 10:15 am  
**Proposing the San Quintín Bay Hydrodynamic Forecast System Through Data Assimilation Scheme.**  
Mariangel Garcia, Computational Science (D)

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**Session G-6**

**Oral Presentation:** Range & Wetlands  
Saturday, March 7, 2015, 9:00 am  
Location: Templo Mayor

**435** 9:00 am  
**Locating the Main Central Thrust of the Himalayan Orogen: Results from the Melamchi River Traverse of Central Nepal**  
Clint Callanan, Geology (U)

**436** 9:15 am  
**Effects of speeds of tidal currents on feeding activity and prey selection of California killifish, Fundulus parvipinnis**  
Jaimie Savoie, Biology (U)

**437** 9:30 am  
**The benefits of wetlands filtering out pollutants over time: do they wane or stay strong?**  
Ray Hartfield, Mathematics (U)  
Raquel Aguilar, Gustavo Rodriguez
9:45 am  
The Strength of an Herbivore-Induced Defense in the Brown Seaweed Silvetia compressa is Weakened by the Presence of the Red Seaweed Chondracanthus canaliculatus  
Breanna Goldsby, Biology (U)

10:00 am  
Open Houses on the Open Range: Rangeland Conversion in San Luis Obispo County.  
Kyle Walsh, Geography (M)

10:15 am  
Assessing Vulnerability: A synthesis of climate change impacts to agriculture  
Laurel Howard, Geography (M)

Session G-7  
Oral Presentation: Cultural Symbols  
Saturday, March 7, 2015, 9:00 am  
Location: Visionary Suite

9:00 am  
User Agreement: the Relationship Between “User” and “Owner”  
Deborah Fisher, English (U)

9:15 am  
Tracing Chinese Autonomy in the Poetry of Modern China  
Simon Shieh, English (U)

9:30 am  
The Light and Dark of the Abyss: Binary Oppositions in and out of “Watchmen”  
Amanda Hurych, English (U)

9:45 am  
Queens of Noise: Patti Smith, Joan Jett, and Women’s Spaces in Punk Rock  
Cameron Satterlee, History (U)

10:00 am  
Problem Posing and the Prospect of Reforming the Sciences and the Humanities  
Jeremy Bijan Juybari, Econ & Interdisciplinary Studies (U)  
Trevor Auldridge

10:15 am  
Identification and Ideographs: Appeals to Nature and Natural in Environmental Advertising  
Mary Vidal, Rhetoric and Writing Studies (M)

Session H: Oral Presentations

Session H-1  
Oral Presentation: Cultural Boundaries  
Saturday, March 7, 2015, 10:30 am  
Location: Pride Suite

10:30 am  
Rio con Cogada: A History of the New River  
Marcie Rodriguez, History (U)

10:45 am  
Indigenously Remixing Culture  
Lora Paz, English and American Indian Studies (U)

11:00 am  
What is the pronunciation of Los Angeles?  
Eric Spoelstra, History (M)

11:15 am  
Letters from Oma: The Study of Abandonment through the Life of a Mixed Race Orphan Living in a Post-Colonial Society.  
Jayme Navalle, History (M)

11:30 am  
Material Representation: Narco Culture and Religiosity in New American Conception  
Megan Zebert-Judd, Homeland Security (M)

Session H-2  
Oral Presentation: Cancer, Support & Media  
Saturday, March 7, 2015, 10:30 am  
Location: Park Boulevard

10:30 am  
A New Kind of Normal: Two Families Balance the Complicated Communicative Process of Support—Post-Cancer Diagnosis  
Sarah-Jane Winstead, Communication (Applied) (U)  
Kristen Gascon

10:45 am  
Learning from Celebrities: Cancer Information in the Media  
Julia Drizin, Psychology (M)
454 11:00 am  
*Advice about Cancer Disclosure from Cancer Survivors in College*  
Tonya Pan, Clinical Psychology (D)  

455 11:15 am  
*Mapping the Online Social Network of Cancer Bloggers*  
Sharon Baik, Clinical Psychology (D)  

**Session H-3**  
**Oral Presentation:**  
Solar Energy, Sand & High Temperature Materials  
Saturday, March 7, 2015, 10:30 am  
Location: Tehuano  

456 10:30 am  
*Heliostat Field Design and Optimization for a Small Particle Solar Receiver*  
Eduardo Palomar Trullen, Mechanical Engineering (U)  

457 10:45 am  
*A Comparison Of The Monte Carlo Method To The Discrete Ordinates Methods In Fluent For Calculating Radiation Heat Transfer In A Particle Receiver*  
Eugene Cho, Mechanical Engineering (M)  

458 11:00 am  
*On and Off-Design Performance of a Combined Cycle Solar-Fossil Hybrid Gas Turbine Plant*  
Matthew Virgen, Mechanical Engineering (M)  

459 11:15 am  
*Strength and Ductility of Polymer Bonded Sands*  
Nicole Garcia, Civil Engineering (M)  

460 11:30 am  
*An Evaluation of Containment Materials for High Temperature Phase Change Metal Thermal Storage*  
David Curran, Mechanical Engineering (M)  

**Session H-4**  
**Oral Presentation:** Undergraduate Cardiac Biology  
Saturday, March 7, 2015, 10:30 am  
Location: Aztlan  

461 10:30 am  
*Design, Expression, and Preparation of an NF-κB p50 Homodimer-GFP Fusion Protein*  
Carlos Nowotny, Chemistry/ Biochemistry (U)  

462 10:45 am  
*Characterizing Myosin Storage Myopathy (MSM) in a transgenic fly*  
Evan Tully, Bioengineering (U)  

463 11:00 am  
*Effects of RyR2, NCX and SERCA down-regulation in Neonatal Cardiomyocytes using siRNA*  
Amanda Brambila, Biochemistry (U)  

464 11:15 am  
*Rejuvenation of Cardiac Progenitor Cells through PRAS40 mediated inhibition of mTORC1*  
Jacqueline Emathinger, Biology (U)  

465 11:30 am  
*Enhancing the Adaptive ER Stress Response as a Possible Therapy for Ischemic Disease*  
Zoe Sand, Cellular and Molecular Biology (U)
Session I: Creative Arts Presentations

Session I-1
Creative Arts:
Visual, Performing, Creative Arts & Design III
Saturday, March 7, 2015, 9:20 am
Location: Montezuma Theatre

466  9:20 am
Expression through Dance: Shakti
Nitya Bhaskaran, Microbiology (M)

467  9:40 am
Life is
Desmond Hassing, Theatre: Youth Theatre (U)
Katie Rich, Chris Yarrow

468  10:00 am
Kingdom Catalina Overture
Marcos Trejo, Music Education (U)

469  10:20 am
Actors Reacting: Breaking the Page in Scene Study
Bernardo Mazon, Theatre (U)
Courtnee Stagner

470  10:40 am
Toe and Heel: The Gender Roles of Tap Dance
Liv Stevns Petersen, Musical Theatre (M)

471  11:00 am
“Times Like This”, Lucky Stiff Character Analysis
Kelty Morash, Theatre Arts Performance (U)

472  11:20 am
Jack Cole: The Father of Theatrical Jazz Dance
Kikau Alvaro, Musical Theatre (M)
ABSTRACTS BY SESSION
Friday, March 6, 2015
Session A: Oral Presentations

Session A-1
Oral Presentation: Flow & Transport (Engineering)
Friday, March 6, 2015, 9:00 am
Location: Pride Suite

1 9:00 am
In vivo quantification of intraventricular flow during left ventricular assist device support
Vi Vu, Bioengineering (M)
Karen May-Newman, Mechanical Engineering

Left ventricular assist devices (LVADs) are mechanical pumps that are surgically connected to the left ventricle (LV) and aorta to increase aortic flow and end-organ perfusion. Clinical studies have demonstrated that LVADs improve patient health and quality of life and significantly reduce the mortality of cardiac failure. However, in the presence of left ventricular assisted devices (LVAD), abnormal flow patterns and stagnation regions are often linked to thrombosis. The aim of our study is to evaluate the flow patterns in the left ventricle of the LVAD-assisted heart, with a focus on alterations in vortex development and blood stasis. To this aim, we applied color Doppler echocardiography to measure 2D, time resolved velocity fields in patients before and after implantation of LVADs. In agreement with our previous in vitro studies (Wong et al, Journal of Biomechanics 47, 2014), LVAD implantation resulted in decreased flow velocities and increased blood residence time near the outflow tract. The variation of residence time changes with LVAD operational speed was characterized for each patient.

2 9:15 am
Jerky Flow in a Constrained Granular Material
Pouya Golshan, Civil Engineering (M)
Julio Valdes, Civil Engineering

The current work focuses on investigating the role of imposed strain rate (SR) on the internal deformation mechanisms suffered by granular packs loaded monotonically in constrained compression. A digital image correlation technique is used to track localized deformations and thus, to gain insight into the mechanisms that lead to the periodic stress drops (i.e., serrations) that are registered at the top of the pack during loading. The serration amplitudes increase with decreasing SR, with a gradual deformation gradient for high SR, periodic propagation of compaction bands for medium SR, and highly jerky deformation bursts for low SR. Statistical analysis of the serrations and the aforementioned observations suggest that a competition amongst the rate of grain breakage and the rate of densification is at the heart of the SR-dependence observed.

3 9:30 am
Transport Dynamics over Micro-patterned Surfaces: Theory and Experiment
Bowen Ling, Mechanical and Aerospace Engineering (D)
Ilenia Battiato, Mechanical Engineering

Surfaces with micro-scale topological features are widely encountered in natural systems. Distinctive characteristics of the micro-structured surfaces have been adopted in a variety of applications and manufacturing processes including, but not limited to, friction reduction, ultrafiltration of colloids and bio-reactor on micro-fluidic chips. Understanding flow and solute transport over micro-patterned surfaces is essential to many applications. The relationship between the surface topological structures and its impact on solute transport remains unclear. By adopting newly developed fabrication techniques at the PNNL Environmental Molecular Science Laboratory and an innovative design of the micro-flow chips, we are able to observe solute transport at an unprecedented temporal resolution. Comparison of available analytical solutions with the collected data shows that model applicability is limited to low-Peclet number regimes and cannot capture the impact of topological features on the transport dynamics. We develop a new analytical model which take into account 1. non-uniform velocity profiles both in the open flow layer (i.e. fracture) and inside the patterned layer (i.e. porous matrix), 2. slip velocity condition on the interface and 3. the effect of geometrical properties of the matrix on the solute dispersion inside the fracture. We provide an analytical two-dimensional solution for the concentration profiles both inside the fracture and the matrix and compare our analytical predictions with experimental data.

4 9:45 am
Spatio-temporal upscaling of reactive transport in porous media for ultra-long time predictions
Farzaneh Rajabi, Mechanical Engineering (D)
Ilenia Battiato, Mechanical Engineering

In most practical applications it is satisfactory to know the macroscopic (averaged in space and/or time) values of the state variables. Predictions of subsurface transport for ultra-long times require the formulation of continuum scale models for time-averages. In the current study we perform a spatio-temporal upscaling for pore-scale advection-diffusion equations.
with nonlinear heterogeneous reaction using homogenization method to (i) obtain macro-time continuum-scale equations and (ii) identify their applicability regimes in terms of relevant dimensionless groups.

5 10:00 am

**A New Reconstruction Algorithm for Flow and Reactive Transport Simulation in Porous Media on Cartesian Grids**

Mehrdad Yousefzadeh, Mechanical Engineering (D)
Ilenia Battiato, Mechanical Engineering

Complex and time-dependent geometries are a challenge in simulation flow and reactive transport in porous media. Immersed Boundary Methods are efficient tools to handle these type of geometries by applying a source term to enforce BCs at the body surface. The source term is determined by the difference between the interpolated values on the boundary points and the desired (physical) boundary values. In mass transport due to the jump (discontinuity) in concentration values across the boundary, we are forced to use one sided stencil reconstruction (interpolation) of boundary values. We have proposed a better reconstruction scheme, which performs the interpolation along the outward normal to the body and is second order accurate in space and can be applied to different types of boundary conditions.

6 10:15 am

**Lagrangian coherent structures in an unstable bottom boundary layer under a solitary wave**

Daniel A Nelson, Aerospace Engineering (D)
Gustaaf Jacobs, Engineering

The role of Lagrangian Coherent Structures (LCS) in fluid mixing is investigated in the unstable bottom boundary layer (BBL) under a solitary surface wave mimicked by a soliton-like pressure gradient driven flow in an oscillating water tunnel. The finite-time Lyapunov exponent (FTLE) field, both backward in time and forward in time, is determined for a two-dimensional direct numerical simulation (DNS) of the unstable BBL from the development of the instability through the growth of the large scale transport structures. Attracting LCS are identified trailing the primary vortices that form moving separation surfaces which pick up material from the boundary and transport it into the primary vortices. Weaker, secondary separation surfaces form beneath smaller, secondary vortices. At a later time, the secondary vortices are absorbed by the primary vortices and the separation surfaces from the smaller vortices merge with the separation surfaces from the larger vortices. The primary vortices are the most significant sources of mixing between the near wall and outside the boundary layer, implying that the primary vortices are the physical mechanism for particle resuspension.

7 9:00 am

**SDSU’s DACA Students and Access to Health Care**

Miguel Angel Castaneda, Chicana and Chicano Studies (U)
Victoria Gonzalez-Rivera, Chicana and Chicano Studies

The passage of the Affordable Care Act (ACA) has made it possible for millions of Americans to sign-up for health insurance, bringing the number of uninsured people nationwide to an all-time low of 13.4%. Moreover, the implementation of the Deferred Action for Childhood Arrivals (DACA) program has given immigrant youth deportation protection and access to some social services from government agencies, including health insurance through California’s Medi-Cal program. However, even after these changes in health care and immigration policy there remains a health crisis among immigrant youth in California. A recent UCLA study found that 69% of immigrant youth in California ages 22 to 32 do not have health insurance and 71% of that same cohort report having an urgent need to see a doctor. My research thus far suggests that there is a great deal of confusion on all parts regarding who qualifies for Medi-Cal and the application process itself. Through interviews with approximately a dozen DACA students at San Diego State University I aim to determine the rate at which this group of formerly undocumented students are signing up for Medical, discuss what barriers, if any, they confront in the process, and suggest ways in which the university can help them access health care.

8 9:15 am

**Does sample matter? Differences between College and MTurk Participants on Causal Attributions Towards Stigma.**

Karen D Key, Psychology (U)
Allison Vaughn, Psychology

Stigmas about disabilities fluctuate across time and person based on information, especially information about the onset of the disability. Given that such beliefs vary, this study used the causal attribution model to examine stigma toward mental and physical disability groups. Specifically, how causal information influenced one’s feelings and subsequent helping behaviors towards the disabled. Previous research has predominately used undergraduate samples; however the goal of the present study was to test the generalizability of these effects beyond
college students to the average American adult. Two samples (n = 156) were recruited: an older adult sample from Amazon’s Mechanical Turk (MTurk) and a younger college sample from the undergraduate participant pool (SONA). Participants were randomly assigned to one of three information conditions: no information (control), information that a person was responsible for their condition (responsible), or information that a person was not responsible for their condition (not responsible). Both samples rated sixteen stigmas on perceived controllability (responsibility and blame), a positive emotions index (liking, pity, and anger), a helping behaviors index (charitable donations and personal assistance), and perceived benefits of various treatments (job training, educational training, welfare, medical treatment, and psychotherapy). Omnibus tests revealed main effects of sample as well as Sample x Information interactions for Alzheimer’s disease, heart disease, chronic obstructive pulmonary disease (COPD), drug abuse, and HIV. Simple effects tests showed that beliefs about responsibility were more salient for one than the other, yet it fluctuated based on stigma. When given responsible information, MTurkers perceived Alzheimer’s disease as more controllable and were more likely to report helping behaviors towards people with COPD than SONA participants. On the other hand, when given not responsible information, MTurkers perceived drug abuse as more controllable and were more likely to report positive emotions towards people with HIV than SONA participants. Finally, no sample main effects or Sample x Information interactions were found on the perceived benefits of any of the various treatments. Results suggest that more research is needed to better understand generational effects regarding the attribution of stigmas because these findings have potential to inform anti-stigma campaigns.

9 9:30 am

**SES Priming Effects on Creativity**

Juan O Chavez, Psychology (U)
Claire Murphy, Psychology

This study was interested in investigating how creativity varies across different Social Economic Status (SES). The study hypothesized if participants are primed with a social economic status, then priming would have an effect on a creativity performance. In order to measure creativity, a functional fixedness (FF) problem was presented. Participants (N = 16) were pooled from an advanced psychological method course from a major university. The study found no significant interaction difference between the two SES conditions (low and high SES) and the functional FF/non-FF groups, F(3,12) = .244, p = .878 with an effect size of $\eta^2 = .053$. The study helps support that creativity is not hindered when participants are primed with a SES when performing a functional fixedness task.

10 9:45 am

**Think Outside the Stigma: Effect of Sample on Attributional Analysis of HIV**

Sierra B Cronan, Psychology (U)
Allison Vaughn, Psychology

More than 1.2 million people in the United States have HIV—the virus that causes AIDS. Previous research on attribution theory indicates that perceived controllability and stability of the disease influences stigma. Most diseases fall into the category of controllable and unstable or uncontrollable and stable; however, HIV has been viewed as both controllable and stable. These attributions influence stigma towards those suffering in terms of emotions and behaviors. Previous research has largely used student samples that may not accurately represent the population as a whole. Therefore, the goal of the present study was to test the generalizability of attitudes towards people with HIV by comparing a student sample with a non-student sample of American adults. In the present study, a total of 156 participants were recruited using the undergraduate participant pool (SONA) and Amazon’s Mechanical Turk (MTurk). The SONA sample (n = 77) averaged 18.8 years of age while the MTurk sample (n = 79) averaged 31.9 years of age. Participants completed an online survey using Qualtrics software for partial course credit or compensation. Both samples rated a person with HIV on controllability (of disease onset), emotions (likeability, pity, and anger), and helping behaviors (personal assistance and charitable donations). Participants were randomly assigned to one of three information conditions: no information (control), information that the person was responsible for their condition, or information that the person was not responsible for their condition. A main effect for sample was found for the controllability index, indicating that students felt that HIV was more controllable than the non-student sample. A significant sample by condition interaction was found for the positive emotions index. Simple effects tests revealed that when given non-responsibility information, this was more salient for MTurkers as they felt more positive emotions towards those with HIV than the SONA participants. Results suggest that how people think, feel, and act towards people with HIV is more complex than previously thought. Future research is needed to better understand the differences found between the samples in order to target stigma reduction campaigns more effectively.
11  10:00 am  
**Costa Rica’s National Identity And Its Effects On Policy Attitudes Regarding Ethnic Minorities**

Lizet Serrano, Psychology (U)  
Thierry Devos, Psychology  

Nicaraguan immigration and indigenous land disputes in Costa Rica have called into question Costa Rica’s national identity and relationships among three subgroups (Costa Ricans of Nicaraguan descent, Indigenous Costa Ricans, and Costa Ricans of European descent). The purpose of this study is to examine lay definitions of Costa Rica’s national identity, which subgroups encompasses the “prototype” of Costa Rica’s national identity, and finally the relationship between viewing subgroups as more or less prototypical and attitudes towards policies affecting these subgroups. It is hypothesized that Costa Ricans of European descent will be perceived as more prototypical of the national identity than Costa Ricans of Nicaraguan descent and Indigenous Costa Ricans. It is also hypothesized that the propensity to view Costa Ricans of European descent as most prototypical will be linked to lower support for policies aiding ethnic-minority groups, in this case the Nicaraguan immigrants and Indigenous tribe members. Data will be collected through online surveying of Costa Rican citizens attending a university in Costa Rica, La Universidad Veritas. The study aims to provide some information over Costa Ricans’ views on their national identity and subsequently shed light on how ethnic minorities fare in light of these understandings. The study is being carried out as an Honors Thesis in partial fulfillment of the requirements for the completion of the University Honors Program at SDSU.

12  10:15 am  
**Culture and Gentrification in Barrio Logan**

Emanuel E Delgado, Geography (M)  
Kate Swanson, Geography  

Using Barrio Logan as a case study, I investigate the cultural and economic impacts of gentrification in a racially segregated neighborhood of San Diego. Barrio Logan is a prime community in which to study these impacts since redevelopment from Downtown San Diego is currently expanding into the region. In the 1960s, the construction of the 5 Freeway and the Coronado Bridge divided the predominantly Mexican-American and African-American neighborhood. Yet, while this neighborhood has been marginalized by various urban planning processes, it has maintained a strong cultural identity. This identity may now be threatened because the long-awaited redevelopment of the community comes at the cost of rising rents and taxes, which displaces many. Much gentrification scholarship has ‘displaced critical perspectives’ by focusing primarily on the human agency and economic benefits for middle income gentrifiers. This study intends to reverse this trend by focusing on the impacts of gentrification on a low-income barrio. I will first map the pattern of gentrification in Central San Diego by using demographic data from the Bureau of the Census for the years 1970, 1990, 2000, and 2010. Then, I will interview key stakeholders, such as residents, developers, and government officials to expand upon and bridge results from the maps. The contributions of this research are twofold. Firstly, as some studies of gentrification have shown (Dávila, 2004), real estate developers appropriate the culture of ethnic and low-income communities to attract middle-class gentrifiers and so-called “urban pioneers” (Smith 1996). This research will explore entanglements and tensions between economic development and cultural disruptions. Secondly, by interviewing a wide range of stakeholders and by mapping the demographic change, the study is a holistic account on the impacts of redevelopment in a historically dis-invested community of San Diego.

13  9:00 am  
**Droplet Microfluidics as a Means for High-Throughput Drug Screening in vivo**

Carlos J Brambila, Bioengineering (U)  
Paul Paolini, Biology  

High-throughput cell-based drug screenings conducted through various technologies, such as in micro-titer plates, have significantly advanced drug development. However, the costs and time associated with such technologies are exorbitant. Polydimethylsiloxane (PDMS)-based microfluidic devices provide a popular lab on a chip technique where reagents may be combined in sub-nanoliter volumes in a fast and controlled manner. PDMS is a cheap, transparent, and bio-compatible substrate that affords rapid prototyping and an efficient platform for drug screening. We used such devices to generate water-in-oil emulsion droplets at high throughput (~1000 drops per second) that efficiently encapsulated cells in presence of drugs. Reducing the size of the reaction compartments to sub-nanoliter volumes allowed us to be parsimonious with reagents while high number of droplets (~ 106) provided superior statistical resolution. In this project, we designed, fabricated and used microfluidic devices
to test the efficacy of cancer drugs on a human cancer cell line where the drug concentrations were systematically varied. Our results show that we were able to identify the drug concentration levels as well as cell state in each droplet and were able to run our microfluidic devices successfully at high-throughput efficiency using image analysis and photo-multiplier tube (PMT)-based detection.

14 9:15 am

Generation of edited induced pluripotent stem cells as cell models
Samvel Avagyan, Biology (U)
Girish Melkani, Sciences

Generation of patient-specific induced pluripotent stem cells (iPSCs) offers a powerful platform for the establishment of physiologically relevant cell models to dissect basic biology and to use in drug screening. A critical requirement for such models will be to facilitate the enrichment and the through characterization of homogenous populations of pertinent cell types for use in downstream studies.

Linage-specific, promoter-driven reporters are useful in identifying and enriching specific cell types in a heterogeneous mixture. Furthermore, they offer the advantage of enabling live monitoring of cells during complex biological processes. Therefore, we previously generated stable pluripotent reporter lines using episomal vectors or site-specific insertion of the reporters into heterologous sites. While both methods achieve context-specific expression with measurable GFP in the pluripotent state and a post-differentiation absence of GFP, the reporter activity can be heterogeneous and correlate poorly with actual levels of the endogenous promoter expression. In this study, we present an improvement over previous methods by targeting the endogenous genomic site to construct lineage-specific reporter knock-ins.

Recently, Transcription activator-like effector nuclease (TALEN) and clustered regularly interspaced palindromic repeat (CRISPR) based gene editing technologies have facilitated the precise and efficient means inducing genomic alterations. To this end, human iPSC lines generated from fibroblasts were used for the insertion of a GFP-Neomycin fusion expression cassette at the endogenous OCT4 locus using GeneArt® Precision TALs and CRISPR/Cas9 based gene editing technologies. Our goal is to create single and double knock-in reporter systems for the generation of cell models that enable real-time tracking of reprogramming, stem cell differentiation, and used as cell models for various downstream applications.

15 9:30 am

BlotQuant, Novel Software Specialized for Immuno-blot Data Analysis
Andy Fedoriouk, Chemistry: Biochemistry (U)
Chris Glembotski, Biology

Western blotting, or immunoblotting, is a common technique used in molecular biology and immunology in order to determine protein expression levels in tissues and cells. A typical method for obtaining quantitative data from immune-blots involves measuring the grayscale of “blots” which correspond to protein expression levels in samples from an image of film developed with a chemiluminescent dye. Grayscale, or the pixel luminance, ranging from 256 (white) to 0 (black) on a film corresponds to the degree of protein expression in the sample. In immune-blots, grayscale values are often compared to control proteins to determine protein expression relative to control. However this method of data analysis involves a significant amount of manual processing using a program with grayscale measuring capability followed by numerical calculation, usually done with excel spreadsheets. Grayscale is measured using rectangles that are manually moved over each individual region of area to be measured, and data is then gathered and transposed to a spreadsheet. Consequently, even for an experienced user, assembling a histogram that compares relative levels of protein expression on an immunoblot may take hours. In an effort to accelerate data analysis of immunoblots, our hypothesis was that we could develop software using Visual Basic 2012, to facilitate the measurement of multiple blots concurrently, using multiple apertures and zooms to ensure quicker and more accurate enclosure of the exact region of each sample. Grayscale measurements would then be grouped and labeled according to sample identity and frequency (n) into a spreadsheet that can be easily exported for further analysis. Further we hypothesized that the program would also allow for pre-selected background subtraction to reduce post-image analysis numerical processing. Performance of the program was compared to the standard method to assess precision as well as time-of-analysis. Early indications show that the program performed as accurately as the manual method and reduced the time of analysis by two-fold. Future improvements of the program may incorporate more numerical processing that would enable the immediate calculation of fold-over-control for all samples without the need for subsequent spreadsheets.
16  9:45 am

**Design and expression of an mCherry-IkB fusion protein for in vitro binding and inhibitor studies**

Eric Gonzalez, Biochemistry (U)
Tom Huxford, Chemistry and Biochemistry

NF-κB is a transcription factor which controls the expression of genes involved in cell survival, inflammation, and the immune response. NF-κB is composed of a heterodimer of two subunits, p50 and p65. Under normal conditions, NF-κB is held inactive by associating with an inhibitor protein called IκB. When cells are stimulated by environmental signals, such as lipopolysaccharides or inflammatory cytokines, classical IκB’s are phosphorylated and degraded by the ubiquitin-proteasome pathway. The NF-κB then translocates to the nucleus and activates gene expression by binding to specific promoters of target genes. However, p50 homodimers can be detected in the nucleus of resting cells. These p50 homodimers repress the transcription of NF-κB genes. In the nucleus, IκB-like proteins known as IκBζ bind preferentially to p50 homodimers. Mouse knockout studies have shown that IκBζ, is required for expression of interleukin-6 (IL-6), suggesting a co-activational role for IκBζ. Our lab has produced a 2.0 Å crystal structure of p50 bound to IκBζ. The structure suggests that a small point of contact along the p50:IκBζ interface is crucial for binding. To further study this interaction, we aim to design a construct of IκBζ with an N-terminal fluorescent protein known as mCherry. Using Förster Resonance Energy Transfer (FRET), we are interested in screening peptides and small molecules as potential inhibitors of the p50:IκBζ complex.

17  10:00 am

**Recombinant expression and purification of the Drosophila melanogaster UNC-45 protein as an amino-terminal GST-fusion**

Perla A Pena Palomino, Chemistry: Biochemistry (U)
Tom Huxford, Chemistry

The proper function of muscle depends upon the assembly of myosin heavy chains into thick filaments and organization of the sarcomere. Genetics studies carried out in organisms as diverse as worms, flies, and fish indicate that the protein product of the UNC-45 gene is necessary for proper folding, assembly, and function of skeletal muscle. Despite its clear phenotype, the mechanism by which the UNC-45 protein affects myosin assembly is not well understood. In support of future studies aimed and structural and in vitro biochemical characterization of UNC-45 function, we designed and prepared a bacterial expression plasmid that harbors the full length UNC-45 protein from the fruit fly Drosophila melanogaster fused to an amino-terminal glutathione-S-transferase protein. The fusion protein is linked with a polypeptide sequences that bears the recognition site for the Tobacco Etch Virus (TEV) Protease. The protein expresses in E. coli bacteria as a 138 kDa single chain polypeptide and can be purified by glutathione-sepharose affinity chromatography and size exclusion chromatography with a yield of several milligrams per liter of culture. This will enable inexpensive and efficient removal of the tag for crystallography studies. Large scale removal of the decahistidine affinity tag was not possible previously. It is hoped that the untagged UNC-45 protein will enable improved crystal packing and resolution of the amino-terminal tetraricopeptide repeat (TPR) domain in electron density maps prepared from diffraction data. Moreover, the GST-UNC-45 protein will provide a valuable tool for testing UNC-45:Myosin binding in vitro via GST-pulldown approaches.

18  10:15 am

**Effective Labeling of P24 Antigen for Detection of HIV Using Nonlinear Laser Wave Mixing Spectroscopy and Capillary Electrophoresis**

Kelsey S Hunt, Biology (U)
William Tong, Chemistry and Biochemistry

We present novel methods for preparing p24 antigen for laser wave mixing-based early detection of human immunodeficiency virus (HIV), a retrovirus that eventually leads to acquired immunodeficiency syndrome (AIDS). The p24 antigen is an early marker of HIV. A standard method of detection for HIV is enzyme-linked immunosorbent assay (ELISA), which can detect a specific antibody or antigen. Laser wave mixing, interfaced to capillary electrophoresis, is an ultrasensitive alternative to ELISA for the detection of p24 antigens. Proper preparation of the p24 antigen is essential for the effectiveness of our detection method. This method can lead to earlier and more accurate diagnoses of HIV, possibly preventing further spread of HIV and allowing earlier treatment, so that the virus can be maintained and the progression to AIDS delayed. Experiments with proteins and antibodies have determined the proper preparation of the p24 antigen. It is hypothesized that p24 antigens, labeled with a chromophore, will produce more accurate results than p24 antigens labeled with a fluorophore. To test this hypothesis, bovine serum albumin (BSA) samples were labeled with the chromophore QSY-35 and additional samples of BSA will be labeled with the fluorophore FITC. These samples were detected by our laser method and the results compared. The label that yields the most accurate and sensitive detection via laser wave mixing and capillary electrophoresis was used when preparing p24 antigens. These preparation techniques can then be applied to ultrasensitive detection of other disease marker antigens for a wide range of diseases.
Dental Health Practices, Knowledge and Attitudes among Mexican Migrants
Lilly Najera, Health Science: Public Health (U)
Tracy Finlayson, Graduate School of Public Health

Rationale: Oral health is a leading unmet health need among underserved populations. The promotora model used in a Community-based participatory research (CBPR) integrates oral health education and social action to reduce oral health disparities. As such Boca Sana, Cuerpo Sano (BSCS), whom developed a 5-week interactive Lideres Communitario-led (lay-community health worker) oral health education program to increase oral health literacy among Mexican migrant families in three underserved and hard-to-reach communities in North San Diego County. Hypothesis: The frequency of participants' hygiene practices may increase as a result of their improved dental health knowledge and attitude after undergoing the 5-week BSCS education program. Methods: This study examines the effectiveness of a 5-week promotora-led dental health education program, based on the average change in knowledge, attitude and dental health practices pre and post intervention. Participants were primarily female caregivers of a minor, and were interviewed prior and after the 5-week education program. Based on a survey sample of 82 respondents, pre and post knowledge, attitudes and hygiene practices were assessed. Results: Preliminary results indicate post intervention average knowledge score, increased by 10%. The percentage of correct responses per attitude question was relatively high at baseline, therefore a great change for each individual attitude item was not observed post intervention. However, the most observed changes were on fatalistic belief (7.5%), perceived severity of disease (3.6%), perceived importance on dental health (12.5%), perceived importance of baby teeth (25.1%), outcome expectation (6.1%) and dental fear (12.3%). In comparison to baseline, post intervention, participants’ dental health practices, such as the frequency of brushing and flossing, was improved by an average of two additional times per week respectively. Conclusions: Preliminary results suggest that participants’ dental health knowledge and attitude changes post-intervention may have had a positive impact on their oral health practices. In order to confirm the association between knowledge and attitude changes and dental hygiene practices further analyses are currently undertaken. Future research should explore the effectiveness of CBPR methods on a larger scale in order to improve dental health practices among underserved communities.
food cost per residents at each of the RCFEs between the years of 2000 to 2014. From a subsample of 116 randomly selected facilities, the analyses ranked the expenditure on food per resident. The results show that RCFEs—for which residents are paying out of pocket for—are not providing enough food to sustain healthy living. Some RCFEs are making residents ill from malnourishment from insufficient amounts of food or missed meals. The study examines malnutrition rates among residents of RCFEs by specific zip code areas. As an example, the lowest amount of money spent for food each month is located in the Poway zip code of 92064 while the highest was located in the Bonita zip code of 91902. Findings help to shed light on the hidden dangers of malnutrition among older adults in assisted living. The study explores recommendation for preventing further malnutrition abuses and deaths.

22 9:45 am

Factors Associated with Being Lost to Follow-up at the AntiRetroviral Therapy Centre in Surat, India

Apurva Barve, Psychology (M)
Kristen Wells, Psychology

In 2004, the Indian government began providing free antiretroviral therapy (ART) to people diagnosed with human immunodeficiency virus (HIV) through a network of ART centers; however, in 2013 only 36% of people living with HIV were receiving ART. This qualitative study evaluates factors associated with lost to follow-up (LTF) to the New Civil Hospital ART Centre in Surat, India. Semi-structured in-depth interviews were conducted with 25 HIV-positive adult patients of the New Civil Hospital ART Centre who had discontinued treatment for more than three months (Mean age = 35.2 years [SD = 11.3 years]; 56% married; 64% female). Interviews were conducted in Gujarati or Hindi, audiotaped, transcribed verbatim, translated into English, and analyzed using content analysis. Interview data indicated that knowledge about treatment, together with situational and personal barriers, were the major factors associated with being LTF. Barriers included transportation expense, side effects, ART clinic waiting times, travelling away from Surat, and work and parenting responsibilities. Patients also expressed emotional concerns, including fears of HIV disclosure, depression, hopelessness, and suicidal ideation. The analysis revealed that discrimination and stigma were also barriers to ART. Conversely, social and family support, health benefits of the ART, and good services provided by the ART centre facilitated adherence to recommended ART. Improving patients’ ability to both overcome barriers and obtain support in attending monthly ART Centre visits are essential to ensuring that patients adhere to recommended ART.

Keywords: Antiretroviral therapy, India, HIV, Lost to follow-up

23 10:00 am

“I don’t know if I made the right decision”: Uncertainty and fluidity in vaccine decision making and implications for intervention.

Lori A Thurman, Anthropology (M)
Elisa Sobo, Anthropology

Problem: The current increase in vaccine-preventable disease outbreaks is due largely to decreases in pediatric vaccination. Although abundant research attempts to understand why some parents resist vaccination, much of this work casts parents as either “pro-” or “anti-” vaccine. But there are indications that vaccine decision-making is an ongoing process, implying both complexity and uncertainty in parent attitudes. To plan effective interventions, an accurate representation of parent decision-making behavior is vital. Methods: With the help of students enrolled in Anthropology 508, we recruited 53 English speaking San Diego parents with at least one child kindergarten age or younger. With IRB approval, we used the ‘five minute interview’ method to ask what gave these parents confidence in their vaccine decisions. We used anthropologically informed content analysis techniques to analyze their answers. To characterize the sample, we collected demographic data. Findings: The average parent was white, female, 35 years old, and had a yearly household income of $104,063. Twenty-four parents (41.4%) had a master’s degree or higher, and all participants had completed at least high school. Most fully vaccinating parents (n=33) saw vaccination as routine and not due for reflection. However, vaccine cautious parents (n=20) were highly involved in the decision-making process. Their decisions differed from vaccine to vaccine in ways that highlighted individualized exceptionalism, environmental controlism, skepticism regarding various vested interests, and a desire to live in harmony with nature. In addition, vaccine cautious parents desired more unbiased, unpolarized information, more dialog, and fewer ultimatums. Parents frequently justified their decisions using these typologies simultaneously and, at times, conflictingly, suggesting uncertainty with their choices. Implications for Practice. Stereotyping parents into discrete categories based upon single past decisions (i.e., in regard to one child or one vaccine of many) elides the complexity of vaccine decision-making, and so may lead to missed opportunities for intervention. Clinicians’ recognition of the complexity and uncertainty of parental decision-making could pave the way to increased vaccine uptake. Joining the call to abandon deficit-focused, one-size-fits-all interventions, we recommend a non-categorical, approach to consultation dialog that acknowledges the fluidity of vaccine reasoning and honors parents’ efforts at engaged healthcare consumption.
24 10:15 am

**Examining the relationship between immunization coalitions and California childhood immunization rates.**

Hannah M Summers, Public Health (M)
Hal Madanat, Public Health

Immunizations are one of the most cost-effective clinical preventive tools in healthcare. Every year, vaccinations prevent an estimated 2 to 3 million deaths. The federal health-promotion and disease prevention program “Healthy People” has included childhood vaccination objectives in each program since its inception in 1979. Despite this, childhood immunization rates in California remain less than ideal—in 2013, less than 70% of California children had received their complete vaccination series. In an attempt to raise immunization rates, some areas have formed local and regional immunization coalitions – partnerships of people and organizations cooperating to raise immunization rates in their communities. The purpose of this study is to identify relationships between immunization coalition activity and immunization rates. The study uses California Department of Public Health data on 2014–2015 immunization rates for childcare, kindergarten, and seventh grade enrollees in both public and private institutions throughout the state. Data on immunization coalitions was gathered from immunization coalition and health department websites. Immunization coalitions were categorized by activity depending on the number of annual immunization events held, participation in health policy legislation, and number of educational/promotional programs implemented. Results showed higher immunization rates in counties with active immunization coalitions, although the differences were not significant. This information is valuable to health departments, organizations, and other stakeholders in immunization, as it can help them analyze the impact of their advocacy and determine ways in which to re-focus immunization coalition efforts.

Keywords: immunization, vaccination, coalition

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25 9:00 am

**Identifying Sexism And Societal Good In Spinoza's Theological Political Treatise**

Courtney N White, Philosophy (U)
Steve Barbone, Philosophy

By analyzing Spinoza’s conception of the state, which he articulates in his *Theological Political Treatise*, we can come to understand where particular problems of sexism arise, having to do with the private and public spheres within society. Simone De Beauvoir outlines the foundations of feminist thought in *The Second Sex*. Using her understanding of the “problem of women”, I will articulate how inconsistency amongst thought and action facilitate how sexism is integrated into societal institutions, such as businesses, schools, etc. By providing a system for differentiating between these problems, we can better analyze sexism presence in our society as it currently takes form and extract it from our political and social system.

26 9:15 am

**Trust and Social Support in LGBT Young Adult Literature**

Vibiana Tran, English/LGBT Studies (U)
Michael Borgstrom, English

Although young adult literature is often considered less valuable as subjects of study for literary critics than adult literature, young adult literature is more relatable to the lives of its adolescent audience than is adult literature. Young readers often seek representation of themselves in the media they consume, and LGBT youths, who may be struggling with their sexual identities, can find themselves in the growing genre of LGBT young adult literature. The four novels that are the subject of this study are: *Boy Meets Boy* (David Levithan), *The Bermudez Triangle* (Maureen Johnson), *Will Grayson, Will Grayson* (John Green and David Levithan), and *If You Could Be Mine* (Sara Farizan). The study focuses on the ways in which the social support of friends and family, or the lack thereof, helps or hinders youths in accepting their sexuality. This thesis finds that the representations of LGBT youths in these four novels reflects the results of sociological research on LGBT youths and their social support systems. In cases where friends are supportive, LGBT youths find it easier to “come out” to themselves and to others, as they do in *Boy Meets Boy* and *The Bermudez Triangle*. When friends are not supportive, on the other hand, LGBT youths close themselves
off from others, as in The Bermudez Triangle and Will Grayson, Will Grayson. The fear of parents’ responses can also prevent LGBT youths from coming out to their families, as evidenced by the events portrayed in both The Bermudez Triangle and If You Could Be Mine. The presence of other LGBT people who can serve as role models or confidants for youths is also important, as LGB youths may not feel comfortable discussing their sexualities with their heterosexual friends.

27 9:30 am

The Subversive Voice of Third-Wave Feminism as a Play of Aporia in Grunge.

Linnea Zeiner, History (M)
Eve Kornfeld, History

This excerpt from the forthcoming History M.A. thesis, The Maverick Feminism Project; Third-Wave’s Expression in Grunge, examines the Voice as a physical, political, and performative gender-fucking instrument that affects a dramatic musical genre evolution and consequently, socio-cultural change. As a multi-modal cultural history project The Maverick Feminism Project studies subjugated feminism within music, using Media Specific Analysis (MSA) and multiple disciplines to translate the divergent and varied movements of gender rebellion. Feminist Musicology, Sociology, Queer Theory, and Post-Structure Philosophy form the architecture of this scholarly exploration into intentionally blurred and deconstructed lines of sexuality.

The Voice in Grunge produces lyrical and mechanical visualizations that tease, twist, and transgress socially-constructed barriers of gender identity through the powerful component of Queering. Following the Third-Wave Feminist movement and its Riot Grrrl beginnings, from the roots of Bikini Kill and Hole in the early 1990s, this project examines the socio-political artistry of Kathleen Hanna and Courtney Love as vocal transgressors that encompass Sapphonic performity. The Imagery that is created as a result of these performances is paradoxical, displaying Derrida’s ideas of pathbreaking. Play as pathbreaking in their audio-visual space inverts masculine and feminine extracts of essentialism causing opposing visual expressions and behaviors to simultaneously erupt and improvise. The complexing visual and aural result is an abstruse aporia, where gender contradictions define a genre of music that continually disguises itself in order to subvert the ever-present panoptic gaze.

28 9:45 am

Western Feminist Imperialism in the “war on terror” and the “war on women”

Taylor Wondergem, Women’s Studies (M)
Huma Ahmed-Ghosh, Women’s Studies

Feminist scholars and reproductive justice activists have connected efforts to deny women control over their own reproductive and sexual health to broader systems of oppression (Smith, 2005). In addition, it has been well demonstrated that the rhetoric of “liberating women,” used to justify war in Afghanistan and subsequently Iraq, was not constituted in reality (Ali-Ali & Pratt, 2009; Ferguson, 2005). However, no existing study has focused on the parallels between the present “war on women” and the “war on terror.” This study bridges these two bodies of research together by employing narrative analysis of how dominant US feminist organizations construct and address issues of war and reproductive rights. Through my analysis of the National Organization for Women (NOW) and the Feminist Majority’s (FM) constructions of war and reproductive rights, I explore connections between the role of mainstream feminism in U.S. imperialism in the “war on terror” and implications in imperialism through the reification of existing race and class hierarchies within the U.S. Moreover, I focus specifically on the George W. Bush presidency, as these years include both the initiation of the U.S. waged “war on terror” in Afghanistan and Iraq, as well as major setbacks to women’s reproductive rights that are part of the ongoing “war on women.” Ultimately, my thesis locates the underlying assumptions of liberalism within feminist discourses to argue that these organizations’ narratives specifically, as well as Western feminist discourses more broadly, are informed by and act in service to U.S. empire building projects.

29 10:00 am

Reclamation of Masculinity in Contemporary Representations of Characters with Disability in Film

Fallon A Hughes, Women’s Studies (M)
Anh Hua, Women’s Studies

This research examines disability and masculinity as it is represented in three contemporary Hollywood Blockbuster films using film analysis including examinations of characters, plot points and dialogue content. The films selected for this analysis are The Hammer, Jack Ryan, Shadow Recruit, and 3 Days to Kill. All of the films were produced in the United States. One is an independent film while the other two were produced by large production companies. They debuted between 2010 and 2014. The research looks at the films’ use of various disability tropes prevalent in movies to examine the reductive qualities inherent in the films such as the presentation of hegemonic masculinity. The use of one form of masculinity for characters with disabilities in these films limits the representation of a wide spectrum of
masculinity. It argues that films, in the greater context of the social dialogue, represent what the dominant society thinks about people with disabilities including stereotypes and reductive tropes surrounding masculinity that propagate misinformation about people with disabilities and the nature of those disabilities. It argues that to portray characters with disabilities as complete humans the film industry needs to move beyond a single-dimension-vision of masculinity and disability.

30 10:15 am

The Military Hom[o]coming Kiss: Modifying Family Values and Representations within the Military
Shane J Wehlage, Communication (M)
Sakeenah Gallardo
Chuck Goehring, Communication

Until recently, queer kissing in American history has been absent from the mainstream discourse. As more media are depicting queer kisses, the reaction of the audience to this homosexual act has slowly diminished. The only institution where homosexual kissing has not been visualized is in the Armed forces. We argue that visual representations of queer kissing in the military, seen through homecoming traditions, modify public discourse towards mobilizing pro-gay politics. By juxtaposing family laden military homecomings with queer kissing, we argue that military family understandings are being altered towards acceptance of gay members and the identification of gay individuals modifies the identity of the military.

Session A-6

Oral Presentation: Identities and Learning of Secondary and Post-Secondary Students
Friday, March 6, 2015, 9:00 am
Location: Templo Mayor

31 9:00 am

Observing Mathematical Caring Relations in the Classroom
Raymond M LaRochelle, Mathematics & Science Education (D)
Lisa Lamb, Teacher Education

In this presentation I will share my extension of Hackenberg’s (2010) on how a teacher can care for students without compromising the quality of mathematical instruction. Noddings (2004) conjectured that all teachers extend care for students in one way or another. However, her construct, called a caring relation, does not take into account the student’s mathematical learning. It only addresses the emotional issues within the classroom. Hackenberg (2010) extended Noddings’ construct and created a construct called a mathematical caring relation (MCR). A mathematical caring relation is a relation in which the teacher “decenters,” or momentarily dismisses his or her understandings, in order to harmonize with the student’s current mathematical conceptions as well as emotions, all with the aim of pushing the student toward mathematical success. Hackenberg studied the formation of MCRs in a small interview setting. In my research I have extended her work by demonstrating that one can use her construct to analyze MCRs in the classroom setting.

In my research I used Hackenberg’s (2010) construct to analyze three classrooms of teachers who are known to have built positive learning communities in their classrooms. First, I transcribed videos and chunked them by complete interactions. Then, I looked for evidence of cognitive decentering and of protecting or providing learning opportunities, which are two important characteristics of mathematical care. I analyzed the learning opportunities from a constructivist perspective, in which learning occurs when students become perturbed by some unexpected result and accommodate their internal mathematical schemes.

Results indicated that it is possible to observe the extension of mathematical care of teachers from videos of classrooms. In order to demonstrate this, I have provided six complete interactions and analyzed them. Three interactions demonstrate care that is also mathematical care, and three interactions demonstrate care that is not mathematical care.

In conclusion, this research represents a first attempt at analyzing the formation of MCRs from videos of classrooms. My future work will be focused on understanding how MCRs are co-constructed in inquiry-oriented mathematics classrooms.

32 9:15 am

The Identity Formation Process of a Hybrid Identity: A Grounded Theory Study
Vanessa Falcon, Education (D)
Frank Harris III, ARPE, Education

Statement of the Problem: The purpose of this grounded theory research study was to explore the essence and underlining structure of a hybrid identity development process among undergraduate students who lived a transborder lifestyle in the U.S.-Mexico border region by identifying the factors that influenced the phenomenon. In the 1990s transnational and transborder individuals were identified by scholars as part of a new understanding for the movement of populations (Schiller, Basch, & Szanton Blanc, 1995). Today researchers state that this phenomenon is ever most prevalent at the world’s busiest international border shared between the cities of San Diego, California and Tijuana, Mexico (Kiy & Kada, 2004). Part of the transborder phenomenon is college students who collaborate internationally between San Diego, California and Tijuana, Mexico because they reside in both sides of the U.S.-Mexico border while attending higher education institutions in San Diego, California (Chavez Montano, 2006 & Relano Pastor, 2007). Currently there
is no information about how many students live a transborder lifestyle in the San Diego, California and Tijuana, Mexico border region; few researchers have explored the understanding of their experiences. As a result, the lack of research about the development of this student population called for further investigation. Methods: Semi-structured one-on-one interviews were conducted with twelve undergraduate students who lived a transborder lifestyle in the San Diego, California and Tijuana, Mexico border region; they took place at a higher education institution in San Diego, California. Results and Conclusion: The central finding of this study is the illustration of the developmental process of a Hybrid Identity; therefore, a conceptual framework for the systematic understanding of the phenomenon was created. The stories which participants shared as part of their interview illustrate how their hybrid identity development was influenced by the transborder lifestyle they lived through the transborder context in the U.S.-Mexico border region. The influential factors of their hybrid identity development are identified as the obstacles they faced through the transborder context and the different ways they coped with and adapted to the barriers of their milieu.

9:30 am
Student experience of worldview and the educational alignment in post-secondary education
David C. Martin, Teaching, Learning, & Culture (D)
Cristian Aquino-Sterling, Teacher Education

In 2004 the National Science Board (NSB) identified a critical shortage of workers in Science, Technology, Engineering, and Mathematics (STEM) fields that will be needed by the year 2020. It was stated that the percentage of women choosing math and science courses dropped by four percent from 1993 to 1999 (National Science Board, 2004). Absent is any mention of the development of social and cultural capital of gendered, minority, or traditionally marginalized students. The NSB states, “[We must] tap the talents of all our citizens, particularly those belonging to groups that are underrepresented in the science and research enterprise, and continue at attract foreign students and scientists to the U.S.” (p. 2). Shortly thereafter, the US Government Accountability Office (2014) reported an increase (77%) in favorable grants to institution that provide grant funding for institution that give priority to minority, disadvantaged, or under-represented groups. There has not been an appreciable increase of women and minorities participation in STEM. The common thread among the literature is the focus on the development of economic and human capital. Personal interest and programs for student satisfaction development of social and cultural capital of the under-served are not considered. The purpose of this study is an examination of the following questions: What are the consequences of alignment, or misalignment, worldviews and institutionalized social and cultural capital of women, minority, and under-represented groups in post-secondary education? Does the focus on skill, economic, and human capital development, restrict the cultural, spiritual, and language experience of the under-served? Lastly, what cultural and attitudinal factors might be used to predict student degree persistence and achievement?

9:45 am
Comparing Levels of Homophily and Intergenerational Closure Between Two-Year and Four-Year Students: A Propensity Score Matching Analysis Utilizing the Education Longitudinal Study of 2002
Aaron R Iffland, Education (D)
Rafaela Santa Cruz, Teacher Education

In this study, the researcher investigated the levels of two social capital measures (homophily and intergenerational closure) held by two-year and four-year college students upon enrollment immediately after high school. Data from the Education Longitudinal Study of 2002 were employed in a propensity score matching analysis to create matched samples (n = 2,736) capable of mimicking quasi-experimental groups. Utilizing data gathered from the base-year student survey, two composite measures of homophily were constructed: gender homophily and race/ethnicity homophily. Also, two measures of intergenerational closure were constructed: students know parents and parents know students. A measure of the student’s family income was also used as a covariate in the analysis. Using a robust ANCOVA model employing trimmed means and bootstrapped confidence intervals, the levels of homophily and intergenerational closure between two-year and four-year college students were compared.

Significant differences in the levels of intergenerational closure between two-year and four-year students were found, but only when family income is at intermediate levels. Significant differences exist at the upper-middle income groups ($50,000–$100,000) for both measures of intergenerational closure and at the highest income group (>-$200,000) for intergenerational closure: parents know students. Significant differences also exist at the $25,000–$35,000 income range for race/ethnicity homophily. By investigating the levels homophily and intergenerational closure held by high school students who immediately enroll in community colleges, it is believed that a greater understanding of their influence on the success of community college students can be attained. While it may be difficult to influence economic, human, or cultural capital levels, it is possible to influence social capital levels to improve community college outcomes. A better understanding of these concepts could be used to feasibly and efficiently influence the success of community college students across the nation.
Veterans in Postsecondary Education: Factor Analysis and Structural Equation Modeling Using the Community College Survey of Men (CCSM)

Thomas R De La Garza, Education (D)
J. Luke Wood, ARPE, Education

In recent years, the community college has seen an influx of veterans returning home from Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF) (Randall, 2012). Like their counterparts in prior eras, these veterans often pursue post-war/conflict opportunities via postsecondary education. Often, their pursuit of a postsecondary certificate or degree begins at a community college, where 36% of military service members and veterans who attend postsecondary education are enrolled (Radford, 2011). As veterans continue to return home and subsequently complete their military service, the community college serves as a viable option for utilizing their post 9/11 G.I. Bill benefits (U.S. Department of Veterans Affairs, 2012). With the rise of veteran populations at community colleges, there remains a need for these institutions to better serve veterans. Prior research on veteran students has shown that they can experience feelings of disconnectedness, isolation, and discomfort in the collegiate environment (Persky & Oliver, 2010). The Community College Survey of Men (CCSM) assesses predictors of student success for historically underrepresented and underserved men in community colleges. The instrument is designed to inform programming and service-delivery for male students (Wood & Harris, 2013). While the instrument was designed for community college men in general, this validation study sought to determine the utility of this instrument as a needs assessment tool for veteran men as well. Analyses identified five constructs with strong factor loadings and internal consistency; they included action control, locus of control, degree utility, self-efficacy, and intrinsic interest. Building on previous validations of the CCSM (Wood & Harris, 2013) to include the aforementioned factor analysis of veteran respondents (De La Garza, et. al., 2014), a conceptual model was constructed and tested using a series of multivariate analyses predicting veteran student achievement using the five factor constructs in addition to four key variables from the CCSM. Overall, the CCSM was validated and recommended as a tool to more accurately address the needs of veteran men and the structural equation model further provides a means to predict success in postsecondary education.

To Tell or Not To Tell: The Attitudes and Beliefs of Elderly Veterans Who Choose Not to Report Chronic Pain

Chelsea R Chapman, Communication (U)
Perry Pauley, Communication

This research investigates the prevalence of reporting pain to others as well as attitudes and beliefs regarding pain in elderly veterans. The purpose is to research which attitudes and beliefs about pain reporting could cause these elderly veterans to under report or not report their pain. There are 14 attiudes and beliefs that will be measured through a questionnaire, all of which are based on existing research. Participants’ responses to the questionnaire will aid in categorizing their beliefs into broader groups. Participants from each category will be interviewed to expand upon the rationale behind their questionnaire responses. Regression analysis will be used to identify demographic trends in both pain reporting behaviors and rationale(s) for not reporting pain. Ethnography and content analysis will be used to identify themes and trends in the interviews following questionnaires. This study contributes to a further understanding of the motives that determine whether or not to disclose pain to others. This understanding is valuable because pain cannot be easily measured or even identified without self-reports from those experiencing the pain. This research has the potential to provide insight on the reasons people under report their pain and information/accommodations that can be made to improve these rates of reporting pain to others. Based on previous research and the unique characteristics of the sample population, this research predicts a high prevalence of under reporting pain due to the 14 attitudes and beliefs addressed in the questionnaire. All identifying information will be kept confidential. All paper questionnaires will be stored in a locked box when not in use and all computer data will be password protected.
Hungary. Both my parents, now divorced, live in the U.S. but my identities my whole life as a dual citizen of the United States and

Abstract: I have lived in the borderlands of two cultures, two identities my whole life as a dual citizen of the United States and Hungary. Both my parents, now divorced, live in the U.S. but my heart lies in Hungary where I was born and where my identity feels most aligned. This Autoethnographic project explores the topic of cultural identity and how one navigates the complexities of dual citizenship and dual identities. Through this research the navigation of finding oneself within a divide of cultural identity leads ultimately to the revelation of acceptance and allowing both cultures to impact one’s life to the extent that you choose, rather than what is expected. The research question is what do the actions and stories of multicultural individuals reveal about the challenges in negotiating one's identity? The study is centered on my own family, including my American father, my Hungarian mother, my brother, and my sister whom I observed during dinner conversations and interviews. I also reflected on my own experience of living between two cultures and how that has shaped the way I view the world around me. From my interviews and research I found two emerging patterns in negotiating identity. First, the conversations and stories of my family revealed the specific strategies that family members have engaged in to adapt to one or both cultures. Second, my own reflections upon my family's stories and my own experiences reveal a tension between what my family hopes for and what I need to do in being true to my own cultural identity. In the end, we are the key to our own destiny and creating a world for ourselves that we feel comfortable and satisfied living in regardless of the world our parents and their culture has created for us. From this we can teach people the importance of respecting a new culture we are in and learning to challenge that which is around us culturally in order to find where exactly we belong.

Expectant First-Time Fathers Discussion Forum: Evaluation of Model
Kaitlyn L True, Kinesiology (U)
Lauren Hunter, Nursing

Based on the findings of similar study conducted in Australia, this study evaluates an innovative prenatal education program for fathers who are expecting their first child. The program involves a male facilitator, a recent first-time father himself, conducting a free-flowing discussion forum among first-time fathers, without their spouses being present. This study is unique in contributing to the knowledge of paternal experiences with pregnancy, childbirth, and parenthood because it evaluates an alternative form of prenatal classes, catered specifically to first-time fathers. The objective of this study is to evaluate the effectiveness of the forum, facilitated by a recent father, and assess whether it is a useful tool for preparing and providing men with the opportunity to discuss any concerns regarding pregnancy, childbirth, and fatherhood. Fourteen first-time fathers, ages 18 years and older, will attend two discussion forums to discuss shared concerns. Each participant will receive an outline of potential topics to be discussed in the forum. The facilitator will help guide the discussion and offer his own personal narrative on pregnancy, childbirth, and fatherhood. Pre-forum and post-forum surveys will be administered to participants to identify the perceptions of the first-time fathers. The surveys will utilize both Likert-response and open-ended questions. The Likert-response questions will be analyzed using an SPSS analysis, and the open-ended questions and transcribed voice recordings will be subject to content analysis. The findings may be useful for health-care providers and prenatal educators to better meet the needs of expectant fathers. The study may also benefit the participants by giving them an opportunity to have additional support and access to a prenatal education forum. The small number of participants being recruited for the discussion forum and the time constraints provide limitations to the study. Such limitations and the potential for future studies using a larger sample size participating in the discussion forums for a longer period of time would provide greater breadth and depth to the research.

The Importance and Struggle of Communication in Finding One's Cultural Identity
Diana DeBolt, Communication (U)
Patricia Geist-Martin, Communication

Abstract: I have lived in the borderlands of two cultures, two identities my whole life as a dual citizen of the United States and Hungary. Both my parents, now divorced, live in the U.S. but my heart lies in Hungary where I was born and where my identity feels most aligned. This Autoethnographic project explores the topic of cultural identity and how one navigates the complexities of dual citizenship and dual identities. Through this research the navigation of finding oneself within a divide of cultural identity leads ultimately to the revelation of acceptance and allowing both cultures to impact one’s life to the extent that you choose, rather than what is expected. The research question is what do the actions and stories of multicultural individuals reveal about the challenges in negotiating ones identity? The study is centered on my own family, including my American father, my Hungarian mother, my brother, and my sister whom I observed during dinner conversations and interviews. I also reflected on my own experience of living between two cultures and how that has shaped the way I view the world around me. From my interviews and research I found two emerging patterns in negotiating identity. First, the conversations and stories of my family revealed the specific strategies that family members have engaged in to adapt to one or both cultures. Second, my own reflections upon my family's stories and my own experiences reveal a tension between what my family hopes for and what I need to do in being true to my own cultural identity. In the end, we are the key to our own destiny and creating a world for ourselves that we feel comfortable and satisfied living in regardless of the world our parents and their culture has created for us. From this we can teach people the importance of respecting a new culture we are in and learning to challenge that which is around us culturally in order to find where exactly we belong.

Work-Life Balance Among Tenured/Tenure-Track ProfessorsA Comparative Study Between Community College and University Faculty in the Social and Behavioral Sciences
Sandy Somo, Sociology (M)
Minjeong Kim, Sociology

Understanding work-life balance has increasingly become a critical issue in our country, as well as other parts of the world. Research has indicated that although institutions such as education and employment have bettered gender equity, that is not the case within our homes with regards to housework and child rearing. Although there has been a plethora of research conducted that looks at how these dynamics affect professors, there is not much literature available on community college professors, or any comparative studies that look at these two professions side by side. Since campus culture and institutional priorities may vary greatly among the various types of institutions, it is important to ensure that we include all types of institutions of higher education in this conversation.
The purpose of this research is to explore the intricacies of the work-life balance of tenure and tenure-track professors in the social and behavioral sciences. It is a comparative study between professors that teach in community colleges and professors who teach in universities, all of which are located in Southern California. This research will use both qualitative and quantitative methods, by the use of in-depth interviews with numerous faculty members from the various institutions, and surveys plus a time log that will be administered prior to the interviews. With this research, I aim to examine the work-life balance among professors at different types of institutions, with an emphasis on what institutional structures and policies exacerbate or ameliorate the present conflicts.

40 10:00 am

**Communicating Callings: Construction of Public Health Professional Identity**

Jennifer A Gehrisch, Communications (M)
Patricia Geist Martin, Communication Studies

Abstract: Professionals of the public health field espouse a dominant ideology, come from diverse educational backgrounds, relate to, and communicate with communities uniquely. Journeying into the public health field by exploring narratives of public health research and health intervention professionals, working within a community of learners and seasoned veterans, provided a valuable outlet for examining this phenomenon. Interviewees are public health investigators working in a local nonprofit in San Diego, California, the Institute for Behavioral and Community Health which operates under the auspices of San Diego State University Research Foundation. Public health workers personal stories and lives are revealed as they share insight into their experiences with intercultural and intercultural communication, public health research, identity, ideology, education, career trajectory, and emotions they experience while working on public health projects directed at changing health disparities. These revelations, some merely in an attempt to affect positive change and encourage preventative measures, give insight into a vastly unexplored and everchanging world of communicative interaction.

Keywords: Health communication, public health, intercultural communication, health, interviews, careers, ideology, epidemiology, prevention, health research, narrative.

41 10:15 am

**Navigating Narratives: The Storytelling of High Authority Females in Male-Dominated Occupations**

Nikki Irene Truscelli, Communication Studies (M)
Kelly Christerson, Carly deAnda
Patricia Geist-Martin, Communication Studies

Although the gender binary in the workplace has become less stratified in recent decades, there remains subjugation that can be seen at higher positions in the hierarchical ladder. The topic of sex-typed work has been researched thoroughly, yet few studies have explored the disproportionateness of high authority women in academia, social services, and the medical field. Through narratives this study highlights the experiences of 11 high authority females in male-dominated occupations. The personal stories shared by participants reveal the ways in which individuals navigate through their workplace experiences in a male-dominated occupation.

Session A-8

Oral Presentation:

Language, Learning and Processing

Friday, March 6, 2015, 9:00 am

Location: Legacy Suite

42 9:00 am

**Verbal Learning and Memory in Across Stages of Huntington’s Disease: Evidence from the California Verbal Learning Test-II.**

Francesca V Lopez, Psychology (U)
Paul Gilbert, Psychology

Huntington’s Disease (HD) is a neurodegenerative disease that causes cognitive, motor, and psychiatric symptoms. Studies using the California Verbal Learning Test-II (CVLT-II), a well-validated clinical measure, have shown that episodic memory (EM) is impaired in individuals with manifest HD. Recently, there has been movement towards investigating individuals in the transitional stage between pre-manifest and manifest HD. The current study examined individuals in various stages of HD relative to a demographically similar comparison group. The CVLT-II included oral presentation of two 16-word lists, List A (target) and List B (distractor). List A was presented over five immediate recall trials. List B was presented over one immediate recall trail. Short delay free and cued recall of List A followed the presentation of List B. Long delayed free and cued recall was assessed after a 20 minute delay. Recognition memory trials were administered...
after the delayed recall trails, in which 32 words were presented (List A and List B). Participants were instructed to identify target words with a “yes” and distractor words with a “no.” The results revealed differences among the groups on numerous CVLT-II measures, including encoding and retrieval indices. The current study offers unique insight into the profile of EM impairments during the transitional stage of HD, which is a highly novel finding given that only one study to date has examined cognitive deficits in this group. The present findings suggest that the CVLT-II may be a sensitive measure to detect cognitive changes in various stages of HD. In addition, identification of EM impairment during the transitional stage of HD may lead to interventions aimed at improving EM abilities to improve daily functioning.

43 9:15 am

The Auditory Kiloword Study: ERP Evidence for Task Specific Effects of Phonological Neighborhood Density during Spoken Word Recognition

Kurt Winsler, Psychology (U)
Philip Holcomb, Psychology

A number of previous studies have indicated that certain characteristics of visually presented words produce systematic differences in the timing and amplitude of various ERP components. The present study extended this work to auditory word recognition. Specifically, we investigated electrophysiological effects of phonological neighborhood density, orthographic neighborhood density, and word frequency on auditory word recognition. Two different go/no-go tasks were used; lexical decision (LD) and semantic categorization (SC). Thirty-two channels of EEG were collected from 27 monolingual English-speaking adults while they listened to a list of 960 words (480 each in LD and SC). Overall, and consistent with previous visual word studies, the results indicated that words with many phonological or orthographic neighbors as well as words that were low in word frequency elicited larger N400s than words from small phonological or orthographic neighborhoods and words that were high in word frequency. Importantly, the frequency and orthographic neighborhood effects remained unchanged across the two tasks. However, the N400 effect for phonological neighborhood density was significantly greater during the LD than in the SC task. This finding is consistent with the hypothesis that making auditory lexical decisions leads listeners to focus on the phonological level of processing which in turn enhances the effect of the number of phonological competitors. Making semantic decisions, on the other hand, does not require this kind of focus. This pattern provides further evidence of the influence of top-down task effects on the neurocognitive underpinnings of word recognition.

44 9:30 am

Observing Language Changes in Aging and Alzheimer’s Speech Using Information Theory Techniques

Roselene Freeman, Computational Linguistics (M)
Robert Malouf, Linguistics

This corpus study examines entropy in regards to the spontaneous speech of adults as they age, and compares this with the overall entropy of speech produced by those with Alzheimer’s Disease. Switchboard and Buckeye corpora were used for typical adult speech, and Alzheimer’s speech came from the Carolina Conversations Collection. Two language models, one containing speech from adults under 40 and one containing speech from those over 40, were created in the SRI Language Modeling Toolkit and used to calculate perplexity from individuals randomly taken from different decade spans in the Switchboard corpus and from the 33 individuals with Alzheimer’s from the CCC. Preliminary results show that entropy stays within a specific range in typical adults as they age, and Alzheimer’s adults have a wider range of entropy and a higher average than typical adults. This effect was consistent with both the younger and older language models used.

45 9:45 am

An Agent-Based Model of Linguistic Diffusion

Sara Kazemi, Computational Linguistics (M)
Robert Malouf, Linguistics

This study takes an individual-based approach on the role of social space and social network structure on the diffusion of linguistic innovation, a process that facilitates language change and variation. An agent-based model (ABM) that generates random graphs of interconnected collectives was devised to evaluate the effects of individual and collective variables on innovation adoption time. Significant findings include the phenomenon that individuals with relatively low degree ties (first through fourth) to the source of an innovation tend to adopt innovations much more quickly when they have a larger amount of weak ties. This supports a notion of a speaker-innovator who is a fringe member of a collective, characterized by a relatively large number of weak ties. This definition of the speaker-innovator is congruent with the “strength of weak ties” theory, which asserts that it is through weak ties that innovations travel beyond the innovator’s local network to external networks. However, the model is not without weakness and several ways in which the model may be improved and extended are provided.
The impact of Russian-English bilinguals’ language experience on event description
Irina Potapova, Language and Communicative Disorders (D)
Sonja Pruitt-Lord, Speech, Language and Hearing Sciences

A recent body of research indicates that speakers of different languages perform differently on both linguistic and non-linguistic tasks in ways that correspond to differences across their languages. For example, English speakers better remembered agents of accidental actions than Spanish speakers (Fausey & Boroditsky, 2011). Crucially, English speakers frequently use agentive constructions (“She broke the vase”) even for accidental actions, while Spanish speakers use non-agentive constructions (that could be translated as “The vase broke itself”). Studies on spatial orientation, conceptualization of time, and color perception report similar findings. Such work has been taken as evidence of the potential for language to impact cognition. Extending this line of inquiry to bilingual speakers sheds light on this topic, as well as bilingualism studies.

In the present study, we investigate whether Russian-English bilinguals’ descriptions of past events in English are influenced by their knowledge of Russian. The languages differ in that English does not require speakers to communicate whether or not an action has been completed—it is grammatical to say “Max drank the juice” regardless of whether Max drank the entire glass or had one sip—but Russian requires speakers to use a specific verb form that reflects an action’s degree of completion. Given this difference, it is possible that Russian speakers attend more closely to events’ degree of progress, which may be reflected in an event description task.

Thirty-nine Russian-English bilinguals (mean age=32.69 years, SD=8.7) viewed images of complete and incomplete actions and were prompted to describe them. Responses were categorized as either explicitly marking event progress (e.g., “ate the whole apple,”) or not (e.g., “ate.”).

Results indicate that Russian speakers that acquired English later provided more responses indicating incompleteness. Further, individuals that identified themselves as native Russian speakers were significantly more likely to mark event progress than individuals that identified as native speakers of both Russian and English.

Findings suggest that a Russian-English bilingual’s linguistic behavior in English can be impacted by their experience in Russian, especially if English was acquired later. Follow-up studies can explore whether similar differences surface in non-linguistic tasks (e.g., memory task for event completion).
Session A: Poster Presentations

Session A-9
Poster:
Engineering, Sciences & Applied Mathematics
Friday, March 6, 2015, 9:00 am – 10:45 am
Location: Montezuma Hall

48 Poster #1
Can Sines Be Used To Approximate Stellar Ellipsoidal Variations?
Matthew Garrett, Astronomy (U)
William Welsh, Astronomy

When given a planet with a short orbital period around its parent star, the star can become elongated due to a tidal force being exerted by the planet’s gravity. This causes a double-hump brightness variation, twice per orbit, known as ellipsoidal variation. The amplitude of the variation depends on the mass of the planet, and can therefore be used to estimate the planet’s mass. Sines and cosines are used to approximate these ellipsoidal variations. However, this method may not be accurate enough. Using the ELC program to compute the ellipsoidal variations resulting from a more correct Roche potential, I am determining if using sinusoids is sufficiently accurate for use with data from NASA’s Kepler Mission.

49 Poster #2
Optimal Control of the Quartic Oscillator
Amadeo C Candido, Applied Mathematics (U)
Peter Salamon, Mathematics

The time-dependent quantum harmonic oscillator is a standard example used to model various systems that range from children playing in a swing set to cooling particles near absolute zero. Using Optimal control, which is a formalism for solving infinite dimensional optimization problems subject to differential equation constraints, we investigate the problem of optimally controlling the frequency of the quantum harmonic oscillator in order to reach a given target energy in minimum time for the quartic case. Results have been presented for the quadratic case for a collection of oscillators trying to reach minimum energy in minimum time. A solution for optimally reaching the target energy for the quartic oscillator is presented and shown to be directly related to the open problem of producing optimally squeezed light.

50 Poster #3
Flow and Vortex Structures Related to Thrombus Formation in the LVAD-Assisted Heart
Claudine G Reider, Bioengineering Biomechanics (M)
Karen May-Newman, Mechanical Engineering

5.1 million Americans are affected by heart failure (HF), costing the U.S. healthcare system $32 billion annually. Left Ventricle Assist Devices (LVADs) are mechanical pumps attached directly to the heart as a HF treatment. However, LVAD patients have high risk of thrombus (clot) formation, likely caused by altered fluid dynamics through the heart, which form regions of disturbed flow. After initial thrombus formation, thrombus growth depends on a balance of local chemical and fluid dynamic factors which we hypothesize encourages rapid thrombus growth in LVAD patients. Our aims are to measure changes in the fluid mechanics of the LVAD-assisted heart during development of a left ventricle (LV) thrombus using a mock circulatory loop, and to assess clinically important indices which can identify patients at risk.

Experiments are performed with a cardiovascular mock loop, which reproduces the cardiovascular system of a HF LVAD patient. The system is assembled with silicone LV models featuring the progressive enlargement of a simulated thrombus. The LVAD speed is gradually increased over the operational range to assess the effect on LV vortex formation and stasis. The velocity field is measured using Particle Image Velocimetry and fluid stasis evaluated using a stagnation index, SI.

In the Pre-LVAD condition, the flow pattern is similar to a HF patient. Two counter-rotating vortices formed from the initial transmural jet are redirected to the LV outflow tract (LVOT). As LVAD support is increased, a portion of the flow bifurcates towards the LVAD outflow at the apex. As speed increases further, LVAD flow increases until all exits the LV through the LVAD. This flow pattern results in an area of flow stasis adjacent to the LVOT, which is progressively worsened as the clot size is increased, demonstrating the positive feedback thrombus formation problems observed in some LVAD patients. Our experimental design provides a controlled model to quantitatively study the connection between thrombus formation and fluid mechanics that plagues many medical devices in current use.
51 Poster #4

Theoretical Design of Nano-Layered, Hyperbolic Dispersion Al/SiO2 with Minimum Losses

Priscilla N Kelly, Computational Science (M)
Lyuba Kuznetsova, Physics

Motivated by a greater need for increased performance in modern-day technology, this poster will show theoretical predictions for the nano-layered metamaterial Al/SiO2. It will emphasize on finding the conditions for low losses since what limits metamaterials in devices today is their losses outweigh any increase in speed for use in devices. Using the Effective Medium approximation (EMA) with non-local corrections, we have investigated three major effects and their impacts on inherent losses and hyperbolic dispersion.

This poster looks at the number of layers needed to reach the EMA using nonlocal corrections. This model predicts a variation only in the perpendicular direction as the number of layers changes, this is an important factor to consider when reducing losses. The first of the trends is to find the saturation limit of non-local corrections in Al/SiO2 layers. This will tell us when the number of layers reaches the EMA, therefore the full range of optical effects Al/SiO2 layers is capable of. The second and third effects, Al fill fraction with a fixed layer height and thickness of a single layer in a sample of 20 layers, will be investigated to minimize losses. Both of these effects determine the transition wavelength to hyperbolic dispersion which allows for fine tuning of this dispersion to certain applications. The poster will also discuss the repercussions these properties will have on the manufacturing techniques and future applications of Al/SiO2 devices.

52 Poster #5

Strain Rate Effects on Stress Relaxation in Sands

Sharon M Macdonald, Civil Engineering (M)
Julio Valdes, Civil, Construction and Environmental Engineering

Stress relaxation is a time dependent loss in stress that occurs when a material loaded at a constant strain rate is then suddenly subject to zero strain. This parametric study focused on the role of strain rate on the stress relaxation of three different sands loaded in one dimensional compression to various imposed stress levels. The results show that the extent of stress relaxation increases with increasing strain rate, and is dependent on the mineralogy of the soil. Particle breakage data complement the relaxation results gathered.

53 Poster #6

Biodegradability of Organic Carbon in Low Carbon Environments

Amy Bigelow, Environmental Engineering (M)
Natalie Mladenov, Civil, Construction, and Environmental Engineering

Sitting above the tree line, alpine catchments are among some of the most pristine and barren environments in the world. In these nutrient poor areas, life sustaining substances such as nitrogen, phosphorus, and carbon are obtained in part through the transportation of dust by aeolian deposition. These nutrients in turn affect the biogeochemical cycling in the catchments as well as nitrification and stream water quality. In particular, this research is concerned with the cycling of the dissolved organic carbon (DOC) in these depositions.

To that effect, the goal of this project is to discover if the DOC in the catchments is biodegradable and, if it is, what the degradation rates for different DOC sources are. This will be tested by using four different methods: analysis of total organic carbon in sampling, measurement of carbon dioxide in the headspace of sample incubations, microbial XTT assays, and fluorescence spectroscopy. In combination, these methods should give an accurate measure of DOC biodegradability.

There are several outcomes possible at the completion of this project. First, the testing methods will be solidified and as a result, more reliable. Second, if the hypothesis is confirmed it will suggest a link between climate change influenced wind deposition and carbon cycling in these environments. Third, if biodegradability in catchments can be measured accurately it will open the door to being able to do the same sampling in other areas with extremely low carbon amounts such as groundwater and the deep ocean.

54 Poster #7

Determination of Seismic Protection Factors for Anchorage of Nonstructural Components into Concrete

Timothy Johnson, Structural Engineering (D)
Robert Dowell, Structural Engineering

The excitation of buildings during earthquakes can cause damage not only to the structure itself, but also components attached to it. While many design similarities exist between building structures and these nonstructural components, there are also many significant differences which are poorly documented in code guidelines. Performance criteria for the anchoring of these nonstructural components, in particular, has been an issue of great contention, as little scientific research exists for the development of appropriate conservative guidelines. As is, anchorage is defined as either ductile or brittle, with the former
being the encouraged design solution and the latter assessed with a penalty factor to protect against undesirable failure modes. Dynamic structural tests were performed at SDSU to specifically target this penalty factor and evaluate ductility as an appropriate metric for desirable anchor performance. These tests were full scale using a simulated nonstructural component developed from industry statistics and research, and both real and simulated earthquake ground motion profiles were used to load the component. Both the component and anchors were fully instrumented, recording forces, displacements, and accelerations from each element in the system.

From these results, a computer model is under development to provide insight into a wide array of systems beyond this model component. Because of the system's high nonlinearity, traditional finite element analysis has had significant convergence problems with long run times, so an independent program—derived using first principles—has been used to develop a closed-form solution to the problem. With run times 10,000x faster and less numerical drift than its finite element counterpart, this new model will be used to perform a detailed parameter study to assess, characterize, and evaluate what performance guidelines are best suited for nonstructural component anchorage.

Session A-10
Poster: Catalysis & Supramolecular Chemistry
Friday, March 6, 2015, 9:00 am – 10:45 am
Location: Montezuma Hall

Poster #8
Water Nucleophilic Attack vs. Radical Coupling Water Oxidation by Optimizing Mono and Binuclear Water Oxidation Catalyst
Ryan J Shirey, Chemistry (U)
Douglas Grotjahn, Chemistry

With the growing energy need an efficient method of capturing, storing and utilizing sustainable energy is in demand. The sun provides more than enough energy to satisfy this demand but modern batteries aren’t a sustainable method of containing that energy. The chemical bonds in hydrogen gas store a higher energy density than modern batteries and burn cleanly to produce water. The goal of our research is to lower the kinetic barrier of water oxidation to make a solar fuel cell more efficient. Lowering the kinetic barrier will decrease the electrical potential needed to be generated by solar power to perform water oxidation. Ruthenium water oxidation catalysts have the capability to perform this catalysis but optimization of these catalysts is vital to broadening the current understanding of water oxidation and increasing its efficiency. Due to the relatively high potentials currently required to perform water oxidation many catalysts are vulnerable to destructive oxidation. During cyclic voltammetry testing of [Ru(2,2’-Bi-1,8-naphthyridine)(terpy)] in water, the 2,2’-Bi-1,8-naphthyridine ligand became oxidized. Molecular orbital energy computations suggest there is a LUMO located on the pi system. In order to protect the ring system I am coupling 1,3-Bis(trifluoromethyl) benzene to naphthyridine. The trifluoromethyl groups positioned above and below the pi system should provide enough steric shielding to protect the system. Derivatives of this scheme that are being synthesized include: coupling fluorinated isopropyl groups for increased steric, and 1,4-Bis(trifluoromethyl)benzene as an electronically similar control. Once this ligand is protected from oxidation, the basic nitrogen of naphthyridine located near the open sight on ruthenium should assist in proton transfers for the proposed Water Nucleophilic Attack Mechanism (WNAM). Another proposed water oxidation mechanism called the Radical Coupling Mechanism (RCM) requires the interaction of two oxo groups bound to two catalytic metal nuclei. To optimize catalyst thought to be performed by the RCM I am synthesizing a binuclear ruthenium complex with electron rich ligands. The intramolecular RCM has great potential to increases reaction rate as opposed to an intermolecular interaction. Electron rich ligands should better stabilize the three-four oxidation of ruthenium required to oxidize water; making the process faster.

Poster #9
Preferred binding of κB DNA by the NF-κB p50 homodimer
Lisa M Acuna, Chemistry (U)
Tom Huxford, Chemistry and Biochemistry

NF-κB is a family of eukaryotic transcription factor proteins that inducibly regulates the expression of a large number of genes that play important roles in innate immunity and inflammation. NF-κB consists of varying homo- and heterodimers, one form of which is a homodimer of p50 subunits (p50:p50). The NF-κB p50 homodimer is unique among NF-κB proteins in that it escapes regulation through association with classical IκB proteins in the cytoplasm and enters the nucleus where it and binds to DNA. In the nucleus, p50:p50 is the preferred binding partner of the “nuclear IκB” protein IκBζ, itself an NF-κB responsive protein that is required for the further NF-κB-dependent expression of the pluripotent cytokine interleukin-6 (IL-6). This raises the possibility that ternary complexes of NF-κB p50 homodimer with IκBζ on target gene DNA could serve as a necessary signal for elevated expression of vital pro-inflammatory NF-κB target genes. Previously determined x-ray crystal structures of p50:p50 on B DNA have revealed that this dimeric transcription factor binds to double-stranded DNA with variable spacing. We recently
crystallized and determined the x-ray crystal structure of the DNA binding Rel homology region of murine p50 homodimer to κB DNA from the promoter of the IL-6 and NGAL genes and found, once again, that p50 binds the two sites with distinct spacing. In an attempt to identify the “preferred” binding mode of p50 on κB DNA, we prepared oligonucleotides with an “idealized” sequence κB DNA designed to allow p50:p50 to bind with 9–12 base pair spacing. The 3.2 Å x-ray co-crystal structure of the complex suggests that p50:p50 binds κB DNA with 11 base pair spacing when afforded freedom to select its ideal binding mode. We conclude that this is the preferred spacing of p50:p50 on κB DNA.

**57 Poster #10**

**Bifunctional Catalysis for the Selective Oxidation of Water and Organic Substrates**

Robert Vasquez, Biochemistry (U)
Douglas Grotjahn, Chemistry

Ruthenium (II) (terpyridine)(bipyridine) complexes have received significant attention in the field of homogeneous water oxidation (WOX). Meyer and coworkers have shown that replacing one pyridine group of the bipyridine ligand with an N-heterocyclic carbene (NHC) improves catalytic activity. It is our hypothesis that these complexes can be further improved upon by adding a pendant base to the remaining pyridine ring, which may mediate proton transfer in a water-nucleophilic attack (WNA) mechanism. In addition, a pendant base could possibly prevent the issue of proton binding Rel homology region of murine p50 homodimer to κB DNA designed to allow p50:p50 to bind with 9–12 base pair spacing. The 3.2 Å x-ray co-crystal structure of the complex suggests that p50:p50 binds κB DNA with 11 base pair spacing when afforded freedom to select its ideal binding mode. We conclude that this is the preferred spacing of p50:p50 on κB DNA.

58 Poster #11

**Synthesis of Functionalized Pyrogallolarene Capsules Targeting New Applications of Supramolecular Chemistry**

Kristine Claudine L Teppang, Biochemistry (U)
Byron Purse, Chemistry

Supra molecular chemistry focuses on self-assembled complexes that are dependent upon non-covalent interactions between molecules. The forces that allow self-assembly include metal coordination, hydrophobic effects, and hydrogen bonding. Recent research in supramolecular chemistry has emphasized the molecular encapsulation of guest species and studies of host-guest chemistry. Molecular encapsulation allows for chemical compartmentalization and segregation of encapsulated guest molecules from their surrounding environments. This provides beneficial applications such as the control of chemical reactions, similarly to how our cells use organelles to isolate chemical environments. Our research group is working on methods to create a molecular capsule that has a new mechanism to control guest release. Our hypothesis is that mechanical forces can rupture these molecular capsules that are formed and induce the release of kinetically encapsulated guest species on demand. To achieve this goal we are developing functionalized pyrogallo[4]arene capsules that will open and release their contents in response to the physical stretching forces that can be applied by ultrasonication of solutions. Previously, our group has proven the successful encapsulation of small, non-polar guest species such as fluoranthene, fluorene, and pyrene by pyrogallo[4]arene hexamers. These pyrogallo[4]arene hexamers serve as molecular capsules that self-assemble via hydrogen bonding. Thus far, we have investigated the use of thermal and mechanical energy to create kinetically stable encapsulated species by melting and mechanical grinding via ball milling. In this project, we have devised an innovative chemical synthesis for a pyrogallo[4]arene hexamer that is monofunctionalized only at the lower rim which prevents interference with the capsules’ assembly. Our synthetic approach involves attaching a stable alkene group to each component of hexamer that will then be modified using olefin metathesis methods to attach a variation of reactive handles, with a special focus on azides. Using these azides will allow us to successfully attach polymers of different lengths and take proper investigative studies to test our hypothesis. In addition, the alkene group allows for attaching charge labels for mass spectroscopic analysis of encapsulation.
59  Poster #12
Assessment of UCH-L3 Substrate Selectivity using Engineered Ubiquitin Fusions with Variable Linker Lengths
Peter Suon, Biochemistry (M)
John Love, Chemistry
The Ubiquitin Proteasome System (UPS) is a complex system composed of multiple structural and functional elements that play key roles in cellular processes such as signal transduction, cell cycle regulation, apoptosis, and protein degradation. Proteins destined for degradation via the proteasome are first ‘tagged’ with the protein ubiquitin, which is covalently attached to internal lysine residues in the targeted protein. The enzyme Ubiquitin Carboxy Hydrolase L3 (UCH-L3) is believed to prepare ubiquitin for additional rounds of ubiquitination by cleaving small peptides and chemical adducts from the ubiquitin C-terminus. Previously in our laboratory, protein substrates of UCH-L3 were engineered and used to characterize UCHL-3 substrate selectivity. The engineered substrates consisted of N-terminal monoubiquitinated test variants derived from Streptococcal protein G (protein Gβ1) and Staphylococcal protein A (SpAβ). The thermal denaturation temperatures (Tm) of the fusion proteins were measured using circular dichroism and span a range of over 60°C. More importantly the rate of hydrolysis for the fusion proteins was demonstrated to be directly correlated to the Tm of the test variant fused to the C-terminus of ubiquitin. The engineered substrates were designed to emulate natural ubiquitin fusions and thus did not contain any ‘linker’ residues between the C-terminus of ubiquitin and the N-terminus of the test protein. To explore the effects of linker length on UCH-L3 hydrolysis we are engineering new UCH-L3 substrates that contain an unstructured 13 amino acid linker between ubiquitin and the test protein. The thermal stability of these new fusion protein substrate will be measured using circular dichroism spectroscopy (CD) and followed by analysis of UCH-L3 hydrolysis rates characterized by the newly engineered substrates. Our goal is to continue to use these engineered substrates to explore the mechanics of UCH-L3 and the potential role protein trafficking and degradation within living cells.

60  Poster #13
Cyclic Voltammetry Studies of H-bond Complex of a p-Phenylenediamine-Based Urea with 1,8-Naphthyridine Using Platinum and Glassy Carbon as Working Electrodes.
Bryan T. Tamashiro, Chemistry (M)
Diane Smith, Chemistry
Previous studies in the Smith group show that U(H)H, a p-phenylenediamine-based urea, undergoes a reversible oxidation in methylene chloride. The overall oxidation of U(H)H is a 1 e⁻ transfer with a surprising 2 e⁻/1 H⁺ mechanism where removal of the first electron produces a radical cation with an acidic NH proton that is then removed by the dimethylamino group from another U(H)H. This leads to removal of a second electron and creates the final products: the protonated electroinactive species, HU(H)H⁺, and the doubly oxidized form, U(H)⁺. Since this corresponds to 2 e⁻ per 2 ureas, the process appears to be a net 1 e⁻. Interestingly, two distinct pathways are observed on the return scan. One pathway consists the reduction of the U(H)⁺ while the second pathway involves reduction of a H-bond complex formed between HU(H)H⁺ and U(H)⁺, leading to an overall electrochemically reversible process.

In this study, cyclic voltammetry of U(H)H in the presence of 1,8-naphthyridine has been examined. The addition of naphthyridine results in an increase in current height and the appearance of a second oxidation wave at a more positive potential. The increase in current is due to competition for the acidic proton between naphthyridine and the dimethylamino group of another U(H)H. Interestingly, the shape and behavior of the more positive oxidation wave alters depending on the electrode material. We hypothesize that the change in the CV wave is due to electrode fouling on the platinum (Pt) and poorly polished glassy carbon (GC) electrodes. With a carefully polished GC electrode the observed second oxidation wave shifts slightly to more negative potentials and appears to merge with the first oxidation wave as the concentration of naphthyridine increases. Surprisingly, this behavior reflects a mechanism that is similar to that of U(H)H by itself. In conclusion, the appearance of the second oxidation wave is due to oxidation of the H-bonding complex between the radical cation urea, U(H)H⁺, and naphthyridine, which is accompanied by proton transfer to naphthyridine.
ABSTRACTS

61 Poster #14
Modeling the Evolution of Drug Resistance in Malaria
Alissa A Calderon, Biology (U)
David Hecht, Chemistry

The evolution of drug resistance in malaria continues to be a widespread concern. Many anti-malarial drugs target key proteins such as dihydrofolate reductase (DHFR). However in malaria, the structural plasticity of DHFR allows it to maintain its active site and catalytic activity, while resisting drug binding. One way to better understand this process is through the appreciation of DHFR structural evolution in general. To that end, we are exploring the use in silico evolution as a way to predict and model likely amino acid changes in DHFR that may occur in the field in response to a selection pressure. Here we study the predicted amino acid replacements in DHFR that are expected to confer resistance to anti-folate drugs such as pyrimethamine, cycloguanil, methotrexate, trimethoprim, P65, P218, and WR99210 while still binding the natural DHFR substrate, 7,8-dihydrofolate, and the cofactor, NADPH. Iteration of this process allows the opportunity to model the coevolutionary processes involved with drug resistance. Through these studies, we have identified several mutations that are predicted to convey resistance to one or more of these drugs. Validation experiments are planned in future studies.

62 Poster #15
Structure-Based Analysis of Mammalian Anaplastic Lymphoma Kinase Evolution
Monica G Tello, Psychology (U)
Lany Huynh
David Hecht, Biochemistry

Anaplastic Lymphoma Kinase (ALK) is a tyrosine kinase involved in brain development that has been implicated in several forms of non small-cell lung cancers. Key point mutations in ALK can lead to unregulated kinase activity and subsequent carcinogenesis. Here we present a structure-based analysis of the evolutionary history of mammalian ALK in order to gain insight into the origins of these mutations. Following a comprehensive search of the NCBI protein sequence database, 10,486 ALK sequences were downloaded in FASTA format, and imported into MS Excel where they were sorted by species and by their classification as either a wild-type (wt) or a mutant sequence. These were pruned to 267 unique wt and mutant vertebrate ALK sequences. Homology models were generated for each sequence and a structure-based alignment was generated from a superposition of the 167 ALK homology models representing 49 mammalian species with the experimentally determined x-ray crystal structures of human wt-ALK from the Protein Data Bank (2XP2.pdb). Using this structure-based alignment of DHFR, a metric was generated for the degree of conservation at each alignment position – not only in terms of amino acid residue, but also secondary structure, and residue class. A phylogenetic tree was generated using the alignment and compared with the canonical phylogeny. The results of these analyses highlight the high degree of sequence conservation found in ALK.

63 Poster #16
Optimized Synthesis of the Potent Anti-Malarial and Anti-Cancer Natural Product; Lagunamide A
Nicole A Kohnen, Biochemistry (U)
Arielle Kanner
Mike Bergdahl, Chemistry

Lagunamides are a valuable group of macro-cyclic depsipeptides extracted from the cyanobacterium Lyngbya majuscula. Recent experiments suggest the mode of action of the natural product as an intrinsic apoptotic pathway by cleavage of capsase-9, activating a downstream cascade that results in mitochondrial-mediated apoptosis, by definition, and in other words initiates a self-programmed cell’s death, which is the purpose of therapeutics. Lagunamide A demonstrates a collection of biological activity and impressive IC50 values including anti-malarial properties (IC50 0.19-0.91 micro-M), significant cytotoxic properties against P388 murine leukemia cell lines (IC50 6.4-20.5 nano-M) and ileocecal colon cancer (1.6 nano-M), which demonstrates an extremely powerful therapeutic agent, and presents the need for the total synthesis of Lagunamide A. The Bergdahl group presents an innovative and optimized convergent strategy for coupling unique N-methylated unnatural peptide fragments created via solid phase synthesis to assemble a complex, functionalized pentapeptide fragment, to attain the northern hemisphere of the Lagunamide A. The southern hemisphere is synthesized via a highly convergent asymmetric route to establish five of the 10 crucial stereocenters that form the specific molecular structure of Lagunamide A. Chiefly, consecutive Vinlogous Mukaiyama Aldol Reactions (VMAR) were...
employed to establish 4 contiguous stereocenters in high yield and
diasteriomeric ratio. The synthesis of Lagunamide A concludes
with the macrocyclization of each component to complete the
full cyclic structure. In the future, we will synthesize analogs for
structure-activity relationship (SAR) experiments and carry out
cell tests against malaria and various types of cancer. Advanced
intermediates have been synthesized and characterized by NMR
spectroscopy, X-ray crystallography, FTIR, HPLC and LCMS. We
will present our novel total synthesis, which permits necessary
adjustments for accessing a large and diverse molecular library of
exceptional bioactivity.

64 Poster #17
International Evaluation of Screening Questions to Identify
Persons with Drug-Resistant Tuberculosis
Matthew T Wong, Epidemiology (M)
Stephanie Brodine, Graduate School of Public Health

Background: Although drug-resistant forms of M. tuberculosis
exert heavy disease burden worldwide, especially in developing
countries, drug resistant tuberculosis (DR-TB) makes up a
minority of all TB cases. To efficiently develop rapid, low-cost
drug susceptibility tests, selecting patients at increased risk for
DR-TB reduces the cost by testing fewer drug-susceptible TB
patients. Therefore, simple screening tools are needed to identify
TB cases most likely to be drug-resistant. Objective: We evaluated
the ability of five screening questions to predict extensively
drug-resistant (XDR) TB among TB patients in three high-burden
countries. Methods: TB patients presenting at collaborating
clinics and hospitals in India, Moldova & South Africa who were
suspected, but not diagnosed with XDR-TB were prospectively
screened and enrolled into a study comparing four assays for
detecting XDR-TB. Prior to enrollment, patients were administered
a five-question screener. Patients were eligible if they had TB for a
second time after completing treatment, close contact with known
drug-resistant case, been diagnosed with multi-drug resistant TB
(MDR-TB), or failed standard or MDR-TB treatment. Demographic,
clinical and lifestyle data were gathered through patient
interviews and chart reviews. Drug resistance was ascertained
by standardized liquid-culture methods. Chi-square and logistic
regression were used to assess the specificity of the screening
questions in detecting XDR-TB. Results (Preliminary): Of 914 TB
patients included in the analysis, 53.8%, 24.7% and 21.5% came
from India, Moldova and South Africa, respectively. Median age
was 33 years (range: 8-79); 63.8% were male. Overall, 41.6%,
49.7%, and 8.7% had pan-susceptible/mono-resistant TB, MDR-
TB, and XDR-TB, respectively. Preliminary analyses showed that
history of TB treatment (OR 2.70, CI 1.28-5.71), diagnosis with
MDR-TB (OR 2.78, CI 1.68-4.59), failure of standard treatment
(OR 2.33, CI 1.40-3.86) and failure of MDR-TB treatment (OR
3.00, CI 1.80-4.99) were individually associated with XDR-TB. The
associations remained significant after adjusting for age, gender
and study site. Conclusion: Screening questions on history of TB
treatment, diagnosis with MDR-TB, failure of standard treatment
and failure of MDR-TB treatment served well in identifying
persons with XDR-TB.

65 Poster #18
Performance of a Pyrosequencing Platform in Diagnosing
Drug-Resistant Tuberculosis: A Global Study
Sophia B Georgiou, Global Health (D)
Timothy Rodwell, Public Health

Project: Pyrosequencing, with its ability to quickly identify genetic
mutations associated with drug-resistance in Mycobacterium
tuberculosis (Mtb) clinical isolates, holds great potential to
curb the spread of multiple and extensively drug-resistant
tuberculosis (M/XDR-TB). The Global Consortium for Drug-
resistant tuberculosis Diagnostics has conducted a global
study analyzing 1128 Mtb clinical isolates from patients in
India, South Africa and Moldova in order to assess the ability of
pyrosequencing to predict phenotypic drug-resistance in diverse
clinical environments. Methods: Acid-fast bacilli (AFB) smears
and drug-susceptibility testing (DST) were performed on all
samples using WHO-recommended critical concentrations of
isoniazid (INH), rifampin (RIF), moxifloxacin (MOX), ofloxacin
(OFX), amikacin (AMK), kanamycin (KAN) and capreomycin
(CAP). Genetic resistance profiles of all isolates were determined
by pyrosequencing regions of the katG, inhA, ahpC, rpoB, gyrA,
and rrs genes. eis-promoter sequencing capability was added to
the platform following primary analysis of the results. Sensitivity
and specificity of the assay was calculated for each drug in
reference to MGIT960 culture results. Results: 86.7% of smear-
positive and 86.4% of culture-positive isolates yielded valid
pyrosequencing reads, while 54.9% of smear-negative and 43.1%
of culture-negative isolates gave valid sequencing reads for
given gene targets. Altogether, the sensitivities and specificities
of pyrosequencing as a predictor of phenotypic drug-resistance
were 95.2 and 96.1%, 93.8 and 99%, 93.7 and 98.3%, 94.1
and 99.1%, 83.5 and 99.3%, 50.4 and 99.2%, and 84.2 and
99% for the detection of resistance to INH, RIF, MOX, OFX, AMK,
KAN, and CAP, respectively. eis-promoter sequencing capability
improved the overall sensitivity of assay KAN-resistance detection
to 85.8%, but the specificity fell to 93.3%. The expanded assay
showed the greatest gain in sensitivity in Moldova (7% to 79%),
where eis-promoter mutations were found among 22.2% of
isolates returning definitive sequence reads. Conclusion: Our
study finds pyrosequencing to be a useful and flexible companion
diagnostic to culture-based growth diagnostics in predicting
drug-resistance among Mtb clinical isolates, due to its high
performance in predicting phenotypic drug-resistance profiles
and its ability to perform on smear- and culture-negative samples
in diverse clinical environments.
Characterization of the Genome Surrounding the Phage-Encoded Shiga-Toxin Gene in Alternative Marine Bacterial Hosts

David A Collins, Microbiology (U)
Veronica Casas, Biology

Exotoxin production, such as the shiga toxin (STX) of enterohemorrhagic Escherichia coli O157:H7, is a virulence trait of many pathogens. These genes persist in the environment in a stable and mobile state in the genomes of bacteriophages. Phages carry genes within and between bacterial species by transducing genes during infection of bacteria. The transfer of exotoxin genes in non-cognate hosts is a key step in the evolution of novel human pathogens. Marine water and sediment samples were collected at Dog Beach in San Diego, CA and their total DNA was tested for the stx gene by PCR. Environmental isolates were cultured from samples positive for stx, and distinct colonies were screened stx. The gene from positive isolates was sequenced and aligned to the reference E. coli stx 2A gene to confirm the PCR product generated was indeed the stx gene.

To identify the isolates carrying the stx gene, sequencing of the 16S ribosomal RNA gene was performed and compared to the Ribosome Database Project (RDP) database. The isolates sequenced were grouped into three groups identified by the RDP database as belonging to the Pseudoalteromonas, Vibrio, and Shewanella genera. Attempts to induce a lysogen carrying the stx gene from these hosts were unsuccessful. To characterize the genome upstream and downstream of the stx gene within the isolates and determine if phage genes were present, primers were designed to amplify the stx gene and the surrounding genomic sequence. The PCR products generated from the three different bacterial isolate groups were cloned, sequenced, and a tBLASTX alignment performed to identify the putative genes surrounding the stx locus. Results indicated that the surrounding genes varied between the three groups and coded for genes such as those for DNA processing, tRNA modification, and nucleotide transport, but did not align with phage genes in the database. While phage genes were not identified in the genome proximal to the stx gene identified in the Pseudoalteromonas, Vibrio, and Shewanella species isolated from marine samples, the presence of virulence genes, such as exotoxins, within alternative hosts in the environment provides the raw material for evolution of novel pathogenic organisms.
Identification of B-cell block in an SCNT mouse model
Charlene Echegaray, Biology (U)
Ralph Feuer, Biology

Epigenetic reprogramming has become an invaluable tool for scientists to generate patient-specific stem cells. Often somatic cells such as fibroblast or blood-derived cells are used as starting material. In both approaches, induced pluripotent stem cells (iPSCs) and Somatic Cell Nuclear Transfer (SCNT), the genome of somatic cells is converted to an ES Cell-like state. However, any mutation that was acquired during a cell’s lifetime would also be transferred to the newly generated stem cells. We believe that such mutations have not been analyzed in detail. Here, we found that in a new SCNT mouse model derived from CD4+ Treg cells, approximately half of the offspring had a decreased number in B cells. This “B-low” phenotype was independent of the TCR genes. Breeding of these “B-low” mice with each other resulted in mice with a complete block in B cell development. We believe that this is due to a mutation that had been present in the CD4+ Treg cell and is now causing a major phenotypic change in B cell development. We refer to this line as “Miss B” (MB). Initial analysis of B cell development in MB mice, revealed the absence of mature B cells in the spleen, and absence of B1 cells in the peritoneal cavity. We determined a developmental block at the pro- to pre-B cell stage in the bone marrow of MB mice. A selective block at this stage is often caused by mutations affecting the pre-BCR and its signaling capacity, such as Igμ, Igα, or BLNK. We are currently undertaking a candidate approach and investigating whether any mutations are present at these loci. To do so, we are performing southern blot analysis and 5' Rapid Amplification of cDNA Ends (RACE) to determine whether any mutations have occurred at the BCR locus.

Monitoring Proteolytic Cleavage on the Cell Surface with a Novel Cell-Based Assay
Andre Dharmawan, Microbiology (M)
Roland Wolkowicz, Biology

Proteolysis is an essential biological process as it serves multiple purposes, such as protein activation and regulation of many cellular functions. Although a large number of proteolytic events occur in the intracellular secretory pathway of the trans-Golgi network, extracellular proteolysis at the cell surface and extracellular matrix (ECM) play significant roles in the progression of some diseases as exemplified by the role of Matrix Metalloproteinase 14 (MMP-14) in cancer. The current aim is to develop a new cell-based assay for the monitoring of proteolytic cleavage on the cell surface.

We are proposing to develop such assay using MMP-14 cleavage activity on the cell surface as a proof-of-principle. MMP-14 is a ubiquitously-expressed cell surface protease known to activate several soluble MMPs via extracellular proteolysis. Active soluble MMPs are used for the restructuring of the ECM that facilitates cells migration and development. MMP-14 is known to be highly expressed in cancer tissue as cells require constant remodeling of ECM for fast replication and migration. The assay will be based on a two-tag system (FLAG and HA) flanking the optimized substrate of MMP-14 that serves as the primary detection element that can distinguish cleavage and non-cleavage events. An mCitrine fluorescent protein was introduced adjacent of these two tags as a visual marker for cell surface localization by fluorescence microscopy. Lastly, the entire scaffold protein will be anchored on the cell surface by the addition of the C-terminal transmembrane domain of mouse Lyt-2 cell surface protein.

The utility of the assay for monitoring cleavage on the cell surface will be demonstrated with the overexpression of MMP-14. Once this assay is proved to function as intended, it can also be used as a platform to monitor other biologically important surface proteolysis events such as cleavage of the Amyloid Precursor Protein in Alzheimer disease, proteolysis of sialic acid by the influenza virus neuraminidase (NA) for the spread of viral particles, and HIV gp41 cleavage by matriptase for HIV pathogenesis.

Expression and purification of ANN-predicted phage structural proteins
Shr-Hau Hung, Biology (D)
Anca Segall, Biology

Phages are the most abundant and diverse entities on earth, and they play critical roles in different microbial communities. Currently, the data of the phage diversity is increasing extensively because of the application of metagenomic sequencing in different ecosystems. However, sequences from environmental phage genome are extremely diverse that over 70% of them can’t be annotated by the database in GenBank. In 2012, Victor Seguritan et al. have developed a method using Artificial Neural Networks (ANNs) to predict phage structural proteins from metagenomic sequencing data. In this study, we would like to validate different ANNs specified to classify phage portal, capsid or tail proteins by co-expressing ANNs-predicted phage portal proteins with either capsid proteins or tail proteins and look for self-assembled phage-like structure under transmission electron microscopy (TEM). Since phage assembly is a highly ordered and complicated process that involves many proteins, expressing more than one structural protein at the same time may increase the opportunity to self-assemble into correct structure than expressing only single protein. Currently, nine ORFs classified as capsid, portal, or tail proteins and two operons containing
Effects of POP-contaminated fish oil on total antioxidant enzyme capacity and oxidative stress on the reduction of cardiovascular disease risk in rats.

Chen H Glasheen, Foods and Nutrition (U)
Mee Young Hong, Exercise and Nutritional Sciences

Cardiovascular disease (CVD) and hypertriglyceridemia patients may be prescribed high dosages of omega-3 polyunsaturated fatty acids (n-3 PUFA) which include docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA). In accordance with FDA and AHA recommendations n-3 PUFA derived from fish oil should be a part of treatments and both primary and secondary CVD prevention. Deterioration of marine ecological health has introduced lipid soluble persistent organic pollutants (POPs) which include polychlorinated biphenyls (PCBs) and pesticides that have bio-accumulated in fish fat. Growing concerns about human health and patient safety as well as un-uniform test results of PCB in food and patient serum have raised questions about CVD risk reduction factor (lower LDL oxidation and vasointergrity preservation). The study tests the effects of POP-contaminated fish oil (6200 ng/ml fat) on antioxidant enzyme capacity and oxidative stress on CVD risk factors.

Session A-13
Poster: Integrated Medicine: Nutrition & Supplements
Friday, March 6, 2015, 9:00 am – 10:45 am
Location: Montezuma Hall

Poster #24
Effects of POP-contaminated fish oil on total antioxidant enzyme capacity and oxidative stress on the reduction of cardiovascular disease risk in rats.

Chen H Glasheen, Foods and Nutrition (U)
Mee Young Hong, Exercise and Nutritional Sciences

Cardiovascular disease (CVD) and hypertriglyceridemia patients may be prescribed high dosages of omega-3 polyunsaturated fatty acids (n-3 PUFA) which include docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA). In accordance with FDA and AHA recommendations n-3 PUFA derived from fish oil should be a part of treatments and both primary and secondary CVD prevention. Deterioration of marine ecological health has introduced lipid soluble persistent organic pollutants (POPs) which include polychlorinated biphenyls (PCBs) and pesticides that have bio-accumulated in fish fat. Growing concerns about human health and patient safety as well as un-uniform test results of PCB in food and patient serum have raised questions about CVD risk reduction factor (lower LDL oxidation and vasointergrity preservation). The study tests the effects of POP-contaminated fish oil (6200 ng/ml fat) on antioxidant enzyme capacity and oxidative stress on CVD risk factors.

Poster #25
Effects of Watermelon Powder Supplementation on Hepatic Gene Expression involved in Lipid Metabolism in Atherogenic Diet-Fed Rats

Katy Kaufman, Nutritional Sciences (M)
Mee Young Hong, Exercise and Nutritional Sciences

Cardiovascular disease (CVD) is one of the leading causes of death in the United States, which has led to an increasing need for cost effective non-pharmacological treatment alternatives to reduce associated risk factors. Watermelon, which is rich in antioxidants and bioactive compounds including l-citrulline, may be a viable method to improve CVD risk factors. Studies have shown that l-citrulline in watermelon plays a role in vascular function by causing vasodilation through the production of nitric oxide (NO), which lowers blood pressure and arterial stiffness. NO has also been shown to aide in stimulating fatty acid oxidation and lipolysis in adipose cells. We want to examine if watermelon powder supplementation has therapeutic effects on lipid metabolism through regulation of hepatic gene expression. We hypothesized that watermelon would improve blood lipids through the modulation of hepatic genes involved in lipid metabolism. Forty male-weanling (21 days old) Sprague-Dawley rats were divided into four groups (10/group, total N = 40) in a 2 (diets) x 2 (treatment) factorial design using an atherogenic diet with or without Dextran Sodium Sulfate (DSS) as an inflammatory agent for 48 hours. The genes of interest included fatty acid synthase (FAS), HMG-CoA reductase (HMGR), corticosteroid regulatory element binding protein -1 and 2 (SREBP-1, SREBP-2). Quantitative real-time polymerase chain reaction (PCR) was used to measure the mRNA levels of the hepatic genes of interest. Watermelon powder groups were found to exhibit significantly lower total...
cholesterol levels, LDL-cholesterol, and serum triglycerides (P<.05). FAS, HMGCR, SREBP-1, and SREBP-2 were significantly down regulated in watermelon diet groups (P<.05). These findings support the use of watermelon powder as an alternative treatment for improving risk factors associated with CVD by altering hepatic lipid metabolism related gene expression and thus improving lipid profiles. Supported by NUTR 302L class and SDSU UGP.

73 Poster #26
Preventive effects of watermelon powder on colitis by maintaining the number of intact crypts in atherogenic diet-fed and dextran sodium sulfate-treated rats.

Yen-Tzu Tseng, Nutritional Sciences (M)
Mee Young Hong, Exercise and Nutritional Sciences

Colitis, which is characterized by a chronic and recurrent inflammation in the large intestine, contributes to increase the risk of colorectal cancer. Dextran sodium sulfate (DSS) is widely used to induce inflammatory bowel disease in animal models, which is similar to human’s colitis. DSS produces free radicals to cause systemic inflammation and influence the growth of colonic crypts related to fluid absorption. Numerous studies support that antioxidant-rich diets promote health and suppress inflammation. Watermelon and its bioactive phytochemicals are known to play an effective role reducing oxidative stress through its high antioxidant capability.

We hypothesized that phytochemical-rich watermelon supplementation reduces the risk of colitis by maintaining the number of intact crypts during the DSS-induced inflammation. The 40 rats were randomly divided into four groups: control diet, control diet + DSS, 0.33% watermelon powder diet, and 0.33% watermelon powder diet+ DSS. Following 4 weeks of defined diets, DSS group rats were administrated 3% (w/v) DSS (40kDa) in their drinking water for 2 days, while no-DSS group rats continued to receive non-treated drinking water. DSS-treated rats showed lower weight gain and water intake (p < .05). The number of intact crypts in colon was significantly lower in two DSS-treated groups (p < .05). The number of intact colonic crypts was significantly higher in watermelon diet + DSS group compared to control diet + DSS group (p < .05). This data demonstrated that watermelon supplementation improves colitis by maintaining normal colonic crypt morphology. Funded by SDSU University Grant Program.

74 Poster #27
Dose response of dried plum on bone density and bone turnover biomarkers in osteopenic postmenopausal women: a randomized controlled trial

Pouneh Pouneh, Nutritional Sciences (M)
Shirin Hooshmand, Exercise and Nutritional Sciences

Our previous findings in osteopenic postmenopausal women indicated that daily consumption of 100 g dried plum for one year is highly effective in increasing bone mineral density (BMD), as well as improving indices of bone turnover. The objective of our current study was to examine whether 50 g dried plum would be as effective as 100 g dried plum in reversing bone loss in osteopenic older postmenopausal women. Forty eight osteopenic women (65-79 years old) were randomly assigned into one of three treatment groups: 1) 50 g dried plum; 2) 100 g dried plum; and 3) control (0 g dried plum), and 42 subjects completed the study. All groups received 500 mg calcium and 400 IU vitamin D as a daily supplement. Blood samples were collected at baseline, three and six months to assess biomarkers of bone turnover. Physical activity recall and three-day food records were obtained at baseline, three and six months to examine physical activity and dietary confounders as potential covariates. Both doses of dried plum significantly increased total body bone mineral density (BMD). Tartrate resistant acid phosphatase-5b (TRAP-5b, a marker of bone resorption) decreased at three months and six months in both dried plum groups. These results confirmed the ability of dried plum in improving BMD in older postmenopausal women and suggest that lower doses of dried plum (i.e. 50 g) may be as effective as 100 g dried plum in reversing bone loss in older, osteopenic postmenopausal women. Hence, our findings suggest that the consumption of a reasonable amount of dried plum is beneficial for older, osteopenic women.

75 Poster #28
The effect of dried plum on lipid profile and liver function enzyme activities in postmenopausal women

Arshya Ahouraei Far, Nutritional Science (M)
Mee Young Hong, Exercise and Nutritional Sciences

Cardiovascular disease (CVD) is the number one cause of death for both men and women in the US. Abnormal level of blood lipids is a major risk factor for CVD and can lead to reduced liver function and liver disease. Evidence suggests that food sources rich in bioactive compounds are beneficial in reducing CVD risk. Dried plums are abundant in bioactive components including high fiber, vitamin A, K, B1, B2 and B6, boron, magnesium, potassium, iron, and calcium, and high in antioxidant. Therefore, the objective of the study was to examine the effect of dried plum on lipids profile and liver function markers. Forty eight postmenopausal women between the ages of 65–79 were randomly assigned into
3 groups and consumed 0 g/d Dried Plum (n = 16), 50 g/d Dried Plum (n = 16), 100 g/d Dried Plum (n = 16) in addition to their normal diet for 6 months. Fasting blood samples were collected at 0, 3, and 6 months. Dried plum supplementation (50g and 100g combined) showed lower levels of % change in aspartate aminotransferase (p = 0.004), alanine transaminase (p = 0.001), alkaline phosphatase (p = 0.001), creatine kinase (p = 0.044) and lactate dehydrogenase (p = 0.038) in both 3 months and 6 months. A significant decrease in total cholesterol (p = 0.037) and a trend of increase in HDL cholesterol (p = 0.061) were seen in the control vs. dried plum groups (50g and 100g combined) at 3 and 6 months. In conclusion, dried plum-supplemented participants showed lower cholesterol level and improved liver function, which may contribute to lowering the risks of CVD.

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**Session A-14**

**Poster:**

**International/Cultural Concerns Across Disciplines**

Friday, March 6, 2015, 9:00 am – 10:45 am

Location: Montezuma Hall

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**76 Poster #29**

**Organizational Factors Related to Culturally-Competent Care**

William G Spears, Public Health (U)
Melody Schiaffino, Graduate School of Public Health

Problem Statement/Background: When looking at the organization as a whole by identifying and understanding the cultural and linguistic needs of patients, addressing the cultural communication between healthcare professionals and patients can help mitigate barriers for vulnerable patients and provide the best possible care. Leadership and policy organization readiness for competent care—healthcare providers offer cultural and language diversity within the organization—that reduce ethnic or racial health disparities of individuals receiving in-patient services at Florida medical centers. Methods: This is a descriptive cross-sectional study of general acute care hospitals sampled in Florida (N = 215). The survey was previously administered and respondents were asked to identify factors describing practices related to the delivery of culturally-competent care in their hospital. The analysis will include n = 78 hospitals that responded, descriptive statistics will include chisquare and t-test where appropriate. Results/Outcomes: The analysis for the present study is ongoing but we expect to find that hospitals will differ significantly in their approach to providing these services and their states of organizational readiness. We expect areas of difference to include the presence of an office or committee who has dedicated responsibility for promoting cultural diversity goals, possible formal and ongoing training programs on cultural and language diversity among others. Conclusion/Summary: Overall care in raising awareness of cultural competence to improve the health disparities and address the racial and ethnic differences through leadership and organizational structure. The results of this study can also help contribute to research that looks at the structure and processes of culturally and linguistically appropriate services related to the quality of care provided by hospitals.

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**77 Poster #30**

**Characterizing Culturally-Competent Hospital Care**

Kiana Spencer, Kinesiology (U)
Melody Schiaffino, Graduate School of Public Health

Problem Statement: In order to receive the best treatment from a healthcare facility, racial or ethnic health disparities must be eliminated or reduced as much as possible. To do this, healthcare facilities must ensure that they are engaging in culturally-competent care with their patients. One way to do this is by accommodating each patient’s language barrier through the given healthcare facility’s own language services and other culturally-competent services offered. However, these services vary widely, the goal of this study will be to describe the patterns of culturally-competent care and language services among general acute care hospitals in Florida. Methods: This is a descriptive cross-sectional study of general acute care hospitals sampled in Florida (N = 215). The survey was previously administered and respondents were asked to identify factors describing practices related to patient delivery such as dietary and cultural preferences. Conclusion/Summary: Through the focus on developing the knowledge of staff members in healthcare facilities and being accommodating to patients in regards to areas such as language barriers, the overall cultural competency of healthcare facilities will rise, while also lessening the racial or ethnic health disparities in them, bettering the treatment that facility offers. The results of this study can also help contribute to research that looks at more specifically, the organizational factors that relate to the cultural competency of a healthcare facility in relation to the quality of care provided.
**Poster #31**

**Exploring the Digital Divide Among Mexican Migrant Workers in North San Diego County**

Hulises Contreras, Public Health (U)
Tracy Finlayson, Public Health

**Rationale:** Mexican migrant workers are often understudied in public health research and are a hard-to-reach, underserved, mobile group that has multiple unmet health needs. Some studies have successfully employed technology, like text messaging and health applications, to motivate health behavior changes in diverse populations. However, technology use has not been explored within underserved Mexican migrants. Hypothesis: We hypothesize that those with lower acculturation and education levels will be less likely to use technology. Methods: This cross-sectional study examines the association between technology use and acculturation levels, and internet and text message use within a subsample of 60 Mexican-migrant adult caregivers across North San Diego County. Caregivers were interviewed as part of an ongoing 5-week dental health education program. Technology outcomes, main predictors and other sociodemographic variables were examined with bivariate and logistic regression analysis. Results: Preliminary results indicate that 46% of our sample use computers (once/week or more) and 68% use text messaging at least once/daily. Most (78%) caregivers have less than a HS degree. Less than half (43%) reported sometimes/often/always not understanding medical or dental words used by their provider. Another 37% of caregivers need assistance reading written material from their dentist. Caregivers on average were more Mexican oriented (-2.68 ARSMA II Scale). In the logistic regression model, there were no significant associations between acculturation, literacy and frequency of text messaging however, acculturation was associated with internet use such that less Mexican-oriented individuals were more likely to use the internet. Conclusions: Our preliminary results suggest that acculturation and education are not associated with text messaging, but acculturation is associated with internet use. We would like to further examine the relationship between U.S. poverty level and the amount of technology use within our sample.

Both these technologies could be effective in delivering health information to our sample. Future research should explore technology use and its potential to deliver health messages that improve oral health practices to underserved, less acculturated populations.

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**Poster #32**

**A Bi-National Comparison of Environmental Values and Ecotourism Practices within the Tourism Industries of San Diego, CA and Baja California Sur, MX**

Olivia Chavez, Interdisciplinary Studies (U)
Vinod Sasidharan, Hospitality and Tourism Management

Sustainable Tourism was defined in the 1992 Agenda 21 by the travel industry as tourism that “meets the needs of present tourists and host regions while protecting and enhancing opportunities for the future.” Today, ecotourism is one of the leading sustainable tourism industries; having a positive impact environmentally, socially, and economically. Ecotourism has come to be defined as “responsible travel to natural areas that conserves the environment and improves the well-being of local people” (The International Ecotourism Society (TIES), 1990). Central to this study is the question, “Is ecotourism really enhancing people’s environmental consciousness and developing their awareness?” From a cross-cultural perspective there is value in evaluating the similarities and differences of the management of ecological and conservation efforts from the perspectives of both developed and developing countries. The hypotheses behind the study are: The U.S ecotourism industry is less likely to invest in environmental education which limits the impact these experiences can have on deepening tourist’s environmental consciousness while the tourism industry in developing nations, like Mexico, is more likely to coincide with environmental education, as a result, the impact the experience has on deepening tourists environmental consciousness is greater than in developed nations. The survey focused on tourists and locals of these regions in order to determine the impact that each tourism model has in terms of sustainability of ecological resources. By incorporating the New Ecological Paradigm scale, the survey allowed for statistical findings to measure the environmental concern of respondents from both regions. The survey evaluated the ecotourism offerings of the parks, people’s traveling preferences, education levels, and current occupation. Overall, this study measured tourists’ attitudes and views towards their natural environment within the context of ecotourism and environmental education at the La Jolla Underwater Park, San Diego and the Bay of Loreto Marine National, Loreto. The findings provided insights regarding what components of ecotourism are having the greatest impact on tourists and whether those components align with the principles established by TIES.
80 Poster #33

Bilingual Trainings for first responders to create a more resilient city
Sara R Roldan, Homeland Security (M)
Eric Frost, Homeland Security

This reach aims to develop appropriate bilingual trainings for disaster management and prevention, with the help of the pioneer portable resilience and dependable equipment call the VIZ Center in a box. A framework is proposed for the training and prevention of natural and hazards disasters such as: tropical storms, hurricanes, volcanic eruptions, earthquakes, flooding, tsunami and major fires. A detail description, research and data collection for emergency responders will be acquired in Guatemala with the pioneer program VIZ Center in a box which was created for disaster response, recovery, mitigation, and planning. The research in Guatemala will contributed to develop disaster trainings in Spanish and English for first responders. There is a need on a national and international level for contingency and developing planning, plans for proper responses and trainings of first responders in Spanish and English. Another important issue, which needs special attention, is sharing and collaboration between agencies of different languages such as English and Spanish disaster management. It is crucial for national security to create training tools in Spanish and English since there is a big push with governments to prioritize the integrated approach of DRR/CCA/EMR in their development plans of a resilient country. Also to be utilize for first responders at any of the 27 Spanish speaking countries. The VIZ Center in Box system and bilingual trainings and data collection will be utilize as training tools for the prevention and preparedness of disaster. This will help to develop collaboration between countries and agencies to trained first responders and communities, for more resilient cities before, during and after a disaster. The originality of this research is in the comprehensiveness and collaboration between two VIZ centers in two different languages to training first responders for disaster management prevention.

81 Poster #34

Cross-Language Semantic Interference Effects During Picture Naming in Bimodal Bilinguals
Natalie C Silance, Speech Language and Hearing Sciences (U)
Karen Emmorey, Speech Language and Hearing Sciences

The picture-word interference paradigm (PWI) is used to study lexical selection during language production in monolinguals and bilinguals. Using the PWI paradigm previous research from Giezen and Emmorey (under review) found that cross-language activation between a spoken and signed language also impacts language production processes. However, this study did not find semantic interference effects in bimodal bilinguals when a picture and a semantically-related distractor were presented simultaneously. The present study extends the previous by using the PWI paradigm to determine whether semantic interference effects would be observed in bimodal bilinguals when pictures and distractors are presented at different Stimulus Onset Asynchronies (200ms, 0ms, or +200ms).

This study includes fifteen native monolingual speakers of English and fifteen bilingual users of English and ASL. Hearing ASL-English bilinguals named pictures in ASL while hearing English distractor words that were either unrelated or semantically related to the picture. Monolinguals named pictures in English while being presented with auditory English distractor words that were unrelated or semantically related. Based on the previous findings we hypothesized that monolinguals would be expected to exhibit interference in the semantic condition, particularly for SOA=0ms. For signing participants we predicted that if the explanation for the observed null effect for the semantically-related distractors in Giezen and Emmorey (under review) is a slower time course for signing versus speaking, bimodal bilinguals should show semantic interference effects at a later SOA (+200ms), when presentation of the picture precedes presentation of the distractor. Otherwise, if hearing signers are simply insensitive to cross-linguistic competition during language production then we should not observe interference effects in any SOA condition.

Results from monolingual participants yielded slower naming times in the semantic condition than baseline RTs for SOA=0ms, but not in the -200ms SOA condition. Bilingual participants showed no differences, supporting our hypothesis of a null effect. These results suggest hearing signers may be simply insensitive to cross-linguistic semantic competition during language production in contrast to bilinguals with two spoken languages.
**Poster #35**

**SES Effects on Self Reported Language Environment and Peak Language Times**

Lukas D Lopez, Psychology (U)
Margaret Friend, Psychology

Higher SES parents have been known to be more responsive and use more complex syntax when speaking to their children. This results in steeper language developmental trajectories for higher SES monolingual English children (Hoff 2003). The home literacy environment is also an important factor such that joint attention and parent-child conversations are important for positive language outcomes (Schmitt et al. 2011).

The current study considers the effects of SES on the home literacy environment and child language by utilizing the home literacy environment questionnaire (HLEQ) and LENA recording devices in an initial sample of children between 41.6 to 43.2 months of age. LENA devices were left with parents for one day and recorded four 15-minute intervals (wakeup, mealtime, playtime, and bedtime). The following day parents completed the HLEQ: items were grouped into three internally consistent sets: books, descriptive language, and language practice and comprised 21 of 31 HLEQ questions. A median split was performed on SES using maternal education as a proxy. Two or more years of post-secondary education defined the high SES group. The LENA language data utilizes the first 10 minutes of each recording time to account for recording time differences.

High SES parents reported greater use of books (5.34), descriptive language (4.94), and language practice (5.47) relative to lower SES parents (4.09, 4.39, 4.71 respectively). However, neither SES nor HLEQ predicted children’s total spontaneous LENA language data. Rather, children’s language production varied both as a function of SES and time of recording. Lower SES children produced more words during wakeup (M = 49.50) compared to higher SES children (M = 19.80) whereas during playtime, lower SES children spoke less (M = 64.50) than high SES children (M = 84.40).

Participants are part of a larger longitudinal study and this research is ongoing. We anticipate having complete data on 30 participants prior to SRS. Consistent with previous research, we expect that to find that children’s total language production varies as a function of SES and that the HLEQ will emerge as an additional predictor. Of interest are the specific aspects of the home literacy environment that predict language production and how these vary with SES.

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**Poster #36**

**Language and Literacy in Young Spanish Monolingual Children**

Laura A Alba, Psychology (U)
Margaret Friend, Psychology

The present study analyzed the home literacy environment of Spanish-speaking monolingual children. Previous work indicates variability in vocabulary growth across languages (Bleses et al., 2008). As the number of Spanish-speaking families grows in the US, it is important to understand early language development in this population. Maternal education was used as a proxy of socioeconomic status (SES) as previous research indicates that it predicts variation in language outcomes (Hoff 2003). Of interest are the relations between early receptive vocabulary and later language and literacy as a function of maternal education.

Child participants and their primary caregivers are part of an ongoing longitudinal study and previously participated when children were 16, 22, and 30 months of age. To date, 16 (F = 7; M = 9) children have been tested at 45 months of age (M = 44.59, SD = 2.24, range = 41.5-50.0).

At 22 months, vocabulary comprehension was estimated using the Computerized Comprehension Task, (CCT; Friend & Keplinger 2003). At 45 months, children wore a device that recorded child-caregiver interactions at four epochs across a 24-hour period: wakeup, mealtime, playtime, and bedtime. The Home Literacy Environment Questionnaire (HLEQ) was administered to assess characteristics of the home literacy environment and yielded three item sets: language practice, book reading, and communicative engagement with Cronbach’s alphas of .88, .90, and .92, respectively.

Vocabulary comprehension at 22 months, HLEQ scores, and child vocalizations at 45 months varied as a function of maternal education. Higher SES, relative to lower SES, children had larger vocabularies at both ages and their parents reported a richer home literacy environment. The distribution of child vocalizations across recording epochs also varied with SES such that lower SES children vocalized more during the wakeup epoch and higher SES children vocalized more at mealtime. Only SES, but not 22-month vocabulary or the home literacy environment, predicted children’s language production suggesting that the language of Spanish monolingual children, like that of their English counterparts, is influenced by maternal education. We will present a complete analysis of these effects on an anticipated final sample of 27 children.
Cognate Status and Acoustic Cues Influence Language Activation in Spanish-English Bilinguals

Sofía F Camacho, Speech, Language and Hearing Science (U)
Erika C. Lamb, Fernanda Manriquez, Analicia Ochoa, Megan E. Jeong, Carmen Causor
Henrike K. Blumenfeld, Speech, Language and Hearing Sciences

Previous research suggests that lexical status constrains processing during word recognition (e.g., Blumenfeld & Marian, 2007). Furthermore, Ju and Luce (2004) revealed that word recognition is sensitive to bottom-up acoustic-phonetic cues like cross-linguistic variations in voice-onset time (VOT). It is still unclear how these interacting variables influence parallel language activation patterns. This study evaluates the degree to which bottom-up acoustic-phonetic cues (English vs. Spanish-like VOTs on word-initial voiceless stops) and lexical status (Spanish-English cognate targets vs. English-specific noncognate targets) impact bilinguals’ parallel language activation. Bilinguals were predicted to exhibit parallel activation for both cognate and non-cognate target words (e.g., Blumenfeld & Marian, 2007). Using a 2x2 mixed factorial design, we evaluate the effect of lexical status (cognate, non-cognate) and acoustic phonetic properties (English-like, Spanish-like VOTs) on parallel language activation using the Visual World eye-tracking paradigm. Participants selected images corresponding to auditorily-presented English target words. They heard 12 pairs of voiceless stop-initial cognate and non-cognate words with unmanipulated English VOT and 12 pairs of voiceless stop-initial cognate and non-cognate words with artificially shortened VOTs to lengths characteristic of Spanish. Looks to cross-linguistic competitor images, which shared phonological overlap with the target word, would suggest parallel activation. Initial findings with 10 Spanish-English bilinguals yield no evidence of parallel language activation when listening to English and Spanish-VOT targets. However, significant effects of cognate status and VOT were identified. A 2x2 ANOVA revealed a main effect of cognate status, p < .05, with faster and more accurate identification of cognates than noncognates. A main effect of VOT was present, p < .001, with faster and more accurate identification of English than of Spanish VOT targets. Critically, an interaction emerged between cognate status and VOT, p < .01: for cognates, targets with English vs. Spanish VOTs were equally efficient, p = .07; for noncognates, targets with English VOTs were more efficient, p < .001. This pattern was also reflected in the target activation timecourse. For cognates, target activation curves were statistically identical for English and Spanish VOTs, p > .1. However, for noncognates, targets with English VOTs were activated faster, p = .05. Together, initial findings suggest that early language activation is sensitive to both lexical and acoustic factors in bilinguals.

ASL-LEX: A resource for investigating effects of sign frequency and iconicity for American Sign Language (ASL)

Karen Emmorey, Speech, Language and Hearing Sciences

There are many large corpora that are available for spoken languages that researchers use to determine word frequency, which is an important variable in understanding language behavior (e.g., frequent words are recognized more quickly). Similar resources for investigating effects of lexical frequency in sign language are currently lacking. We conducted a large-scale collection of subjective frequency ratings and iconicity ratings for 1000 ASL signs. A group of 25–31 deaf ASL signers from various US regions rated signs on a 1–7 scale based on how often the signs appear in day-to-day communication (7=very frequently). The signs were also rated for iconicity by a group of hearing non-signers in a separate study conducted by our collaborators at Tufts University. This data set allows us to examine the relationship between sign frequency and other variables such as iconicity, sign length or age of ASL exposure (native vs. non-native signers). Firstly, we examine whether higher frequency signs are more or less iconic than low-frequency signs. Secondly, high-frequency words tend to be shorter than low-frequency words, but it is unclear whether similar relationship exists between frequency and duration of signs. Thirdly, because age of exposure to ASL often varies across deaf signers, we investigate if native vs. early ASL signers differ in subjective frequency rating of signs. The results revealed a weak inverse relationship between subjective frequency and iconicity ratings (r = −.10, p < .001). More frequent signs tended to be less iconic, suggesting that the iconicity of signs decreases somewhat with frequency of use. Second, we found an inverse correlation between subjective frequency and sign length (Spearman ρ = −.26, p < .001), suggesting that more frequent signs take less time to articulate, similarly to spoken words. Finally, in line with previous work (Mayberry et al., 2014), the results revealed a strong correlation between native and non-native signers’ ratings, suggesting that subjective frequency ratings are relatively stable across deaf people who are proficient ASL signers. In addition to being an invaluable resource for psycholinguistic research, ASL-LEX provides a useful tool for assessments or teaching.
86 Poster #39

*Investigating relationships between the cognate advantage and measures of development*

Hannah Byers-Straus, Speech, Language, & Hearing Sciences (M)
Alyssa Carbajal, Irina Potapova
Sonja Pruitt-Lord, Speech, Language, and Hearing Sciences

Cognates are translational equivalents that are similar in sound and spelling across two languages (e.g., triangle in English and triángulo in Spanish). It has been robustly demonstrated that adult bilinguals perform more quickly and accurately on language tasks that involve cognates than non-cognates (see Sánchez-Casas & García-Albea, 2005, for a review). In contrast, research on this “cognate advantage” in child bilinguals is sparse but suggests that some children do exhibit a sensitivity to cognates (Kelly & Kohnert, 2012; Pérez, Peña & Bedore, 2010). Though some research suggests that relative language exposure is associated with cognate effects in young bilinguals (Pérez et al., 2010; Potapova, Pruitt-Lord & Blumenfeld, 2014), little else is known about differences between children that do and do not demonstrate the cognate advantage.

The present study includes 63 Spanish-English preschool-aged bilinguals (mean age = 50.35 months, SD = 5.23, 33 males), roughly half of whom were found to demonstrate a cognate advantage. To investigate what contributes to the manifestation of cognate effects in child bilinguals, we assessed the participants’ performance on three frequently-used assessments, including one of language abilities (the Test of Language Development), one of cognitive abilities (the Leiter International Performance Scale) and one of school readiness (the Lollipop Assessment). Assessments were administered at the beginning and end of an academic year.

Correlational analyses indicate few meaningful relationships between the cognate advantage and standardized assessments at the beginning of the year. In contrast, during post-testing, the cognate advantage negatively correlated with both language and school readiness measures. Additional analyses are in progress.

Investigating the cognate advantage in young bilinguals helps establish a developmental trajectory for a widely studied phenomenon in adult bilinguals. Furthermore, it provides much-needed information about typical language development in young bilinguals that can serve as a foundation for novel techniques in detecting atypical development in this diverse population.

87 Poster #40

*Specific Purpose English Communication System for Seniors: A Pilot Study*

Fiona Hay, Speech-Language Pathology (M)
Stephanie Jacobson, Cindy Alsol, Sim Quinzon, Lucia Trapote, Carmen Causor, Tonya Luoh
Henrike K. Blumenfeld, Speech, Language, and Hearing Sciences

The Specific Purpose English Communication System for Seniors (SPECSS) was designed to teach seniors environmentally relevant communication skills via English as a Second Language (ESL) instruction at the Gary and Mary West Senior Wellness Center in downtown San Diego. Non-native English speakers often confront sociocultural boundaries that obstruct access to healthcare, which can be mitigated by reducing language barriers between patients and their healthcare providers (Betancourt, Green, Carrillo, & Ananeh-Firempong, 2003).

This pilot study used a single subject design to examine the efficacy of SPECSS. We predicted that our specially designed curriculum would lead to increased specific semantic knowledge of English as measured during baseline and post-testing. Second language acquisition in older adults may be viewed in the context of the sensitive period hypothesis for language learning, a neurologic timeframe during which language learning must occur for attainment of native-like proficiency. Specific to older adult language learners, environmental and motivational variables play major roles in their ultimate English proficiency, while age-related cognitive changes may be barriers to ESL learning (Hakuta, Bialystok, & Wiley, 2003; Marinova-Todd, Marshall, & Snow, 2000).

Trained bilingual student facilitators conducted ESL classes using the SPECSS curriculum, consisting of visual aids and native language translations. The data in the present study come from ESL classes provided to native Spanish speakers (n = 4, aged 60–70) and Tagalog speakers (n = 2, aged 64–74) who attended on average 10 sessions (SD = 4). A nonparametric McNemar change test examining baseline and post-test scores for each participant revealed that four of six made statistically significant positive gains (ps < 0.0001). Effect sizes indicated that participants who significantly improved had on average, a 30.3% increase in knowledge (SD = 20.8). Individual differences that likely impacted participants’ ability to learn include baseline cognition, medical history, and attendance. Participants reported increased English language confidence leading to English use in a broader range of situations, suggesting generalization beyond the curriculum. Data from four native Mandarin speakers are currently under analysis. Although the small number and high individual variability of participants limits generalizability to other seniors, initial results from the SPECSS curriculum are promising, and merit further research.
Session A-16
Poster: LGBT Concerns
Friday, March 6, 2015, 9:00 am – 10:45 am
Location: Montezuma Hall

88 Poster #41
Sexual Orientation and Rotating Night Shift
Hilda Huambachano, Public Health and Biology (U)
Heather Corliss, Graduate School of Public Health

Background: Compared to heterosexual women, lesbian and bisexual women experience health disparities in a number of domains including exposure to risk factors for chronic diseases such as cardiovascular disease and type 2 diabetes. One potential risk factor that has received less attention is the extent to which lesbian and bisexual women may differ from heterosexual women in their occupational exposure to rotating night shift work. Rotating night shift work disrupts circadian rhythms and has been associated with obesity, cardiovascular disease, metabolic syndrome, and glucose dysregulation. Because lesbian and bisexual women have different occupational and life course experiences, we investigated potential differences in lifetime exposure to rotating night shift work in a large longitudinal cohort study of women. Methods: Data used for this study are from the Nurses' Health Study II, which is a prospective cohort of over 100,000 women established in 1989. Data were derived from self-administered questionnaires administered at baseline and biennially through 2011. This allowed for collection of updated information on risk factors for and occurrence of chronic diseases. Rotating night shift work was assessed at baseline and in years [1989–1993, 2007, 2011], which allowed this exposure to be updated over the life course. Sexual orientation was assessed in 1995 and 2009 (98200 heterosexual women, 904 lesbians, and 554 bisexual women). Planned Analyses: This study will use descriptive, bivariate, and logistic regression analyses to fulfill the study aims. Longitudinal repeated measures descriptive analysis was conducted to investigate associations between sexual orientation and rotating night shift work over the course of the study follow up. We used generalized estimating equations regression to estimate the average effect size over the repeated measures and to account for the non-independence of the repeated measures within an individual. Covariates include age, race, marital status, employment status, living arrangement, and income. Potential Benefits: This study will assess if lesbian and bisexual women are more likely than heterosexual women to engage in rotating night shift work. If this associate is found, then further research will examine the influence of rotating night shift work on disparities in sleep quality and chronic diseases such as type 2 diabetes.

89 Poster #42
A Retrospective Study Examining Dating Violence Perpetration and Dating Beliefs in Young LGB Adults.
Leslie F Leon Aramburo, Psychology (U)
A. Remington Gonzalez
Audrey Hokoda, Child and Family Development

Abstract: Intimate partner violence (IPV) has been extensively studied amongst adult heterosexual couples. Existing literature has found relationships between IPV and personality dimensions, drug and substance abuse, mental health disorders, and childhood traumas. Adolescents who are involved in relationship violence may be at risk of engaging in IPV in future relationships (O’Keefe et al., 1986). Furthermore, studies have identified strategies that perpetrators use to sustain control over victims and beliefs influencing IPV perpetration (e.g., power and control, gender equality) (Dutton, 1998; Hamberger & Hastings, 1991; Hauser, 1985).

Over the years, interest has grown in studying the prevalence rates of IPV amongst individuals who Identify as lesbian, gay, and bisexual (LGB). Some studies investigating IPV within same-sex couples have estimated similar rates of IPV between heterosexual and homosexual couples (Brown, 2008). Other studies suggest a higher rate among gay men couples; Peterman and Dixon (2003) state that IPV is the third largest health problem gay men face, second to AIDS and substance abuse. In addition, there is evidence that young adults who identify as LGB are more likely to suffer negative consequences from IPV than their heterosexual counterparts (Cochran et al., 2002).

Despite this research, unfortunately, a paucity of research examines IPV in LGB individuals.

The purpose of this study is to examine IPV in LGB young adults and focus on the prevalence of IPV in adolescence to adulthood. The study assesses whether strategies perpetrators use and beliefs they hold (e.g., power and control) and attitudes towards seeking help for victims correspond to findings described by studies examining IPV in heterosexual couples.
90 Poster #43

"Neither masculine nor feminine": Exploring Power, Protection, and Consent of Transgendered Populations in Prison
Marquesa J Cook-Whearty, Communication (M)
Ariana Hernandez, Alexandra Hipp
Patricia Geist-Martin, Communication Studies

Abstract: Communication between prison professionals and inmates indicates that transgendered individuals in prison are more at risk for acts of sexual assault and violence than the general population. In this study, we focus on the hierarchy of the prison subculture, constructions of masculinity within the prison system, and communication between clinicians, prisoners, and other prison officials. Due to the ever-present threat of violence, transgendered individuals often seek protection from other inmates in exchange for sexual favors. Through narrative analysis, we argue the prison hierarchy contributes to sociocultural heteronormativity and continues to normalize violent behavior towards the transgender population. There are several themes salient in this study. They include: sociocultural expectations, the structure of the prison system, the hierarchy of power, and protection and consent.

Keywords: transgender, prison, communication, hierarchy, sociocultural expectations

91 Poster #44

An Investigation Of The Effects Of Marriage On Psychological Distress and Individual Self-Rated Health: The Case Of Sexual Orientation
Juan F Flores, Sociology (M)
Audrey Beck, Sociology

Does marriage matter when speaking terms of self-rated health? Past research has persistently recognized the positive correlation between marriage and self-rated health for people within the United States. The following study addressed the differences between cohabiters and married individuals taking into consideration self-rated and mental health. Furthermore, the study focused primarily on same-sex and different-sex relationships, to investigate whether or not marital status manifests a plethora of mental and physical health benefits for individuals, regardless of sexual orientation. The study utilized a regressive-analysis model for the variables of self-rated health and psychological distress. The three target population samples were same-sex and different-sex cohabiters, same-sex and different-sex marrieds and same-sex and different-sex individuals. In sum, married and single individuals reap the greatest benefits regardless of sexual orientation where as same-sex and different sex singles fared worse than their married and cohabiting counterparts, respectively. The findings are relevant to the growing body of literature—with the recent legalization of same-sex marriages across many major American cities—pertaining to sexual orientation and health. New developments and suggestions for future research were also included in the study’s findings.

Session A-17
Poster: Behavioral Health Science
Friday, March 6, 2015, 9:00 am – 10:45 am
Location: Montezuma Hall

92 Poster #45

Association between diabetes-related social support and distress among Latinos with poorly controlled type 2 diabetes.
Mayra G Hernandez, Psychology (U)
Linda Gallo, Psychology

Relative to non-Latino Whites, Latinos exhibit a disproportionately higher prevalence of diabetes. Managing a severe chronic illness like diabetes can be an emotional burden, and depression has been shown to limit effective diabetes management. Some (though not all) research has shown individuals who report greater perceived social support to demonstrate better health behaviors and outcomes than those with relatively less support. Due to the purported cultural value of supportive interpersonal relationships in the Latino population, the current study examined the association between health-related social support and diabetes distress among Latinos with poorly controlled diabetes. Specifically, it was hypothesized that participants who reported higher levels of diabetes-related social support would endorse significantly lower levels of diabetes distress. N=126 Latinos with type 2 diabetes and poor blood sugar control [glycosylated hemoglobin (HbA1c) >7.5%] were recruited from federally-qualified health centers (FQHCs) in San Diego County to participate in a larger study evaluating a diabetes self-management intervention delivered via text messaging (Dulce Digital). Assessments were conducted at baseline, month-3, and month-6. The current cross-sectional analysis examined data from the baseline assessment only. Bivariate correlation analyses examined the associations between diabetes-related social support (abbreviated, 9-item version of the Chronic Illness Resources Survey [CIRS] and distress [17-item Diabetes Distress Scale]). The majority of participants were female (74.6%), married or living with a partner (71.4%), and reported an annual household income <$24,000 (86.5%); mean age = 48.45±9.92
ABSTRACTS

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ABSTRACTS

STUDENT RESEARCH SYMPOSIUM 2015

Student Level: (U)=Undergraduate; (M)=Masters; (D)=Doctoral

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Poster #47

Rosiglitazone affects contractility rates in neonatal mammalian cardiomyocytes

Megan I Malone, Public Health (U)
Paul Paolini, Biology

Rosiglitazone is a peroxisome proliferator-activated receptor-γ (PPAR-γ) agonist with both beneficial and adverse effects on cardiac function. Previous work investigated the effects of rosiglitazone on genome-wide gene expression over 48 hours on neonatal rat ventricular cardiomyocytes in order to identify the drug’s impact on cell signaling pathways. We examined cardiocytes subjected to the drug at 0, ½, 1, 2, 4, 8, 12, 18, 24, 36 and 48 hours of exposure compared to cardiocytes under only DMSO (carrier) exposure. Results from microarray experiments determined cardiocytes exposed to rosiglitazone stress exhibited a differential gene expression profile compared to control experiments. Over 3,000 genes of the 22,518 genes studied had statistically significant expression level changes with p-values < 0.5, and 310 had p-values < 0.0001. Cardiovascular system development, extracellular matrix, and immune response were represented prominently among the significantly modified gene ontology terms in the data set. Enrichment of transcripts involved in cardiac muscle cell differentiation and extracellular matrix provides a panel of biomarkers for further assessment of adverse cardiac outcomes in humans. However, there is a lack of research investigating the effects of rosiglitazone on the contractile function or neonatal cardiocytes. Isolated cardiocytes were plated and videos of contracting cardiocytes at each time point were analyzed to extract contraction time-to-peak, 50% and 90% relaxation times for control, DMSO, and DMSO-rosiglitazone testing groups.

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Poster #48

Evaluating the Receptiveness of Harvest of the Month in the Classroom Program Among Key Stakeholders

Linda Salgin, Public Health (M)
Heather Corliss, Graduate School of Public Health

Objective: With the high rates of childhood obesity in the United States, many school-based nutritional education programs have been implemented to increase fruit and vegetable consumption. This study conducted a process evaluation of one such program, Harvest of the Month in the Classroom (HOTM-C), guided by the RE-AIM framework, to understand barriers and facilitators to implementation. Design: Mixed methods study design, using Nutrition Teaching Self Efficacy Scale (NTSES) pre/post surveys, monthly fidelity questionnaires, three focus groups and 10 semi-structured interviews. Setting: Two elementary schools from San Diego Unified School District and one elementary school from Vista Unified School District. Participants: Key stakeholders
(i.e. principals, teachers, and food service staff) were recruited to participate. Forty-six teachers participated in the NTSES survey. Three principals, four onsite and three offsite food service staff, and additional 15 teachers participated in focus groups and interviews. Outcomes Assessed: Mean changes in NTSES score reported by teachers, fidelity of implementation, facilitators and barriers to implementation reported by all key stakeholders. Analysis: Descriptive statistics, independent and paired sample t-tests via SPSS. Qualitative thematic analysis using NVivo 10 software. Results: NTSES pre-post survey data from teachers showed significant decreases in outcome expectations, a person’s expectations about the consequences of an action (P<.01). On average, 57.14% of program components were implemented each month. Taste-tests, workbooks, HOTM videos and teacher resources were used the most. Teachers revealed that some resources were unnecessary and/or inadequate. They reported an overall positive attitude towards HOTM-C, and did not believe it to be “extra work.” However, given the number of components, teachers consistently reported time as their biggest barrier. Conclusions and Implications: While there were decreases in NSTE, HOTM-C was well received by key stakeholders. To improve implementation, developers may benefit by focusing on the most utilized components, and either revamp or remove components that are less utilized. Developers can use these findings to improve HOTM-C to best fit the needs of key stakeholders. Future studies can consider the students’ perspectives on HOTM-C and focus on outcome evaluations of changes in fruit and vegetable consumption.

Session A-18

Poster: Cancer: Societal & Genetic Influences
Friday, March 6, 2015, 9:00 am – 10:45 am
Location: Montezuma Hall

96 Poster #49
Exploring the Relationship Between Stress, Social Support and Self-Efficacy for Obtaining Cancer Diagnostic Care

Jessica Coleman, Psychology (U)
Kristen Wells, Psychology

Background: Previous research indicates that stress and distress may prevent patients from obtaining diagnostic care following identification of a cancer-related abnormality. It is unknown whether stress or social support is associated with self-efficacy for obtaining cancer diagnostic care. This study examined the relationships between perceived self-efficacy for obtaining recommended cancer diagnostic care, perceived stress, and perceived social support among medically underserved patients who had received a screening abnormality potentially indicative of breast or colorectal cancer. Methods: This is a secondary analysis of surveys collected from primary care patients who experienced an abnormality suspicious for breast or colorectal cancer. Data were collected following identification of the abnormality using self-report surveys, including a 12-item scale evaluating self-efficacy for obtaining recommended cancer diagnostic care (Arevalo et al., 2012; α = .85), the 12-item Perceived Stress Scale (Cohen et al., 1983; α = .81), and the 14-item Interpersonal Support Evaluation List-Short Form (Cohen et al., 1985; α = .81). Using Pearson correlations, we examined relationships between these variables. Results: One hundred and six participants completed surveys in either Spanish or English. Most participants were female (84%), born in Mexico (43%), Spanish speaking (76%), and had completed less than high school education (M = 8.84 years). Participants reported moderate to high social support (M = 3.04), moderate self-efficacy (M = 2.27), and moderate to high perceived stress (M = 2.98). While there was no statistically significant relationship between perceived stress and perceived self-efficacy for obtaining cancer diagnostic care (p = .211), high perceived self-efficacy was correlated with high social support (r = .35; p < .001). Perceived stress was also negatively correlated with social support (r = -.21; p = .031). Conclusions: Stress was not significantly associated with self-efficacy for obtaining cancer diagnostic care, but high social support was linked with higher self-efficacy. Future research should examine the types of social support associated with higher self-efficacy for obtaining cancer diagnostic care, and the link between self-efficacy and receipt of cancer diagnostic care.

97 Poster #50
Perceptions of Biospecimen Donation and Biobanking: A Comparison of Cancer Survivors and Cancer Bloggers

Janiel S Jones, Psychology (U)
Kristen Wells, Psychology

Research using biospecimens may establish innovative ways to prevent, diagnose, and treat cancer. Information regarding cancers is communicated though various media. Social media have provided a platform for individuals to share their experiences with cancer with the audience with whom they engage. This study compared attitudes, perceptions, and willingness to donate biospecimens of cancer bloggers who identify as caregivers (n = 9) and cancer bloggers who identify as patients or survivors bloggers (n = 36) using the Biobanking Attitudes and Knowledge Survey (BANKS) as well as biomedical research trust using the Biomedical Research Trust Scale. These surveys were administered to cancer bloggers via an online survey. Independent samples t tests was conducted. An examination of the means scores on each measure indicated caregivers generally had more knowledge, more positive attitudes, greater willingness to donate a biospecimen, higher self-efficacy for donating a biospecimen, more trust in biomedical research, and greater receptivity to
learning more about biobanking. Only the results for receptivity were statistically significantly higher for caregivers as compared to patients/survivors (p > .05). Future large scale studies should confirm these preliminary findings indicating that caregivers of cancer patients may be more positive about biomedical research.

Keywords: Biobanking Attitudes and Knowledge Survey (BANKS), biospecimen donation, cancer bloggers, social media

99 Poster #52

Comparison of Stroma-Associated Gene Expression in African and Caucasian American Prostate Cancer

Pardis Zaeri, Cell and Molecular Biology (M)
Kathleen McGuire, Biology

Background: In prostate cancer (PCa), race is a major risk factor. African Americans (AA) have higher incidence and increased mortality from this disease than their Caucasian (CA) counterparts. Microarray analyses of gene expression identified altered gene expression in different pathways that are significantly associated with tumor and stromal tissues by race. 20% of these pathways are extracellular matrix components (ECM), cell adhesion molecules (CAM), and epithelial to mesenchymal transition (EMT). Most of the genes were overexpressed in CA stroma versus AA, which we hypothesize leads to less aggressive disease. The goal of this study is to reveal if the genes involved in these pathways which are mostly associated with stroma may contribute to the more aggressive nature of PCa in AA patients. Method: We are performing IHC on tumor microarrays (TMAs) from 443 CA and 105 AA patients, to validate and extend our preliminary gene expression results. The TMAs contain duplicates of tumor, stroma, normal, and benign prostate hyperplasia tissue from each patient. They have extended follow-up data that allow biomarkers to be correlated with disease-free survival. Aperio epathology is applied to the TMA slides after staining in order to image, standardize, and analyze IHC interpretation. Results: Microarray data using AA and CA tumor and stroma samples discovered that the majority of gene expression differences by race are associated with stroma tissue. ECM-Integrin interactions mainly determine cell adhesion properties in a tissue. It has been shown that integrin α5β1 is the key mediator of fibronectin matrix assembly, which then suppresses PCa cell invasion. In CA samples, we have over-expression of both integrin α5 and fibronectin which may suggest why AA have more aggressive forms of PCa. We are confirming this at the protein level using IHC on the TMAs. Conclusion: Our results from IHC so far support our hypothesis that the stroma plays an important role in the racial disparities of PCa via specific ECM/CAM/EMT processes.
Session B: Oral Presentations

Session B-1

Oral Presentation: Ancient and Modern History  
Friday, March 6, 2015, 11:00 am  
Location: Pride Suite

**100  11:00 am**  
*Figure Four*  
Mark E Arnold, History (U)  
Walter Penrose, History  

The Figure 4 project focuses on information from an Arab language version of Mechanica, III that describes in detail a device that was conceived of and constructed in Hellenistic times. Currently, most historians believe that the device described in the text is a tool that was used for cutting a groove in a hole; known as a tap. The modern interpretation of the device comes from research done by historian Eugene Gerhadart Drachmann in the 1950’s. To conduct his research, Drachmann created a modern blueprint, and a working model of the device. His findings and conclusions on the device have been referenced by a number of modern authors.

For this Figure 4 project, Drachmann’s blueprints were used to recreate the device. An experiment was then conducted using the device in order to determine if in fact it could effectively be used as a tap or if there could be an alternative use for this device. Based upon the experiment, it was determined that the device actually worked very poorly as a tool. When used as a tap, the device was cumbersome and ineffective. However, the device proved to be an excellent locking adjustable stud that could also easily be adjusted in length.

**101  11:15 am**  
*Sacred Prostitution in Ancient Mesopotamia: Myth or Reality?*  
Claudia N Mendez, Religious Studies (U)  
Rebecca Moore, Religious Studies

To modern minds the opposition between that which is sacred and that which is profane is clear. In an ancient Near Eastern practice often identified as “sacred prostitution”, one finds the sacred and the profane harmoniously bound together. This ancient custom is thought to have included ritual sexual services offered by women, and possibly by men, in a religious setting. It is thought to have taken place from the rise of Ancient Sumer during the 5th millennium BCE to the fall of the Neo-Babylonian Empire during the 6th century BCE. The practitioners were vessels of sexual energy for fertility goddesses like the Goddess of Sumer, Inanna. It has been widely believed that these sacred sex services aimed to ensure the abundance of life, especially agricultural, on earth. Women played an important role in temple life varying widely not only in social standing but in the type of sex service they offered.

Scholarly debates focus on whether or not such practices involved monetary exchange, whether or not they were actually liberative for the women involved, and more recently, whether or not these practices even existed at all. One is inclined towards speculating that perhaps sacred prostitution, i.e. the exchange of money for sex, did not exist, but sacred sex, i.e. ritualized sex absent of monetary exchange, did exist.

I believe that the problem lies in the terminology, e.g. ‘sacred prostitution,” and “hierodule,” that is used to describe these practices, and in the use of ancient accounts such as that of Herodotus’ Historiae that have been proven unreliable. Scholars claiming that sacred prostitution never existed at all offer valuable research that should be taken into account and could potentially further and refine the study of sacred sex in Ancient Mesopotamia. I propose that research that re-evaluates secondary accounts and looks closer at primary data is needed, writings on “sacred prostitution” should be re-assessed, and cultic sexual service free from definite monetary exchange should be explored. In doing so, a clearer image of what this practice actually entailed will emerge, and will be proven to have had existed in Ancient Mesopotamia.

**102  11:30 am**  
*Pious Bodies in Late Antiquity: Empress Theodora and al-Khayzuran*  
Javier Gonzalez-Meeks, History (M)  
Elizabeth Pollard, History

Late antique male authors established and reinforced imperial feminine virtue by praising and slandering the female body. John Malalas, sixth-century Byzantine chronicler, and al-Tabari, ninth-century Abbasid historian, characterized the actions of the ideal female religious body as generosity towards the disenfranchised, providing public works of philanthropy, and maintaining the political dynasty. These expectations were not modeled from the lives of Empress Theodora and al-Khayzuran but from the memory of previous women who set the appropriate behavior of piety.

An examination of Malalas’ *Chronicle* reveals the piety of Empress Theodora as she donated money to the poor, protected women who were forced into prostitution, and sponsored the construction of church buildings. However, Procopius in *Secret History* described Empress Theodora as an impious ruler who stole property, plotted in the death of her rivals, and forced
women without their consent to live in a monastery. This will be compared to al-Tabari’s *History of Prophets and Kings*, which described al-Khayzuran’s piety in giving generously to the poor, refurbishing sacred buildings in Mecca, constructing water wells for religious pilgrims, and producing two male heirs, which was overshadowed by her involvement in the death of her son al-Hadi. This paper reads between the lines of Malalas, Procopius, and al-Tabari to determine how these women were able to maintain piety as imperial leaders. This analysis aims to analyze gendered power structures and how they operated within Late Antique Byzantine and Abbasid societies. Carolyn Connor (2004), *Women in Byzantium*, analyzed the patronage of imperial women in Byzantium. Fatima Mernissi (1993) *The Forgotten Queens of Islam*, provided a detailed analysis of the power and influence of al-Khayzuran. While these texts were produced within different contexts, shaped by their own religions and cultures, when analyzed together they reveal similar gendered expectations for Late Antique elite and ruling women.

**103  11:45 am**

*Monster or Muse?: The Bohemian Influence on Pre-Raphaelite Women in the Victorian Era*

Jaymee Hernandez, Art History/Liberal Studies (M)
Edward Beasley, History

In a timeline of political upheaval, followed by equipoise, followed by nonconformist tendencies, Victorians by the 1890s had an almost split personality; a reaction indicating that Victorian self-doubt was beginning to surpass Victorian self-confidence. The later part of the Victorian Era was unquestionably working its way toward freedom of expression for women, who had lived in a time of physical confinement and emotional repression. The views and laws for society during most of the 19th century unyieldingly would not shift in favour of women’s right to have an opinion—decade after decade. It wasn’t until more liberating, yet still undermined activities, such as shopping, allowed women the independence to roam about in public. But on a more academic level, in the midst of this societal revolutionary phase, an exclusive and secret organization cleverly disguised by the initials PRB was established in 1848 in what could theoretically be perceived as the unconventional next step in accepting and encouraging Victorian women’s equality with more accomplished designations. Through this available assemblage, how then, does a female artist with learned and greatly admired talents manage to become perhaps the most influential icon of this Bohemian Movement and still decide to perhaps take her own life? Was she a torrential force to begin with, as her circle of friends sometimes described, or just another crested fallen muse simply too physically and emotionally unhealthy to go on as a result of the disposition of her significant other? Although in records she appears to have been much more of an enigma or an ethereal figment of the imagination, Elizabeth Eleanor Siddal’s beautifully tragic life can be better explained not through her own acts, but through her husband’s actions. Bringing to question whether the PRB failed its own doctrines by sanctioning the “traditions” of bohemianism to ultimately destroy the very principle it was determined to construct.

**104  12:00 pm**

*Why Hitler Was Destined to Lose the Second World War HMS Richards, the Voice of Prophecy, and Armageddon.*

Brenda M Schaffner, History (M)
Edward Blum, History

20th Century America is defined by the “wars and rumors of wars” that existed during this century. Several notable evangelicals of the time, namely Billy Graham, Charles Fuller, and Aimee Semple McPherson exist in the historiography. HMS Richards, Seventh-day Adventist radio evangelist, is excluded. HMS Richards was extremely well versed in current events as well as Biblical prophecy. Because of this, he was able to draw parallels to some of the atrocities taking place in Europe during World War II and, though he did not give an exact date as to when Jesus would return to the earth, he did “predict” it would be something that would happen sooner rather than later. Though he is not unique in this train of thought, his approach and sermons are worthy of examination to attempt to understand why he felt the way that he did about these events. This paper attempts to answer questions of his exclusion. Was he excluded because he belonged to the Seventh-day Adventist church, a religion and community known for its exclusivity? Was it something that would happen sooner rather than later. With a specific focus on HMS Richards thoughts on World War II and why there would be no way Hitler would take over the world because it was not dictated in biblical prophecy, this paper is a small sample of what will eventually be a larger work that tracks his thoughts on Armageddon and the end of the world throughout World War II and the Cold War.
MAKING THE MUSLIM MONSTER: SOCIETAL CONSTRUCTION OF THE MONSTROUS MUSLIM TERRORIST
Mary E. Clipper, History (M)
Veronica Shapovalov, European Studies

This research is a segment of a larger project and Master’s Thesis on persistent orientalism in U.S. historiography. This chapter, “The Making of the Muslim Monster” examines the construction of the Muslim as the ultimate “other”, who is inhuman, evil, ungodly, and dangerous. Visual and textual examination through a post-structural lens, using critical theories of Edward Said, Michelle Foucault, Jacques Derrida, as well as monster theories of Jeffery Cohen and Stephen Asma, shows the ways that both Eastern and Western societies have constructed a monster called the “Muslim Terrorist”. While this has been exacerbated in the aftermath of 9/11, this phenomenon has existed since the time of the Crusades. By analyzing images presented in popular culture, including art, literature, cinema, and mass media, this research shows that the West has made the Muslim into a “monster”. Some monsters; however, are self-created by people who have abdicated their humanity through their own horrific actions. Therefore, this presentation will also illustrate how Muslim extremists, to reinforce fear and terror, have used this “Muslim Monster” stereotype.

Monsters have been constructed in an attempt to explain the unknown, the unexplainable, and the intolerable. They mirror societies’ greatest fears. Monsters have also been used as a warning to society, as an explanation for an unexplainable creature or human defect, or to incite violence against an enemy. Xenophobia has bred its own form of monsters to reinforce the fear of the “other” and used to justify racial domination. In times of war, the adversary is often presented in the form of the monster to dehumanize the enemy. This polarization places society in opposition with the “other”, painting them as the monster. This becomes the fundamental battle between the known versus the unknown, us versus them, faithful versus the infidel, and ultimately good versus evil. As the larger project addresses the orientalism that persists in U.S. historiography, in order to overcome the legacy of orientalism in the study of the Arab and Islamic people, the importance of this research lies in the exposure of the societal construct of the “Muslim Monster”.

Session B-2
Oral Presentation: Business Consulting Projects
Friday, March 6, 2015, 11:00 am
Location: Park Boulevard

DFS Food, LLC
Kashia Lor, Marketing (U)
Rick Bunting, Andrew Coco, Hee Won Hwang
Donald Sciglimpaglia, Marketing

DFS Food LLC is a company our group consulted for the 2014 fall semester. DFS Food LLC, offers a great product that has yet to be known to the market. Its instant quick freeze technology has the opportunity to capture a frozen vegetable industry that is perceived as unnatural and processed. Fresher, more natural frozen tomato products gives consumers an alternative who have had growing concerns over chemically enhanced produce. Their recently launched startup company, Bonita Farms, will also have its challenges however. Choosing the most profitable market to enter will be a distinct factor of growth. A market analysis will guide product development and brand identity, as well as provide insight into how to sell products. DFS Food’s pricing and selling strategy is dependent on which market the company enters. Selling to grocery stores offers large volume sales, while selling to restaurants is largely relationship based. Gaining referrals and networking while maintaining clients from each restaurant can lead to long term success. Developing a market plan will promote product and brand awareness that will help in penetrating the market. This plan should focus on building customer relationships, optimizing public exposure, and selling techniques. We have provided low cost recommendations that we believe will build the foundation for DFS Food LLC’s success. As a wholesaler, DFS will need to continue to grow to achieve economies of scale and reach the ultimate goal of becoming a distributor. DFS Food’s competitive industry features large employee bases and advanced technology, which allows competitors to further their market reach. Therefore, it will be essential that DFS Food attracts a niche market that focuses on specialty food customers rather than tap into market already penetrated by large distributors.
107  11:15 am

**Cakes Be We: Quality Cake Systems**

Freddie Lucena, Accounting (U)
Caitlin Clark, Stefanie Davis
Donald Sciglimpaglia, Marketing

BA 404 is a small business consulting course that gives students the ability to gain consulting experience by pairing them up with a client for 14 weeks. Throughout the semester students are encouraged to research about the clients industry, in order to fully understand their client’s company and industry. Our client is Cakes Be We: Quality Cake Systems, which is located in Washington. Cakes Be We: Quality Cake Systems is a software designed to help bakeries speed up the consultation process. Mr. Chris Michaud, the founder of CBW: Quality Cake Systems, expressed his concerns about the company through several video conferences. Through the help of the Small Business Consulting Center, we as a team performed extensive research on the custom cake industry. Our research identified that Cakes Be We: Quality Cake System have several problems, which are that the company has no business plan, marketing plan, pricing structure or a developed website. With the help of Mr. Chris Michaud, the team was able to identify recommendations for the company by looking at the finances, operations, technology, and marketing efforts of the company. Our presentation goal is to provide Cakes Be We (CBW): Quality Cake Systems with an in-depth analysis of its operations, and to offer recommendations for improvements.

108  11:30 am

**Bass Company Business Consulting Project**

Levente Imbuzan, International Business (U)
Ron Weaver
Donald Sciglimpaglia, Marketing

Motivation: Our motivation for undertaking this project was both of community service and personal education. Bass Company is a local San Diego area business that had stagnated and needed help expanding their operations. We undertook this project in order to aid the company and help fix some of the issues it was having as well as to further our own personal knowledge of business operations outside of the classroom. Problem: Statement Bass Company needed help expanding its marketing efforts. It wanted to attract more clients, generate more revenue and develop a better and more effective marketing strategy. Approach: In order to assist the company our team performed a series of analyses. We analyzed the industry that Bass Company operated in, the demographics of its customers, its competitors in the San Diego area, its financial situation, and its administrative and staffing situation; finally we performed an analysis of its strengths, weaknesses, opportunities and threats. Results: Through these analyses we were able to come up with thirteen recommendations that Bass Company would be able to implement that would allow the business to increase its revenue. The recommendations we provided would be of little to no cost for the company. Conclusion: Our conclusion is that if implemented our recommendations could drastically affect Bass Company’s performance. The recommendations were specific to the company based on the results of our analyses but could be reviewed and implemented by a wide range of companies looking to grow their businesses.

109  11:45 am

**Lach Motorsports**

Caleb R Dalrymple, Management (U)
Derek Forde
Donald Sciglimpaglia, Marketing

The objective of this report is to provide the owners of Lach Motorsports (LM) with a thorough business analysis of the company; in addition to in-depth research for improving the marketing initiatives and assisting with the progression of the company’s current and potential avenues of earnings. Research and analysis of the business history, administration, financial analysis, customer analysis, marketing, competitor analysis, and situational analysis is included to present to the owners, Mr. and Mrs. LaChapelle, with a complete understanding of the company’s current situation, and market and industry trends.

The detailed analysis also identifies several critical key issues of focus, which are related to the growth and success of LM. Through our research, we have found strengths that the owners can leverage to their advantage as well as some weaknesses that should be addressed and improved. With these recommendations, we have provided a foundation for LM to implement changes and increase profitability. Our goal is that the provided recommendations are meaningful and can produce effective results and help LM grow and achieve its highest potential.

110  12:00 pm

**Lithyem Small Business Consulting**

Chris DeMaio, Management Information Systems (U)
Mauricio Morales, Yiliang Sun, Jesse Cardona
Donald Sciglimpaglia, Marketing

This report is written to provide the owner of Lithyem, Michael Trezza, a complete analysis of their company, along with an unbiased review of its current status within its industry segment, and suggestions to aid in the development and growth of the company. Research has been conducted on the company’s operations, administration, customers, marketing efforts, competitors, and this report has the potential to give the owner, Michael Trezza, a well-defined outlook of his business from an
external source. Also inscribed is a summary of key business issues that the company will need to address for optimal success. Ten recommendations have been included to help accelerate Lithyem’s expansion and increase its brand awareness within the software publishing industry.

111 12:15 pm

Business Consulting for La Costa Gourmet Final Report
Guillermo Mercado, Accounting (U)
Brooke Granata
Donald Sciglimpaglia, Marketing

In this report we will provide the owner of La Costa Gourmet (LCG), Mr. Duben, an analysis of the company and recommendations to improve the company. All recommendations will be based on increasing profitability. We will focus on constructing a key marketing strategy relating to the two online sales platforms in use, which are Amazon and the LCG website. We will conduct a financial, marketing, administrative, customer, competitor, and situation analysis. Additionally, we will outline key data relating to the history and makeup of LCG.

Session B-3
Oral Presentation: Environmental Health and Risk
Friday, March 6, 2015, 11:00 am
Location: Tehuanco

112 11:00 am

Environmental Risks Perceptions of Hispanic Community Of National City
Raquel C Perez, Anthropology (U)
Vinod Sasidharan, Hospitality and Tourism Management

This study examined levels of awareness of residents of the community of National City, California, regarding their exposure to industrial toxins. Past studies conducted in this community have failed to adequately inform the residents regarding the hazards to which they were being exposed, due to living within close vicinity to auto body shop industries and shipyards that released high amounts of toxins into the air and surrounding salt-water marshes. These exposures to industrial toxins have shown that those living close to these industrial areas exhibit a high frequency of upper respiratory complications such as asthma, emphysema, and even sever bronchitis. The importance of knowing how aware the community is regarding these exposures is crucial because it will provide insight as to how residents obtain environmental risk information relating to their communities and how this knowledge is utilized to make polices that will further advocate their current and future wellbeing. This study examined the perspectives of the Hispanic community that resides in this area, in order to gain insight regarding their awareness of environmental practices in their community. The use of a community-based research methodology allowed for a link to be established between environmental health issues and toxin exposure, thereby enabling the community to advocate policy changes to decision makers and government officials. The use of an anthropological lens in conjunction with a sustainable practice perspective is useful to help people gain more environmental awareness to protect the community in which they reside. This assessment allowed for a better understanding of the linkages between environmental risk perceptions of certain ethnic groups that have been ignored over time due to language barriers and cultural differences. Findings from the study will enable the community to progressively change polices to improve the health of its residents, and possibly receive advocacy where it is most needed.

113 11:15 am

Key Motivators to Adopt Sustainable Practices in the Food Industry
Jessica Y Sandoval, Management (U)
Martina Musteen, Management

A unique competitive advantage is fundamental to maintain a successful business. For-profit organizations are concerned with the changing demands of consumers and now that information can be more transparent to the public, costumers take a stand on the quality of their products and the way they are produced. Palm oil, one of the most used vegetable oils to produce packaged food is viewed negatively by regulatory agencies and ecological organizations that care about the environment. This paper focuses on firm’s endeavors to either reduce palm oil usage or its ability to trace it back to palm oil plantations that engage in sustainable production and are against deforestation.

The purpose of this study was to determine the primary incentives or factors that lead some food manufacturing companies to adopt sustainable practices. To illustrate the concept, I have studied successful food businesses that have already implemented sustainability programs and analyzed the outcomes of these efforts. In my paper, I discuss the steps that the food industry has taken to improve manufacturing processes and become more sustainable in various aspects.

My study reveals that firms that want to set benchmarks in their respective industries take into account the economic, social and environmental impacts that their businesses have in all of their operations. In addition, my paper identifies and describes the following key motivators to corporate ecological responsiveness: habitat preservation, animal welfare, lowering carbon footprint, reducing costs in the long term, complying with stakeholder
pressures, technological capability to change processes, improvement of the supply chain, regulatory compliance, as a mandate of top management initiatives and to maintain good public relations.

In conclusion, my research also provides recommendations and suggestions on ways that companies should implement in order to maintain sustainable practices and continuous improvement to achieve a unique competitive advantage and keep up with social demands to contribute to the preservation of the environment in a financially sustainable way.

114  11:30 am  
**California’s Vineyards and Wineries: An Evaluation of the Wine Industry’s Sustainability Standards**  
Kyla T Krause, Sustainable Tourism Management (U)  
Vinod Sasidharan, Hospitality and Tourism Management

The wine industry is constantly evolving as a result of advancements in science and technology coupled with growing environmental concerns. With wine being California’s most valuable finished agricultural product exceeding an economic impact of $45 billion, vineyards and wineries are extremely relevant to the state’s nationwide recognition. Wine is also exceptionally prominent for the tourism sector, being the second most popular ‘destination,’ behind Disneyland. Diverse and widespread, there are 6 wine regions throughout the state, each encapsulating between 3 to 5 subregions. The unprecedented growth of the industry necessitates an examination of the sustainability impacts of vineyards and wineries, and potential implications of their current practices. California offers two sustainable certifications for vineyards and wineries, i.e., California’s Sustainable Winegrowing Program (CSWP) and Sustainability In Practice (SIP). Metrics of these certifications include standards relating to vineyard management, soil and water conservation/quality, energy efficiency, social equity, and sustainable business strategy. The purpose of this study is to examine factors that influence the wine industry’s interest in participating in sustainable certifications. Specifically, this study compares the practices of two categories of California vineyards and wineries, those that were either CSWP or SIP certified, or not certified at all. Data regarding the sustainability priorities of these vineyards and wineries was collected using a survey, which was administered among owners (or chief managers) of properties in all 6 regions, with a sample that included 30 businesses that are sustainably certified and 30 that are not. The survey included 66 questions focusing on characteristics of the property and metrics that are commonly applied in the certification process. Results from the data analyses provide insights regarding correlations that might exist in a property’s geographical location and likelihood to become certified; relationship of acreage and yield of properties to certification intentions; and, motives of properties to become certified as well as barriers to certification. Results from this study will assist the wine industry to implement continuous improvement in the sustainable practices of vineyards and wineries while applying transparent metrics in evaluating their operations.

115  11:45 am  
**Measurements of Particulate Matter Air Pollution in Food Courts in San Diego's Shopping Malls**  
Ally Lu, Health Science (U)  
Dustin White, Kathryn Paras  
Zohir Chowdhury, Graduate School of Public Health

Particulate matter (PM) is a complex mixture of extremely small particles and liquid droplets that can be broken down into a number of components including acids, organic chemicals, metals, and soil or dust particles (EPA, 2014). Numerous scientific studies have linked particulate exposure to a variety of health problems such as premature death in people with heart or lung disease, aggravated asthma, and increased respiratory symptoms such as irritation of the airways or difficulty breathing (EPA, 2014). New research was conducted to better identify the extent of particulate matter exposure that consumers may experience near food court cooking areas. This study measured and compared PM 1.0, PM 2.5, and Black Carbon air pollution concentrations from cooking exhaust in Plaza Bonita, Parkway Plaza, and Grossmont Center shopping mall food courts.

Sampling was conducted on a Wednesday, a Friday, and a Sunday weekday to investigate whether the particulate matter concentration level changed with variations in shopping activity commonly associated with each specific day of the week. Furthermore, the measured data will be compared to the U.S. Environmental Protection Agency (EPA) air quality standard that was previously established to protected human health. Besides the food court, data was also collected in an adjacent parking structure near each mall, and inside the mall to estimate an overall exposure that a shopper could experience while visiting each mall. In this study, four different sampling instruments were used. A TSI Dusttrak measured the mass concentration of PM 2.5, a TSI P-Trak measured the PM 1.0 particulate count, a HOBO sensor measured the temperature and relative humidity, and a MicroAethalometor measured the Black Carbon concentration. Black Carbon has carcinogenic properties and is formed through the incomplete combustion of fossil fuels, bio fuel, and biomass. This study found that the greatest PM 2.5 concentration observed was 91.31 μg/m³, and was recorded on Friday June 13th in the Plaza Bonita food court. This study also found that the greatest PM 1.0 particle count detected was 68,602 pt/cm³, and was found on Friday June 20th in Parkway Plaza food court. These values are relatively high and worth further investigation.
Air Pollutant Concentrations of Particulate Matter 2.5 & 1 and Noise Levels from Leaf Blowing on San Diego State University Campus.

Katherine Ann Schmarje, Health Science (U)
Salem Bortcosh
Zohir Chowdhury, Graduate School of Public Health

Atmospheric Particulate Matter, or PM, is a mixture of microscopic solid or liquid matter suspended in the Earth’s atmosphere. PM size is directly linked to its potential for causing health problems such as respiratory and cardiovascular disease. The decibel (dB), commonly used to measure sound, is a logarithmic unit used to express the ratio between two values of a physical quantity, often power or intensity. Elevated dB levels may lead to hearing loss in those humans directly exposed. The purpose of this study is to determine if leaf blowing will increase PM2.5, PM1, and dB levels in the immediate area, and also to compare increased levels to current health standards.

This study utilized: one TSI DusTrak DRX Aerosol Monitor which measures PM2.5 and PM1 concentration, one TSI Condensation Particle Counter (CPC) which measures PM2.5 count, one Onset HOBO logger which measures temperature and relative humidity, and the dB 10th application for smartphone which measures dB levels. In order to measure PM and dB levels, instruments were set up at a scheduled time on multiple days when leaf blowing would occur as well as days leaf blowing did not occur for control data. All sampling was conducted at Hardy Quad on San Diego State University (SDSU) campus because of high foot traffic from students and faculty.

Based on three sample days, data displayed that PM2.5, PM1, and dB levels increased from leaf blowing when compared with our control day. Our data revealed that leaf blowing may cause levels as high as 380,000 count of PM1 compared to the control day which only reached levels of approximately 23,000 count of PM1. In regards to PM2.5 mass concentration, levels were as high as 916 μg/m³ in relation to the control day, which only reached approximate levels of 23 μg/m³. Because PM2.5, PM1, and dB level health standards are specified by CARB, EPA, and OSHA as a threshold over a period of time, statistical significance tests will determine if these short term elevated levels from leaf blowing have the potential to cause adverse health effects in exposed humans.

Wintertime Characteristics of the Lung-Deposited Surface Area of Nanoparticles, PM2.5 Concentration, and Carbonaceous Material in Mumbai, India

Abigail Sophia Crotz, Public Health (M)
Zohir Chowdhury, Graduate School of Public Health

Excessive exposure to air pollution in India has had adverse health effects leading to numerous incidents of pulmonary disease, inflammation, and many more related conditions. For this project, samples were taken of fine particles that have an aerodynamic equivalent diameter of 2.5μm (PM2.5); lung-deposited surface area of nanoparticles corresponding to the alveolar region; and organic carbon (OC), elemental carbon (EC), and black carbon (BC). Sampling was conducted in the city of Mumbai, India in the state of Maharashtra within the commercial district of Worli. This site, among many in this city, has generated high PM2.5 readings in the past along with high levels of OC, EC, and BC—components of PM2.5 that are unregulated. Consequently, lung-deposited surface area of nanoparticles, which are a byproduct of combustion, is ubiquitous yet no guidelines regulating its exposure to the general public exist. To analyze exposure, daily 24-hour samples were taken for a period of 2-weeks during the dry winter season on a rooftop location. The concentration of PM2.5 was analyzed using the DustTrak and its mass and OCEC concentration was analyzed with a MiniVol. The lung-deposited surface area of nanoparticles were analyzed using the Nanoparticle Surface Area Monitor (NSAM), which was set to alveolar response settings corresponding to lung deposition criteria. And lastly, the BC component was analyzed using a Microaethelometer, which provided real-time black carbon mass concentration values. With the average 24-hour mean of PM2.5 exposure being 163μg/m³, concentration greatly exceeded World Health Organization (WHO) regulatory standards for PM2.5 concentration of 25μg/m³ and India’s standard of 60μg/m³ during a 24-hour period. Also, PM2.5 components ranged from 3.4–11.4μg/m³ for EC and 2.9–37.3μg/m³ for OC, respectively. Furthermore, the sample average for alveolar deposition surface area of nanoparticles was 153μm²/cm³, respectively, showing deposition curve elevation during peek times corresponding to vehicular traffic. The presence of black carbon concentration was measured against nanoparticle deposition, averaging at 6μg/m³, respectively, correlating with deposition peaks. Essentially, this investigation aimed to contribute to the current knowledge of pollutant characteristics of PM2.5; BC concentration; and lastly, nanoparticle lung-deposited surface area, which has not been analyzed in this region.
**Session B-4**

**Oral Presentation:** Astronomy

**Friday, March 6, 2015, 11:00 am**

**Location:** Aztlan

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**118 11:00 am**

**Analysis of Kepler Observations of Exoplanet HAT-P-7b**

Susan Kurth, Astronomy (M)

William Welsh, Astronomy

NASA's Kepler mission produced thousands of observations of exoplanets, many of which were of close-in gaseous planets called "hot Jupiters." Here I present an analysis of the Kepler observations of the exoplanet HAT-P-7b. HAT-P-7b has an orbital period of 2.2047354 days, a mass of 1.86 Jupiter-masses, and a radius of 1.526 Jupiter-radii. In addition, the planet shows evidence for a very misaligned or possibly polar orbit. Previous attempts to model the data have generally been excellent except for a residual “bump” just prior to the minimum light of the transit. In order to obtain higher precision, I am using a new method to calibrate the data. The program ELC is used to model the data and takes into account gravity darkening, which may explain the anomaly.

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**119 11:15 am**

**Particle Compositions of Pulsars**

Richard, Jr D Mellinger, Physics (M)

Fridolin Weber, Physics

Neutron stars are compact astrophysical objects with masses typically twice that of the sun crammed into a ball the size of a large city (radius of about 10 km). Due to conservation of momentum from the progenitor star, they are often spinning with very high frequencies (sometimes faster than 700 Hz). When neutron stars spin, we call them pulsars. Over time pulsars lose energy due to magnetic braking and slow down: a process usually referred to as spin down. A decrease in frequency causes a decrease in centrifugal force on the matter that makes up the pulsar, allowing it to settle closer to the center; this further increases the densities found within the star. Higher densities lead to higher energy collisions which, in the cases of high enough energies, can lead to different particle make ups. It should not be surprising, then, that as pulsars spin down the particle composition of the interior of the star can be subject to change. Given a nuclear equation of state (the relationship between pressure and density for nuclear material), we have used numerical techniques to determine the particle composition at varying radii within the star throughout the spin down process.

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**120 11:30 am**

**A Study of Optical Transients in M31 from the Research-Based Science Education Program**

Stephanie Lauber, Astronomy (M)

Allen Shafter, Astronomy

Since 1995 the Kitt Peak National Observatory WIYN 0.9-m telescope has been used to monitor M31 for novae as part of the Research-Based Science Education Program (RBSE). The resulting images, which typically cover approximately the inner 20 arc min of M31, are taken through a broad-band H-alpha filter to isolate the strong H-alpha emission lines characteristic of novae shortly after eruption. We are in the process of reanalyzing the entire RBSE data set covering the period between September 1995 and August 2014 in order to produce an up-to-date list of novae from this survey. Here, we present the spacial and population distribution of all novae outbursts contained within the data set. Most objects are known nova events appearing in the Pietsch catalog for Optical Novae and Candidates in M31 as well as 5 new candidates found in the reanalysis.

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**121 11:45 am**

**Detailed Modeling of Triple Stars Observed by the Kepler Space Telescope**

Joanna K Gore, Astronomy (M)

Jerome Orosz, Astronomy

Since the time of William Herschel, it has been known that most stars in the sky are not single: they often have stellar companions and can exist in double, triple, or higher order configurations. Binary star systems are those in which two stars orbit a common center of mass. These systems are valued scientifically because they allow for the measurement of fundamental stellar properties such as mass and radius, and a great deal of astronomical literature has been devoted to binary star studies.

NASA's Kepler Space Telescope has discovered over 2000 eclipsing binary stars in its field of view. Further investigation has determined that many of these eclipsing binaries are in fact triple star systems. The dynamical modeling of triple star systems is complicated by the fact that unlike the two-body problem, the three-body problem has no general analytic solution. However, in certain cases, numerical modeling of three-body systems has allowed the determination of fundamental stellar parameters with an even greater precision than is usually possible with binary systems.

Five triple-star systems observed by Kepler were selected for detailed dynamical modeling. Modeling of the chosen systems lead to the discovery that two of the systems did not have three body solutions. Instead, a model with four bodies was required,
making them quadruple systems. We will give a brief overview of our results to date, and discuss the implications of our results. In particular, this discovery may indicate that quadruple star systems occur with greater frequency than determined by previously conducted surveys. As Kepler is particularly sensitive to star systems that eclipse, there may be many more of these compact quadruple systems that do not eclipse and remain undiscovered.

122 12:00 pm
The Radius of the Super-Earth Planet Kepler-9d
Justin Stevick, Astronomy (M)
William Welsh, Astronomy

Launched in 2009, NASA’s Kepler telescope is designed to search for planetary systems around stars other than the Sun. Planetary transits are detected using extreme precision photometry. The depths of these transits allow astronomers to measure radii of the transiting planets. A particularly interesting goal is to find planets similar in size to the Earth. Kepler-9 is a multi-planet system containing three planets, all orbiting a Sun-like star within the Sun-Mercury distance: two Saturn-size planets and a super-Earth-size planet, Kepler-9d. A super-Earth is defined as a planet with a radius between 1.25 and 2.0 Earth radii. The radius of Kepler-9d is somewhat poorly determined: the discovery paper by Holman et al. (2010) reported a radius of 1.5 Earth radii, while follow-up papers reported 1.64 Earth radii (Torres et al., 2010) and 2.0 Earth radii (Dreizler and Ofir, 2014). This makes Kepler-9d one of the smallest known exoplanets around a Sun-like star. Our goal is to more accurately determine the planet’s size as well as other system parameters. Preliminary results give a radius of 1.45 Earth radii and a period of 1.59 days.

123 12:15 pm
Exotic Matter in Neutron Stars
William M Spinella, Computational Science (D)
Fridolin Weber, Physics

Neutrons and protons, the particles we commonly think of as the building blocks of matter, are themselves actually made up of particles called quarks. These quarks are so strongly confined within neutrons and protons that it is nearly impossible to free them from this confinement. Particle accelerators have only recently become powerful enough to potentially free quarks, and then only for an unbelievably small amount of time. However, a form of matter that consists of unconfined quarks may already exist naturally in stellar objects that we refer to as neutron stars.

A neutron star is the superdense remnant of a very large star that has died in an explosion called a supernova. As you move inward from a neutron star’s crust to its core the density increases drastically, blurring the boundaries between particles like protons and neutrons, and decreasing the strength of the force that binds quarks together. Eventually, the force confining quarks may become so small that they might be freed from their bondage, leading to the formation of a new phase of matter called quark matter.

In our work we computationally model the composition of neutron stars assuming the presence of a host of common and exotic particles, including a phase transition to quark matter at high densities, and compare our results for various neutron star properties to observations. We find that the existence of quark matter is supported by recent observations of high-mass neutron stars. Finally, our ongoing work focuses on determining the effect the presence of quark matter has on the cooling of neutron stars, and further improving our computational models of neutron star matter.

Session B-5
Oral Presentation: Negotiating Relationships
Friday, March 6, 2015, 11:00 am
Location: Metztli

124 11:00 am
Parent-Child Acculturation Gaps and Co-Endorsement of Child Internalizing and Externalizing Problems
Duyen Trang, Psychology (U)
May Yeh, Psychology

Due to a variety of factors, parents and their children differ in their levels of acculturation to mainstream American culture. For example, immigrant parents and their children may acculturate at different rates, which may in turn lead to parent-child disagreement in perceptions of child mental health problems. This preliminary study aimed to investigate the associations between acculturation variables (i.e., parent acculturation level, child acculturation level, parent-child acculturation differences) and co-endorsement of child internalizing and externalizing mental health problems. Data were examined from 279 parent-youth dyads. Families were self-identified as African American,
Participants who had endorsed vaginal sex, regressions revealed that getting tested and an increase in commitment significantly predicted increases in STI communication. To explore the influence of trust and commitment on STI communication we analyzed data from the full sample (n = 272). In this model, increases in trust significantly predicted increases in communication, controlling for commitment and length of relationship. Results indicate the importance of both trust and commitment in terms of communication between partners, possibly identifying a difference between participants who have and have not had vaginal sex, and the dependence between STI communication and testing for overall safer sex practices.

126 11:30 am
Dinner Dates: The Nonverbal Performance of Romantic Couples

Brianna Quintero, Communication (M)
Sandra Wang
Kurt Lindemann, Communication

Dinner dates are a common ritualistic performance among members operating within U.S. cultural scripts. Research has established that ritual and dating scripts presented are based on our cultural norms. These cultural scripts include public displays of nonverbal intimacy and tie signs. Over time, gender roles and new technology have changed, altering cultural dating scripts. In an effort to capture the modern dinner date ritual, researchers utilized an observational approach to quantitatively measure eye contact, touch, attire and presence of mobile phone devices among 38 dining couples. Results found differences among genders, with women displaying higher rates of dressy attire than men. Also, an overall negative correlation of presence of technology and eye contact was found. Possible reasons for gender differences and decreasing levels of intimacy due to technology are discussed.

127 11:45 am
Shaken Not Stirred, Navigating Gendered Interactions in a Nightclub

Kevin N Shufford, Communication (M)
Kyle Bowe, Jamie McDowell
Patricia Geist-Martin, Communication

Participation in the nightclub scene often involves performing identities to gain entrance, mingle, flirt, and resist unwanted attention. In many ways, the organizational structure of nightclubs encourages and exploits both hyper-masculine and hyper-feminine behavior. Through semi-structured interviews, this research interrogates the manner in which individuals situate and construct their identities within the constraints
of the organizational structure of nightclubs. The research revealed that males and females experience the same types of gender discrimination within the nightclub scene, but differ in the strategies for performing identity and the magnitude of discrimination. Crafted in an engaging, conversational narrative mirroring the trajectory of a typical night out, our results reveal the reflections of participants in the nightclub scene on the gender discriminations they encounter and the strategies they use to move around and through the different scenes and the expectations performed by staff, management, and patrons.

128  12:00 pm

**Intimate Partner Violence and Romantic Relationship Satisfaction: A Dyadic Approach**

Julia F Hammett, Psychology (M)
Emilio Ulloa, Psychology

This study examined the association between intimate partner violence (IPV) victimization and romantic relationship satisfaction in a sample of 100 Caucasian and Mexican American newlywed couples. IPV, defined as the physical, psychological, and/or sexual abuse of an intimate partner, is a prevalent concern for couples in the United States. The negative association between IPV and relationship satisfaction has been widely examined in the academic literature. However, the inter-relatedness of the effects individuals’ behaviors may have on themselves (actor effects) as well as on their partners (partner effects) remains unclear. Thus, the purpose of the present study was to identify individual and relationship-level associations between IPV victimization and relationship satisfaction. Data were collected during the first and during the third year of marriage. In order to statistically account for the effects that a partner has on an individual’s outcome, the Actor-Partner Interdependence Model (APIM) was used. In the overall sample, wives’ satisfaction was impacted by their own as well as by their partners’ IPV victimization. While wives’ own IPV victimization was associated with wives’ decreased satisfaction, their husbands’ IPV victimization was associated with wives’ increased satisfaction. Among Mexican Americans, wives’ IPV victimization was related to husbands’ decreased satisfaction, whereas among Caucasian Americans, wives’ IPV victimization was related to husbands’ increased satisfaction. These results elucidate the role that gender and ethnicity may play in romantic relationships marked by aggression. More importantly, knowing about the mutual influence that violent partners have on one another and taking into account these effects when developing treatment plans might help researchers and practitioners to come up with the most effective interventions possible. Thus, the findings of the present study might be useful for the development of individual as well as couple-based interventions for IPV and for the development of differing treatment plans for male versus female victims of IPV as well as for Caucasian versus Mexican Americans.

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129  11:00 am

**Oral Presentation: Biological Sciences**

**Friday, March 6, 2015, 11:00 am**

**Location: Templo Mayor**

**Identification of Transcription Factors Involved in Motor Neuron Differentiation and Function in the Planarian Schmidtea mediterranea**

Carlo G Quintanilla, Biology (U)
Ricardo Zayas, Biology

Motor neuron diseases such as amyotrophic lateral sclerosis are rare and debilitating neurological disorders. Much effort has been devoted to exploring regenerative medical treatments for these diseases and understanding molecular factors that regulate the formation of new motor neurons. A subset of homeodomain (HD) transcription factors is known to specifically regulate motor neuron differentiation and function. For instance, *lim3*, *nkx-6.1* and *hb9* are expressed in distinct motor neuron populations during early development and are required for proper muscle targeting in projecting motor neurons in mice and flies. However, the role of these HD transcription factors in regenerating motor neuron populations has yet to be investigated. The freshwater planarian *Schmidtea mediterranea* is an exceptional model organism to study the regeneration of the nervous system due to its ability to regenerate whole organ systems de novo from a widespread population of stem cells. Furthermore, planarians have a molecularly complex nervous system with distinct cell types also found in humans such as GABAergic and dopaminergic neurons. We are investigating the roles of *lim3*, *hb9* and *nkx-6.1* during regeneration in *S. mediterranea*. To identify planarian
homologs of these genes we performed tBLASTn searches against published planarian transcriptomes using protein sequences from several vertebrate and invertebrate organisms. Preliminary in situ hybridization to these genes revealed expression in the regenerative blastema, a structure formed at the sites of amputation that gives rise to new tissues. In intact animals, *nkx-6.1* was expressed in the nervous system and *lim3* was detected in a punctate expression throughout the animal. These observations suggest potential roles in both differentiated tissues as well in early progenitor populations. We are currently conducting co-labeling experiments with known molecular markers to determine which cell types express these genes during the regeneration process. Additionally, we plan to inhibit their function *in vivo* via RNA interference to analyze the function of HD transcription factors in motor neuron regeneration.

**130**  **11:15 am**  
*Identification of a Group B Streptococcus Bacterial Factor that Promotes Tight Junction Disruption in Brain Endothelium*  
Andres Bermudez, Biology (U)  
Kelly Doran, Biology  

Group B *Streptococcus* (GBS) is a Gram-positive, encapsulated bacterium and a primary cause of meningitis in the human newborn. Meningitis occurs when bacteria are able to interact with, and penetrate the blood brain barrier (BBB) which is a single layer of specialized brain microvascular endothelial cells (BMEC). The cells that comprise the BBB create a barrier by the expression of tight-junction protein complexes that bind the endothelial cells together. Previous work in our laboratory has demonstrated a loss of the BMEC tight junction components Occludin, Claudin-5, and ZO-1 in response to GBS infection. We have further identified a host transcriptional regulator induced upon GBS infection, Snail-1, that is both necessary and sufficient to promote a disruption of tight junctions. We hypothesize that GBS possesses virulence factors responsible for activating Snail-1 leading to BBB disturbance. Experiments utilizing heat killed or formalin fixed bacteria to assess Snail-1 activation by GBS demonstrate a capability of formalin fixed bacteria to stimulate Snail-1 transcription to levels similar to live GBS, whereas heat killed bacteria were unable to upregulate Snail1. Furthermore, we have observed that isolated bacterial cell wall extract is sufficient to induce Snail-1 transcription, suggesting that induction may be due to a surface-expressed bacterial factor. Consistent with these results, treatment of BMEC with a Toll-like receptor (TLR)-2 agonist results in a dose-dependent incitement of Snail-1 transcript. Host TLR-2 is known to recognize cell-wall components such as peptidoglycan, lipoteichoic acid (LTA) and lipoprotein from Gram-positive bacteria. We plan to utilize size exclusion chromatography on the GBS cell wall extract to determine the exact cell wall component responsible for Snail-1 induction. Future studies aim to continue this analysis and determine the TLR2 mediated signaling pathways that lead to activation of Snail-1 and subsequent disruption of tight junction components. Further examination of the mechanisms by which GBS promotes BBB disruption will provide a better understanding of the pathogenesis of GBS meningitis, and the possible development of therapeutic interventions.

**131**  **11:30 am**  
*Keep your Sox on: SoxB1b is required for regeneration and maintenance of the nervous system in planarians*  
Katrina L Cable, Biology (U)  
Ricardo Zayas, Biology  

*SoxB1* transcription factor genes play important roles in nervous system development as key players in the decision of neural stem cells to differentiate into neurons. In mice, knockout of *SoxB1* member *SoxB1* causes epileptic seizures and increased mortality due to a loss of certain neural populations. Additionally, human genome-wide association studies show a correlation between *SoxB1* mutations and epilepsy. However, the downstream targets of *SoxB1* in the developing or post-embryonic central nervous system (CNS) are largely unknown. The planarian *Schmidtea mediterranea* is an excellent model organism in which to study the role of transcription factors in neural regeneration. They have a molecularly complex CNS, which they are able to regenerate following injury or amputation due to a large population of adult pluripotent stem cells. We identified two *SoxB1* genes by performing tBLASTn searches to the *S. mediterranea* genome and transcriptomes using *SoxB1* protein sequences from multiple species. We performed whole mount *in situ* hybridizations and determined that one of these genes, *SoxB1b*, was expressed in known sensory neuron-rich areas and in stem cell progeny. When we inhibited function of *SoxB1b* by RNA interference (RNAi), both intact and regenerating planarians displayed seizure-like behaviors and had reduced brain size. We hypothesized that *SoxB1b* controls transcription of genes required for differentiation of neurons involved in sensory and neural functions. To test our hypothesis, we isolated samples from control and *SoxB1b(RNAi)* planarians and performed mRNA sequencing. We identified 1,493 up- and 1,602 down-regulated genes in *SoxB1b(RNAi)* planarians. Gene Ontology analysis of this dataset revealed
a down-regulation of genes essential for nervous system function, such as ion channels and neurotransmitter receptors. We are currently validating candidate target genes of SoxB1b by comparing their expression in SoxB1b(RNAi) versus control animals and investigating their role in CNS regeneration and planarian seizure-like behaviors by RNAi. This research should reveal the genetic targets of SoxB1b that cause seizure-like activities and help to establish planarians as a model for studying the molecular basis underlying seizure disorders in humans.

132  11:45 am

**Dynamic visualization of gene duplications through microfluidic microscopy in Salmonella enterica serovar Typhimurium LT2**

Polly Parks, Biology (M)
Anca Segall, Biology

The evolution of new genes, creation of selective advantages and resistances to chemotherapies commonly occur through reorganizations or doubling of large DNA regions known as gene duplications. Gene duplications are a highly conserved mechanism found across many species resulting through DNA repair processes. *Salmonella enterica* serovar Typhimurium LT2 will be used to study gene duplication rates offering several advantages, including a short generation time, well-studied genome and low maintenance cost. This study uses a novel approach to investigate gene duplication through the Mother Machine, a microfluidics device, which dynamically monitors duplication events in vivo in individual *Salmonella enterica* LT2 cells. To view gene duplications, we used a DNA binding protein, ParB, fused to Green Fluorescent Protein (GFP), which binds to a specific DNA sequence, parS, inserted into the chromosome. We aim to assess the basal rate of gene duplications based on fluorescence variation in the parental strain with a single copy of parS. For comparisons, another parental strain with two copies of parS will be created. We also aim to compare *Salmonella enterica* LT2 strains with it’s four characteristic prophages (Gifsy-1, Gifsy-2, Fels-1 and Fels-2) knocked out versus the isogenic parental strain harboring the four prophages, to investigate the effect prophages may have on gene duplication rates. Then we aim to create DNA recombination related mutants in the parental strains to determine the effect of those mutated proteins on gene duplication frequency. Conclusions of the effects on gene duplications will be visualized and quantified through this novel single-cell fluorescent microscopy approach and related to the rates determined by previous population studies.

133  12:00 pm

**Comprehensive Survey of Curated Prophage Genomes for the Characterization of Prophage Composition and Insertion Behavior**

Hans Kang, Cell Molecular Biology (M)
Robert Edwards, Computer Science

With recent advancements in DNA sequencing technology, there has been a rapid growth in the number of available sequenced bacterial genomes. Embedded in these genomes is a multitude of foreign DNA, including transposons, insertion elements, as well as bacteriophage DNA known as prophage. While there are fewer fully sequenced phage genomes, these newly available bacterial genomes highlight phage genomics int he context of temperate phages. We present a comprehensive survey of 11,941 bacterial genomes, which were scanned for prophage regions using PhiSpy, a weighted algorithm used to identify prophage regions using a variety of characteristics of phage. A total of 67,022 prophages were identified, with a mean length of 23,351 bp. The data is being used to develop novel methods of identifying prophage insertions into tRNA and bacterial genes to reveal that phages do not preferentially insert into tRNA sites as previously believed. A phage gene heat-map demonstrates the favored positions of hallmark phage genes in relation to the position of the integrase gene. Altogether these findings provide a new perspective of the mysterious nature of phage behavior—which has significant implications in understanding trends in microbial ecology as well as bacterial gains of function such as antimicrobial resistance.

134  12:15 pm

**Defects in myosin thick filament assembly and instability of Drosophila indirect flight muscles as a mechanism for myosin storage myopathy**

Rick Tham, Molecular Biology (M)
Sanford Bernstein, Biology

Myosin storage myopathy (MSM) is a rare congenital myopathy characterized by progressive muscle weakness and reduced muscle tone; it has been linked to cardiomyopathies. MSM is caused by either point mutations or a single amino acid deletion in the MYH7 gene, which encodes for both slow type I skeletal and β-cardiac myosin heavy chain. The histopathological hallmark of this disease is the presence of subsarcolemmal hyaline-like inclusion bodies containing aggregated myosin storage material. Myosin is a contractile protein that forms thick filaments of the sarcomere, and therefore vital to muscle structure and function. Studies of myosin fragments in *E. coli* expressing human MSM mutations have reported that defects in assembly and stability can cause MSM, however the molecular mechanism remains
unclear. Furthermore, this disease has not been studied in a more biologically relevant animal model. We are utilizing Drosophila melanogaster as a model to investigate the molecular basis of MSM. Mutations in MSM alter the electrostatic and hydrophobic properties of the myosin distal rod structure, and are localized around a critical region for thick filament formation called the Assembly Competence Domain. This suggests that structural and functional defects of skeletal muscles observed in MSM are due to improper thick filament assembly, as well as reductions in thick filament stability. Assaying purified myosin from Drosophila indirect flight muscles under low salt and proteolytic conditions will assess filament-forming ability and stability between MSM mutants and wild-type flies. Transmission electron microscopy shows that our in vitro thick filament assembly assay is consistently forming thick filaments. Pelleting assays determine that mutant myosin form thick filaments at a slower rate and exhibit a lower affinity towards each other compared to wild-type. Proteolysis studies are being conducted to assay for thick filament stability. Altogether, successful completion of these molecular assays will help elucidate the underlying mechanism of this debilitating disease.

**Session B-7**

**Oral Presentation:** Neurology & Modeling  
**Friday, March 6, 2015, 11:00 am**  
**Location:** Visionary Suite

135  11:00 am  
**Verbal Learning and Memory Changes During Premanifest Stages of Huntington’s Disease**  
Charles C Moreno, Psychology (U)  
Paul Gilbet, Psychology

Learning and memory ability was assessed using the California Verbal Learning Test - Second Edition (CVLT-II) in pre-manifest gene carriers for Huntington’s disease (Pre-HD) and a demographically similar healthy comparison group. The CVLT-II has been shown to be a valid, standardized measure of verbal learning and memory involving recall and recognition tests over immediate and delayed memory conditions. The CVLT-II also assesses strategic aspects involved with remembering verbal material such as semantic and serial clustering. The Pre-HD group was significantly impaired (p < .001) relative to the control group on the following measures: immediate recall, short delayed free recall, short delayed cued recall, long delayed free recall, long delayed cued recall, and recognition discrimination. Although there were no differences between semantic and serial clustering, the Pre-HD group showed significantly more intrusions (p < .001). While pre-manifest gene carriers for HD have been shown to perform similarly to controls on most standardized neuropsychological tests, the present findings demonstrate that the CVLT-II is useful in detecting changes in learning and memory abilities during the pre-manifest stage of HD.

136  11:15 am  
**Age-associated changes in functional networks in Autism Spectrum Disorder**  
Nicholas A Ray, ISD3 (U)  
Inna Fishman, Psychology

A recent review (Uddin et. al. 2013) of intrinsic functional connectivity (iFC) studies in ASD suggests that there might be an age-related shift from increased connectivity in children with ASD to reduced connectivity in adolescents and young adults with the disorder. This study aims to empirically test this notion in a large sample of individuals with ASD and typically developing (TD) controls, utilizing the Autism Brain Imaging Data Exchange (ABIDE) dataset. Utilizing a low-motion subset of the ABIDE resting-state fMRI data (94 individuals with ASD and 94 TD participants; ages 7–34 years old; head motion < 0.2mm), within-network iFC for three commonly observed networks (Default Mode, Mirror Neuron, and Language) was assessed. Following standard preprocessing procedures (slice-time and motion correction; co-registration and standardization to the MNI space; application of the bandpass filter and spatial smoothing; removal of nuisance regressors including motion, white matter, ventricular and global signals, and their derivatives), canonical regions of interest (ROIs) for each network were identified based on previous reports. Using average time series extracted from each ROI, whole-brain correlation maps were created, cluster corrected (p < 1\(^{-7}\)) and Fisher-transformed to z’. The average z’ score was determined for all significant clusters, and was then averaged within-network to determine functional connectivity. The relationship between these scores and age was examined within each group with linear and polynomial (quadratic) models, to determine the change in connectivity across age.
A significant effect of age on iFC was not found in any of the three networks. Although age-related slopes varied between ASD and TD groups for each network, none of these interaction effects approached significance. Our findings suggest that effects of individual variability (and other sources of variability intrinsic to multisite datasets) may dominate more subtle age-related changes in within-network iFC between ages 7 and 34 years. Specifically, no evidence supporting a crossover from overconnectivity in childhood to underconnectivity in adolescence or adulthood could be detected in ASD.

137 11:30 am
**Diagnostic Prediction in Autism using Conditional Random Forest of Resting State Functional Connectivity**
Afrooz Jahedi, Computational Science (M)  
Collen Chen  
Ralph-Axel Müller, Psychology

Background: Although autism spectrum disorder (ASD) is considered a neurological disorder, there are no established brain biomarkers. Random forests have been successfully applied to reveal potentially complex patterns of biomarkers. Random forests are widely used because they can cope with problems of small sample size and large numbers of predictor variables, complex interactions, and even highly correlated predictor variables. However, variable importance measures show a bias towards correlated predictor variables which can affect the interpretability of forests. In the presence of high correlation of the functional connectivity MRI data, we used Conditional Random Forests (CRF) to minimize bias in the variable selection procedure.

Methods: We used resting state fMRI data from 252 low-motion participants (126 ASD, 126 TD) from the Autism Brain Imaging Data Exchange (ABIDE), matched on age, nonverbal IQ, and head motion. We chose 220 regions of interest (ROIs) from Power et al. (2011), using 10mm spheres to extract averaged time series from each. For each ROI pair, a feature was defined as functional connectivity (time series correlation; 24090 total features). We first used CRF as a technique for dimensional reduction for selecting 100 top features. Then, used it again for diagnostic prediction and random forest interpretation. Conditional Random forest uses recursive binary partitioning that overcomes the bias due to highly correlated functional connectivity predictor variables. The prominence of sensorimotor, salience, attention, default mode, and subcortical ROIs is in line with previous findings from the broader ASD literature.

138 11:45 am
**Variation in local connectivity patterns across low-motion subsamples in autism: A resting state fMRI study of regional homogeneity**
Sangeeta Nair, Psychology (M)  
Ralph Axel Mueller, Psychology

Although atypically increased local connectivity in autism spectrum disorder (ASD) – in the context of long-distance underconnectivity – has been hypothesized, firm evidence remains unavailable. Two early regional homogeneity (ReHo) studies reported divergent results (Paakki et al., 2010; Shukla et al., 2010), and recent findings by Dimartino et al. (2013) differed from those reported by Maximo et al. (2013). Using a data-driven approach, we examined local connectivity in subsets of data from ABIDE and in-house data with maximal data quality (and minimal motion) in order to investigate these inconsistencies.

Resting state fMRI data from a low-motion subsample of the Autism Brain Imaging Data Exchange (ABIDE) were preprocessed following standard procedures. Nuisance regressors included six rigid-body motion parameters, signal from white matter and ventricles, and derivatives. Analyses were also performed with global signal regression (GSR). Time points with motion > .25mm (and their neighbors) were censored, and participants with > 150 time points remaining were selected. For the local connectivity analysis, individual voxel-wise ReHo maps were obtained using AFNI’s 3dReHo command and were standardized to KCC – ReHo z-values (non-standardized analyses were also run). Four separate analyses (separated by acquisition site) were run with low-motion subsamples from ABIDE, and participants were matched on head motion (p = 0.97), age, and nonverbal IQ.

Results: With relatively large subsamples, between-group local connectivity analyses yielded differences across sites. Consistent effects across ≥ 2 sites or analyses include: underconnectivity in posterior cingulate cortex (SDSU, ABIDE), underconnectivity in medial prefrontal cortex (NYU, ABIDE), underconnectivity in pericentral and inferior premotor regions (SDSU & NYU, ABIDE), and overconnectivity in the visual cortex (SDSU, NYU). Local overconnectivity in striate and extrastriate visual cortices (previously reported by Maximo et al., 2013 and Keown et al., 2013) was seen in SDSU and NYU samples, despite differences in other regional findings between these two sites. Non-replications
across analyses may reflect trade-offs between sample size and variability due to inclusion of data from multiple sites. For example, extensive local underconnectivity in bilateral pericentral detected in large combined ABIDE dataset may have remained undetected in other analyses due to reduced power (note small cluster in left premotor cortex in combined SDSU-NYU analysis).

Session B-8
Oral Presentation: Tinker Foundation Field Research Grant Fellows (Latin American Studies)
Friday, March 6, 2015, 11:00 am
Location: Legacy Suite

139 11:00 am
Assessing Vulnerability: A synthesis of climate change impacts to agriculture
Laurel Howard, Geography (M)
Kathleen Farley, Geography

Over the next century, experts project a 2–5°C rise in global temperatures—a change that will result in significant and lasting impacts to agriculture. The impacts of global warming will affect more than commercial agriculture; in fact, some argue that impacts will be most acute in regions where a majority of the population survives through subsistence farming (World Bank, 2012). This shift will have direct impacts on those who rely on agriculture for their livelihoods, such as fieldworkers and farmers, but will moreover impact the entire planet with effects to global food production and consumption. Because these impacts are urgent and wide-reaching, understanding and anticipating how agriculture will be affected by climate change is crucial for global adaptation efforts. Through a synthesis of 52 case studies conducted since 2001, this research examines patterns in agricultural vulnerability to climate change around the world. Vulnerability, a combination of exposures, sensitivities and adaptive capacity, is measured in myriad ways. A synthesis approach allows for the identification of common factors in sensitivity and adaptive capacity while respecting the heterogeneity of pressures and the diversity of studies. Despite a universal recognition that vulnerability is a combination of biophysical and socioeconomic factors, biophysical factors constitute the bulk of those identified in the case studies. In two thirds of the studies, variable precipitation and drought conditions are cited, and over half the studies cite temperature increase. Frequently cited factors that impact adaptive capacity include access to financial resources, credit and social networks. Important adaptive techniques to combat climate change impacts to agriculture are crop diversification, irrigation, and shifts to the timing of planting and harvesting. However, while these practices and many others identified in the case studies address the biophysical climate change impacts to agriculture, few adaptive measures address the socioeconomic sensitivities that also comprise vulnerability. These findings suggest that addressing climate change vulnerability in policy and scholarship should go beyond the adaptive measures to improve farming systems and consider ways to expand access to financial, technical and social resources.

140 11:15 am
Translational Gaps: Informing school wellness policies in the US Border Region
Benjamin Aceves, Public Health and Latin American Studies (M)
Christina Holub, Public Health

The purpose of this study is to identify specific barriers and strategies to implementing evidence-based culturally component and environmentally effective changes to school wellness policies, specifically aimed at preventing Latino childhood obesity in US border region. Data has been collected by interviewing researchers, policymakers, and school staff on including cultural competent themes into these policies in both the US and Mexico. The Tinker Foundation provided the funding to connect with researchers in Mexico, in order to later interview and assess how cultural competency has been recommended to policy makers in the country.

141 11:30 am
The Estimation of Age at Death and Season of Death through Dental Cementum Increment Analysis of Archaeological Human Remains from the lower Rio Verde Valley region of Oaxaca, Mexico
Roberto Vega, Anthropology (M)
Arion Mayes, Anthropology

In bioarchaeology there are various methods used to determine the age, sex, and ancestry of the skeleton from an archaeological setting. These methods are essential to bioarchaeologists as we build a biological profile, as well as, the life history of the individuals. Aging an individual from an archaeological context takes practice with each of the methods (dental development, pubic symphysis, auricular surface, cranial suture closure, bone...
development) as a complete skeleton is rare. The newer method used to determine age, Dental Cementum Increment Analysis (DCIA), allows for the most accurate estimation of age from about 21 years of age until the death of the individual. In analyzing individuals from the lower Rio Verde Valley region from Oaxaca, Mexico we use DCIA to estimate the age at death and season of death and compare the estimated ages acquired through other aging methods. Samples for this study were collected during the 2014 field season in Oaxaca de Juarez, Mexico; the samples include Canines and 1st Molars from previously excavated sites. DCIA relies on seasonality (winter/summer) changes in cementum to determine one season from another. In testing this population with DCIA we hope to determine the following; 1) if this method can be used to determine season of death on human remains from this latitude, 2) how well previous aging methods compare to DCIA, and 3) if there is a relationship between death rates and seasonality. Preliminary data suggests a possible correlation between them.

142 11:45 am

Negotiating Development: Negotiation between Rural Communities in Mexico and Hydroelectric dams

Grecia Perez, Latin American Studies (M)
Anthony Jerry, Latin American Studies

After embarking on fieldwork in the Mexican states of Oaxaca and Nayarit, funded by a TINKER Foundation Field Research Grant, I better understood the role of identity politics in rural development projects. This research explores the process of negotiation between the Mexican State and Rural communities that are brought about by rural development. The negotiation platform can be interpreted as a system of relationships that keeps changing as the nation state creates new policies based on rhetoric’s of economics and human rights. In order to fully understand this system I have analyzed limited discourses of various stakeholders in projects of hydroelectric dams. Identity politics becomes important in the negotiation process occurring locally, nationally, and internationally. This project aims at using reconnaissance research to highlight the relationships between nation building and identity politics in rural communities in Nayarit and Oaxaca currently negotiating the development of hydroelectric dams.

143 12:00 pm

Preliminary Bioarchaeological Research of a Pre-Columbian Skeletal Collection in Oaxaca, Mexico

Bethany H Weisberg, Anthropology (M)
Arion Mayes, Anthropology

Bioarchaeology is the study of human populations of the past through the use of osteological methods to analyze the skeletal remains of individuals. Bioarchaeological research thus adds to the understanding of human diversity on a biological level. During the Spring 2014 semester at SDSU, I was awarded a Tinker Grant for preliminary research in Oaxaca, Mexico for use during the summer of 2014. My proposal was designed around the bioarchaeological analysis of a skeletal population from the Lower Rio Verde Region of Oaxaca, Mexico from the site of Cerro de la Cruz (400–150 B.C.). This preliminary research, working under the direction of Dr. Arion Mayes, Associate Professor of the Anthropology Department, allowed me to assess the site collections, and aid in the determination of age, sex, and minimum number of individuals (MNI). This project is a smaller subset of a much larger ongoing study regarding the biological reconstruction of the region, through time. A total of twenty individuals from Cerro de la Cruz were reconstructed and curated. Methods employed on this collection included the selection of individuals from a specific portion of the site, cleaning the bone to aid in the identification of features, an inventory of elements present, checking for health indicators, identifying if the individual is male or female, and determining the age-at-death. While in Oaxaca, I gained important applied field experience in an international setting with the cooperation of both international and national agencies such as the National Institute of Anthropology and History (INAH), the University of Colorado Boulder, and University of Central Florida. This preliminary project allowed me to gain experience in osteological analysis, field work, and an alternate lens by which to approach cultural studies, and introduced me to important contacts for future research.
Session B: Poster Presentations

Poster #1
Flame Carbon Particle Generation

Kent M Kurashima, Mechanical Engineering (U)
Fletcher Miller, Mechanical Engineering

Solar tower power plants operate by focusing sunlight to a solar receiver. Within the solar receiver, sunlight is converted into thermal energy through the heating of a working fluid. The hot working fluid can be used in a Brayton cycle, ultimately generating electricity.

The Combustion and Solar Energy Lab at SDSU has been developing a high temperature solar receiver, which uses carbon nanoparticles as a solar absorption medium. In order to conduct these experiments a carbon particle generator (CPG) was created. This CPG generates particles by flowing methane and nitrogen through a ceramic tube, heated by a heating coil.

Based on a study done at UC Berkeley, a new flame carbon particle generator (FCPG) was constructed to generate carbon particles via an inverted flame, which allows for a higher conversion rate of liquid fuel to carbon particles than the original CPG. A higher conversion rate is possible with a flame due to the higher maximum operating temperature, 2000°C, as opposed to the coil heating maximum temperature, 1200°C.

The FCPG is a steel pipe separated into two sections. The fuel and gasses are injected through the top to generate the inverted flame. A liquid droplet disperser, housed in a separate pressure vessel, introduces the fuel. An insulated ceramic tube is located in the top section to maintain a flow path and reduce heat loss. The second section of the vessel is an empty volume where the carbon particles empty into and dilution air is inserted. There are sight glasses, along the pipe, to measure mass loading.

The FCPG operates at 80 psig, when the fuel and gases are introduced it is ignited to create a flame. The methane is continually injected in order to maintain the flame while kerosene, is injected to generate carbon particles. Testing will consist of introducing kerosene into the system, with the liquid droplet disperser, while air, nitrogen, and methane are injected. A second test will consist of using diesel fuel instead of kerosene. Along with achieving a higher conversion of liquid fuel to carbon particles, a carbon particle diameter range of 200–500 nm is desired.

Poster #2
Analysis of the Effect of Carbon Particle Oxidation in the Small Particle Solar Receiver

Trent Martin, Mechanical Engineering (M)
Fletcher Miller, Mechanical Engineering

Previous analysis for the Small Particle Heat Exchange Receiver (SPHER) has been done on carbon particles, but has been limited to cases where oxidation is not present due to the complexity of the oxidation process and the continual change of the optical properties that dramatically affect the radiation heat transfer in the receiver. In this study, the oxidation rate of the carbon particles in the receiver were calculated based on a given initial particle size, concentration, and temperature. The oxidation rates can then be used to determine the efficiency of the receiver, as well as how long it takes for the carbon particles to fully oxidize as the transit the receiver.

The receiver was modeled using ANSYS Fluent using a 3-D mesh with over 2 million control volumes (cells). Fluent was used to calculate the velocity and temperature at each cell, which was then passed to a UDF (User Defined Function) that was written for this research to track how the particles moved between cells. This was able to be combined with the temperature and particle size in each cell to determine the amount of oxidation through one of three oxidation models considered in this study. Many case studies were then performed by varying some of the initial properties, including the initial particle size and concentration, and the results for exit temperature, mean particle size at each location, and overall efficiency were determined.

Poster #3
Prone Surf Vehicle for Paraplegic Surfers

Jeffrey C Mirich, Mechanical Engineering (M)
Asfaw Beyene, Mechanical Engineering

Surf therapy for those suffering from spinal injury, amputation, and PTSD is becoming increasingly popular. While patients enjoy the freedom the ocean gives them they are often limited by the performance of their board. Currently, all of the boards used in surf therapy programs are designed for stand up surfing, not a prone approach. This thesis aims to develop and test a new surf vehicle specifically designed for prone surfing of paraplegic patients. Data will be collected from patients of the Travis Manion Foundation Surf Therapy program and the Life Rolls On foundation to determine patient needs. Current modern planning hull design elements will be used to create a high performance prone surfboard. Design aspects such as outline, bottom contours, and fin placement will be backed by macro CFD analysis. At least two prototypes will be manufactured and
tested, then given to the foundations after completion of the thesis defense. Concurrently, the International Surfing Association (ISA) is beginning to discuss the possibility of introducing a “challenged” surf division into their competitive circuit beginning in 2016. If the prototypes are successful they can serve as a model for board designs for a new niche in the surfing industry.

147 Poster #4
Window Seal and Bellows Structure for a Large Scale Solar Receiver
Saranya Nanthan, Aerospace Engineering (M)
Fletcher Miller, Mechanical Engineering

Solar energy has become important energy source for reducing the use of fossil fuels and combat global climate change. In order to harness the energy from the sun and turn it into electricity, it is necessary to either use solar cells or concentrate the light to attain high temperatures in a solar thermal power plant. A power tower, with a central solar receiver on top where concentrated solar radiation coming from a heliostat field is reflected, absorbed and transformed into electricity, is one example. In order to reduce radiative and convective losses and maintain a differential pressure in solar receivers, large windows were evaluated by a previous colleague for use in high temperature concentrated solar receivers. As a result of it, the design of a 1.7m diameter quartz dome window has been evaluated for its ability to maintain acceptable stresses when exposed to pressure differentials and large heat loads from solar irradiation and re-radiation from the receiver walls.

This project is continuation of previous work where a design concept is analyzed to accommodate the thermal expansion differences between the window mount and the receiver body and is intended to be built and tested at the National Solar Thermal Test Facility at Sandia National Laboratories. This Poster covers the design and analysis of bellows as a part of window seal design. The purpose of bellows is to give as much flexibility as possible without failure. In order to find stress and displacement the bellows structure is analyzed with boundary conditions like fixed constraint and roller support to withstand shifting and movements at sealing surface locations. The temperature, pressure (1MPa) and other mechanical effects are the inputs to COMSOL, which is a Finite Element Analysis software where the maximum stresses in the sealing surface and also the bellows component are evaluated. The results of the stress based on above mentioned boundary conditions are analyzed and varying stress and displacement plots are presented.

148 Poster #5
The Effect of Flow Direction and Swirl in a Small Particle Solar Receiver
Ryan M Contois, Mechanical Engineering (M)
Fletcher Miller, Mechanical Engineering

As the demand for renewable forms of energy has become more of a focus, there has been a great increase in research and development in alternative energy production. The Combustion and Solar Energy Laboratory at San Diego State University has approached this problem by leveraging solar heating methods in the design of a Small Particle Solar Receiver Model, which concentrates and directs the immense heat generation potential of solar energy to drive a Brayton cycle and produce electricity. The Small Particle Solar Receiver uses carbon nanoparticles to volumetrically absorb concentrated solar irradiation reflected from a heliostat field and efficiently carry this energy to an external combustion process. This poster will examine the fluid dynamics and heat transfer effects inside the receiver body to provide an effective receiver design.

Specifically, this poster addresses the effects of flow direction and swirl in creating an efficient receiver flow. The main obstacles are negating the effects of buoyancy and eliminating stagnation zones as these two effects can cause a gross misdirection of solar energy, which will lower the receiver efficiency and potentially damage the receiver.

The solar receiver is modeled and simulated using a combination of Fluent for the fluid dynamics and temperature calculation, as well as an externally coupled Monte-Carlo Ray Trace (MCRT) FORTRAN application, used to calculate a source term representing radiation.

The effect on inlet fluid flow direction is examined. Previous research conducted has typically allowed fluid inlet from the rear of the receiver and then either exit near the front, or turn and exit out a central tube. However, the simulation performance, considering possible oxidation effects not yet fully modeled, uncovers concerns of the carbon particles burning out before fully developing into the outlet tube. This paper examines other inlet and flow orientations. Additionally, due to relatively slow flows, depending on the receiver tilt and flow direction thermal stratification can occur in the receiver, an effect not previously accounted for. Swirl is calculated and presented as a means to avoid stratification.
149  Poster #6  
*Carbon Particle Generation via Pyrolysis for Solar Applications*

Evan Schoening, Mechanical Engineering (M)  
Fletcher Miller, Mechanical Engineering

Carbon particle generation via pyrolysis is to be implemented in a concentrated solar power (CSP) system. The carbon particles are used for their energy absorbing properties that will help increase the energy of fluid entering a Brayton power cycle. The CSP will be simulated in the lab by a small particle heat exchange receiver (SPHER) and the particles will be supplied by a carbon particle generator (CPG). A lab scale system is run at about 5 bar while keeping the CPG at a temperature around 1200 degrees Celsius. Constant pressure and heat are needed for pyrolysis to take place and create carbon particles.

A main focus of the study is to see if a larger CPG will produce consistent carbon particles. The previous CPG set up has a length of 24 inches versus the new CPG with a length of 72 inches. The CPG has a diameter of 12 inches with two alumina tubes of two inch outer diameter along the length wrapped in the heat coils then insulation. Fluid flows through the alumina tube where heat is applied to break the hydrocarbon down to carbon particles. The heat for the system is provided by three separate heating coils along the length to keep the CPG at a constant temperature above 1150 degrees Celsius. Three coils will enable better temperature control along the length. Methane and ethylene are the hydrocarbon flows studied to observe the size and distribution of produced carbon particles. The gases have different chemical makeups and the flows are matched for the amount of carbon molecule flow. Data shows that more particles are produced with increased flow rates of the hydrocarbons.

Measurements of particles are done by an extinction tube and particle scanning electron microscopy analysis (SEM). The extinction tube uses a laser and a light sensor to show the amount of carbon passing through. As carbon flow increases so does the percent extinction to show there are more particles with increases flow rates. Computer models are also studied to observe velocity and temperature profiles in the CPG to predict the particle sizes obtained.

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150  Poster #7  
*Controlling Electroosmotic Flow using Metal Cations in Phospholipid Bilayers*

Eduardo De La Toba, Chemistry: Biochemistry (U)  
Shane Wells  
Christopher Harrison, Chemistry

In capillary electrophoresis, proteins are often separated using phospholipid bilayers to coat the interior of the silica capillary walls due to the fact that these proteins would interact with the silica surfaces alone. A separation buffer containing dissolved calcium ions is generally used to perform these electrophoretic separations. The calcium in the buffer interacts with the phospholipid layer and stabilizes it to allow for a sustained coating on the capillary walls. Without this metal cation stabilization, the layer would degrade rapidly. In this project, we tested the use of different metal cations, other than calcium, dissolved in a separation buffer, such as strontium, magnesium, cobalt, and others. This was done in order to test the effect that different metal cations would have on the phospholipids bilayer and how this would influence several factors such as the migration time of analytes and the stability of the phospholipid coating. The data collected reveals that capillary electrophoresis has the potential to lead to more advanced and controlled separations of various samples using knowledge of how different metal cations influence the electroosmotic flow. Being able to control the electroosmotic flow is an invaluable tool for analytical chemists attempting to achieve specific migration times with the highest accuracy possible.

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151  Poster #8  
*Cyclic Voltammetry of 5-Nitroimidazoles with Cysteine Additions*

Jeffrey Acuario, Chemistry (U)  
Diane Smith, Chemistry

5-Nitroimidazoles are biologically active compounds used in several different drugs as an antimicrobial against protozoan parasites such as Giardia. This project focuses on the study of the reactivity of the nitroso and hydroxylamine imidazoles towards water and the amino acid cysteine. These compounds, which are formed by reduction of 5-nitroimidazoles, are believed to be the active form of the drugs. The reduced forms of nitrobenzene,
In this study, we have SKNO-1 cells that express smuRFP protein. Future work will validate that cells emitting fluorescence were alive. In conclusion, the expression of this protein in SKNO-1 cells allows for the analysis of the cell cycle and potential drug resistance.

**152 Poster #9**

*In-vivo Quantitative Leukemic Cell Cycle Imaging Using Infrared Reporters*

Marlo B Villanueva, Biology (U)
Garth Pineda, Sciences

Leukemic stem cells (LSCs) are known to be quiescent and self-renew. We want to identify where cancer stem cells are located in their quiescent state and also during proliferation/migration state by quantitatively tracking their cell cycle kinetics in vivo. To do this, we modified fluorescence ubiquitination cell cycle indicator (FUCCI) system by tagging Infrared Fluorescent Proteins (IFP) to cell cycle regulated proteins. smuRFP is tagged to hCdt1 that fluoresces in G1 phase and Infrared Fluorescent Protein 2 (IFP2) is tagged to hGeminin that fluoresces S/G2/M phase of the cell cycle. These fluorescent proteins absorb and emit wavelengths that are able to penetrate through tissue enabling us to visually quantify cell cycle progression in vivo. SKNO-1 is an acute myeloid leukemia cell line that we transduced with various concentrations of virus and then selected them under puromycin. Ficoll-Plaque was used to isolate viable cells and confocal microscopy was used to validate fluorescence. Our results show that we have successfully created SKNO-1 cell line expressing near infrared fluorescent protein. Biliverdin is added to enhance fluorescence of the protein. Propidium iodide was also used to validate that cells emitting fluorescence were alive. In conclusion, we have SKNO-1 cell that express smuRFP protein. Future directions include transduction of lentivirus encoding IFP2 protein. SKNO-1 cells expressing both smuRFP and IFP2 will be used to inject into mice for *in vivo* cell cycle quantification of leukemic stem cells. This will allow us to visually analyze cell cycle behavior of leukemic stem cells during migration and tumor formation within the animal model.

**153 Poster #10**

*Early Diagnosis and Accurate Theranosis of Multiple Sclerosis Based on Sensitive Analysis of Biomarkers Using Nonlinear Laser Methods*

Alexander Jackson, Chemistry (M)
William Tong, Chemistry

Novel nonlinear multi-photon laser spectroscopic methods are presented as highly sensitive absorption-based detection methods for biomedical applications. Our laser methods offer inherent significant advantages including excellent sensitivity, small sample requirements, short optical path length, high spatial resolution and excellent standoff detection capability. The sensitivity levels are ideal for the detection of specific biomarkers, such as those associated with multiple sclerosis (MS). The symptoms of MS are caused mainly by destruction of myelin in the central nervous system. Due to its similarity with many other neurological disorders, MS is currently diagnosed based on symptoms and confirmed by MRI images of the brain showing lesions. Sensitive chemical-based detection methods are needed in order to detect and diagnose MS before lesions grow to the size detected by MRI. There is still a wide range of proposed biomarkers for MS since the disease’s pathology is not yet completely understood. This work will focus on two biomarkers: acrolein and antibodies against myelin basic protein (anti-MBP). Acrolein is a useful biomarker theranostically while anti-MBP is useful diagnostically. Both biomarkers are suitable for detection by our laser methods using fluorophore labels. In a typical wave-mixing setup, the signal is generated when the two input beams intersect in the sample containing labeled or native biomarkers. The signal is a coherent laser-like beam and can be collected with virtually 100% efficiency and minimal background noise. The signal has a quadratic dependence on analyte concentration, and hence, it is inherently suitable as a chemical sensor. Currently, biomarkers must be detected in cerebral spinal fluid as concentrations in the blood are extremely low. We plan to take advantage of our excellent detection sensitivity levels (zepto-mole or parts-per-trillion) to design and develop a reliable chemical-based detection system for early diagnosis and theranosis of multiple sclerosis.
154 Poster #11

Separation of turbidity and chemical absorbance signals from UV-Vis absorbance spectra of Chlorella vulgaris to monitor stability of cultures during storage.

Rory J Klinger, Environmental Engineering (D)

Temesgen Garoma, Environmental Engineering

The development and manufacture of microalgae based products is dependent upon the quality of microalgae source cultures. Two methods frequently used to monitor this quality are UV-Vis spectrophotometry and Coulter counter particle size analysis. The presence of turbidity in spectrophotometric samples alters the observed absorbance by scattering incident light; and the size of microalgae cells falls near the lower limit of detection by a Coulter counter. It has been shown by others that Mei light scattering theory can be used to deduce particle size distribution in colloidal suspensions. Absorbance spectra between 300nm and 800nm of cultures of Chlorella vulgaris were collected using a UV-Vis spectrophotometer. These spectra were observed to have a logarithmic baseline that depended on the cell concentration of the sample. These spectra were also observed for Coulter counter particle size calibration solutions. Particle size distributions of cultures of Chlorella vulgaris were collected by both Coulter counter and light microscope micrometer. The known particle size distributions were correlated with the logarithmic baseline absorbance in the UV-Vis spectra. The calibrated signal for turbidity then yielded a particle size distribution. This signal was then subtracted from the total to give absorbance corrected for turbidimetric interference. These observations were compiled for algae cultures that had been stored for 0-6 weeks.

155 Poster #12


Jenny K Van, Chemistry (D)

Dale Chatfield, Chemistry

Background: Breath component analysis (BCA), a technique that measures endogenous and exogenous volatile organic compounds (VOCs) in breath, has become a routine procedure used in many research laboratories to probe for potential disease biomarkers. Exposure to VOCs from the environment, household, and workplace often results in absorption via the blood into tissues, and can be retained for many hours or longer. Tests conducted by toxicologists measure BCA of exogenous compounds often are limited to 24-48 hours post exposure, but we have found some VOCs have residence times extending for days or even weeks. The National Institute for Occupational Safety and Health has set forth exposure limits for many acutely toxic VOCs, but there is still a concern about the chronic effects from low-level concentration exposures. We have developed a gas chromatographic-mass spectrometric (GC-MS) method of analysis of VOCs that is sensitive to sub-parts per trillion (ppt) concentrations, and we are applying it to BCA to determine the residence time and elimination kinetics of some model compounds. Hypothesis: Long-term retention of VOCs and their subsequent residence times in breath can have longer residence times than have been reported in the literature. Experimental Methods: Subject(s) are exposed to parts per million (ppm) concentrations of one or a more of the following: trifluorotoluene, sevoflurane, methoxyflurane, 4-chlorobenzotrifluoride, and 3-fluorobenzotrichloride in a controlled manner. Breath samples are collected over a period of days at different time intervals and analyzed by GC-MS. Results: VOCs are detected in breath samples well beyond 72 hours post exposure. Gas anesthetics, methoxyflurane and sevoflurane in particular have longer residence times than the expected few hours. In most cases, the elimination of chemicals can be predicted by a one-compartment model using first-order kinetics. Other compounds found in EBC were monitored and were found to persist in breath weeks after exposure. Conclusion/Summary: The ability to measure VOCs over long periods of time can provide toxicologists with data to monitor potentially chronic exposure through our daily activities. This technique has potential applications in intelligent design of residences and workplace environments and as a tool for collecting trace evidence in forensics.

156 Poster #13

The Community College of Men (CCSM): Structural Equation Model for Veteran Success

Marcus A Manuel, Psychology (U)

Dr. Frank Harris III, ARPE, Education

Statement of the Problem: Military and veteran students have existed in significant numbers in higher education since the end of the Second World War. Just as college campuses faced an influx of veteran students after World War II, community college campuses are today experiencing a new wave of increases in military and veteran enrollment from returning Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) veterans seeking to utilize the new and improved Post-9/11 GI Bill (Randall, 2012). In some college campuses surveyed, enrollment of military and veteran students have increased by up to 500% since 2009 with an estimated $36 billion in Post-9/11
Gi Bill entitlement benefits as of 2013 (Completing the Mission II, 2013). The community college is significant because an estimated 36% of veteran students are currently enrolled in the system (Radford, 2011). Methods to ease transition and ensure academic success for this diverse group of military veterans will continue to engage community college faculty and administrators for years to come. Methods and Outcomes: The Community College Survey of Men (CCSM) evaluates predictors of student success for underrepresented and underserved men in community colleges and was originally designed to assist and improve programming and service-delivery for male students (Wood and Harris, 2013). Using data from the Community College Survey of Men (CCSM), academic achievement of military and veteran students was analyzed using five significant factors derived from previous veteran-related research (De La Garza, Wood, & Harris III, 2014). Conclusion: Development of an initial path model, multivariate regressions, and creation of a structural equation model, yielded four significant factors (action control, self efficacy, intrinsic interest, and degree utility) and two variables (high school GPA and total units/credits earned) related to academic success among military and veteran students. To further enhance the success of veterans in post secondary education, programs should be implemented as early as high school to make sure those planning on entering the armed forces get the help they need to ensure their academic success now and in the future.

157 Poster #14
An Analysis of the Success of Community College Minority Male Initiatives
Levi Sebahar, PreInformation Systems (U)
Luke Wood, ARPE, Education
Statement of the Problem: African American and Latino men suffer from drastic underrepresentation and retention in institutions of higher education. Consequently, many Minority Male Student Success Programs exist in community colleges nationwide with the intention of improving trajectory for these men in postsecondary education. This study seeks to identify the intended goals and outcomes to determine the effectiveness of such Initiatives. Methods and Outcomes: This study begins with a content analysis of all 84 eligible programs listed on the American Association of Community College’s database for Minority Male Student Success Programs. In addition to the listing of funding sources, goals and outcomes were quantified and charted. A matrix was created to provide a graphical representation of the data gathered. It should be noted learning outcomes are not listed in our work. Findings: Findings will be presented in a complete database synthesis, which will identify the most common services, goals, outcomes, and funding sources. Thus far we have learned funding sources are often soft monies, and the volatility of these sources increase the need for accountability of these programs. The most common service offered is leadership/professional development. Conclusion: Though the synthesis has yet to be completely articulated, there is likely much to be taken away from our work from an administrators perspective. What may result from this work could provide an essential instrument to improve the effectiveness and accountability of Minority Male Student Success Programs in Community Colleges nationwide.

158 Poster #15
Parents’ Perspectives on the Implementation of Continuity of Care at the San Diego State University Children’s Center
Mashael Alwashimi, Child and Family Development (M)
Sonia Holzman
San Diego State University (SDSU) Children’s Center currently implements a model of continuity of care in which children remain with their primary caregiver from infancy until they transition to kindergarten at the age of five. Previous research has shown that continuity of care in early childhood education is one of the best practices that can support the healthy development of young children in a variety of domains. However, this practice is rarely implemented within early care and education programs in the United States. Successful models of continuity of care are needed to establish a benchmark. In order to bridge this gap in research, the current study proposes to explore the perspectives, experiences, and thoughts of parents as they participate in the five year continuity of care model at the SDSU Children’s Center. The proposed study will utilize qualitative methods and a phenomenological case study to answer the research question. Focus groups will be held to examine the thoughts, perceptions and experiences of parents whose children are enrolled in SDSU Children’s Center. The findings from the current study may serve as a future model for best practices in early care education. Furthermore, the findings from this study could move the field of child development forward by shedding light on the benefits and difficulties of implementing continuity of care.

159 Poster #16
Permission to Dream: Undocumented Students and the Education and Immigration Policies That Affect Higher Education Opportunities
Lucia M Garcia, Dual Language & English Learner Education (M)
Teresa Marquez-Lopez, Dual Language & English Learner Education
This study looks at current education and immigration policies that directly impact the experiences and educational opportunities available to undocumented students. The author, who is also an elementary school teacher, presents her own biliteracy autobiography and provides insight on how policies and laws like the 1986 Immigration Reform and Control Act directly impacted
her own experiences and access to higher education. The study highlights the implications of the Development, Relief, and Education for Alien Minors Act or “DREAM Act”, and the Deferred Action for Childhood Arrivals (DACA) Program as they relate to a case study of Esperanza, an undocumented high school student and her plight to gain access to higher education. A joint student-parent interview was conducted along with a demographic survey and questionnaire to learn about her experiences as she attempts to attend an institution of higher education. The interview, and survey are analyzed in the context of the literature review and findings are presented. In the presentation of the data, direct quotes from the interview and personal biliteracy autobiography are presented to illustrate the lived experiences and how policy implementation affects those experiences. The patterns emerging in the analysis provide an insider’s perspective into the struggles faced by undocumented students. Implications and recommendations include a plea to be afforded the opportunity to give back to the community, a strong sense of social responsibility, and a desire to earn privileges that United States citizens by birth may take for granted. A call to action and proposal to raise awareness and others, especially among educators, concludes the study.

160 Poster #17
An Evaluation of the Effects of the Circle of Education Curriculum to Promote School Readiness Skills in Preschool and Kindergarten Students
Shannon Marie Schiele, Child and Family Development (M)
Audrey Hokoda, Child and Family Development

School readiness is an urgently important issue in early childhood policy and practice (NAEYC, 2009). Children who are ready for school are able to regulate their emotions and behaviors, form friendships, and follow adult directives (Gilliam, 2005). However, Early Childhood Educators are struggling to manage the social and emotional needs of young children. The inability for these programs to cope with challenging behaviors often leads to serious consequences for the child and their family (Perry, Holland, Darling-Kuria, & Nadiv, 2011). The purpose of this study is to examine the efficacy of the Circle of Education curriculum in promoting school readiness skills in preschool and kindergarten students. Circle of Education is a social-emotional, learning readiness, parent engagement program for young children. There are four main objectives of the curriculum: to build self-esteem, foster emotional regulation, promote friendships, and encourage healthy lifestyles (Delibrainy, LLC, 2014). SDSU students participate in a community service learning internship that implements 12 Circle of Education activities and lessons in the classrooms. In order to examine the efficacy of this curriculum parent perception will be measured using a questionnaire that employs the Likert-Type Scale. The scale will measure the sum of parent responses on 18 Likert items. It is a four level Likert item using the format 1) Strongly Agree, 2) Agree, 3) Disagree, 4) Strongly Disagree. Parent questionnaire are completed (pre) beginning of the school year and (post) end of the school year. Parent surveys will also be used to assess the perceived parent involvement in the school environment. The findings of this study will guide the improvement of services that promote well-being and school success.

161 Poster #18
Growing Together
Maria D Rodriguez, Child and Family Development (M)
Audrey Hokoda, Child and Family Development

Latinos are the fastest growing minority group in the United States and according to the US census they will become the largest minority group in terms of number of individuals by the year 2050 (U.S. Census Bureau, 2010). Unfortunately, historically there has been an achievement gap “discrepancy in the educational outcomes and access” (p. 229), between certain student groups in the United States including Latino students (Nelson, Palonsky, & McCarthy, 2012). Research indicates that parental involvement is positively correlated with positive academic outcomes for children (Antrop-Gonzalez, Velez, & Garrett, 2005; Clark, 2002; Fan & Chen, 2001), however, there is evidence that Latino parents volunteer less often than White parents (Keaton, 2012). Also, according to some studies, there may be cultural barriers to Latino parents involvement (Durand, 2010; Henderson, Marburger, & Ooms, 1986).

Based on the need of this population, the goal of this project is to develop and implement a parenting curriculum designed to provide parents with tools designed to increase their involvement in their children’s education and help them understand how they can better support their children to succeed in school. The parenting curriculum Creciendo Juntos (Growing Together) will be implemented with Latino parents living in the City Heights neighborhood. Research states that a sequence of workshops planned for Latino parents that explains home-school collaboration, the academic standards and how the school system works can be a positive tool to increase Latino parental involvement (Chrispeels & Rivero, 2001). Furthermore, the curriculum will incorporate values that play a central role in parenting in Latino families such as familismo, respeto and personalismo (Calzada, 2010). Basic computer and English classes will be offered to support the parents’ communication needs and to help build trust. Afterwards, the parents will
be invited to attend the workshops. The topics will include Understanding the United States school structure, parents’ rights and responsibilities, advocacy skills and leadership skills. The goal of this project is to change the self-perception of the parents and increase their skills to build a lifelong partnership between the family, school, and community.

Session B-12
Poster: Microbial: Environmental Relationships
Friday, March 6, 2015, 11:00 am – 12:45 pm
Location: Montezuma Hall

162 Poster #19
Phenotypic analysis of marine Vibrio spp. isolated from kelp forests offshore San Diego, California
Tucker Lopez, Environmental Science (U)
Arron Florece, Blaire Robinson
Elizabeth Dinsdale, Biology

Marine microbes aid in the nutrition, reproduction, chemical defense, and immunity of associated organisms in marine ecosystems. As anthropogenic activity increases in coastal regions worldwide, marine microbial communities are shifting from symbiotic to pathogenic, causing further environmental detriment. Although the microbial genomic adaptations resulting from anthropogenic disturbance have been described, few studies have supported the genomic adaptation with evidence of phenotypic adaptations as well. My research explores the phenotypic adaptations in bacterial strains resulting from anthropogenic influence. Bacterial strains were isolated from four kelp forest regions offshore San Diego, California with different levels of anthropogenic disturbance. Because studies have shown that anthropogenic perturbations induce genomic changes in microbes, including transport of pollutant compounds out of the cell and utilization of contaminants as energy sources, we hypothesized that microbial strains isolated from higher anthropogenic disturbance areas would show phenotypic markers for higher tolerance to heavy metals, resistance to antibiotics, and increased carbon and nitrogen utilization. Heavy metal resistance in bacterial strains is tested using Minimal Inhibitory Concentration (MIC) assays for copper. Bacterial Antibiotic resistance is tested using Kirby-Bauer disc diffusion methods with bacterial cultures on agar media. Carbon and nitrogen usage is tested using a 96-well phenotypic array plate with 72 carbon nutrient sources and 24 nitrogen nutrient sources. Four bacterial strains across the four kelp forest sampling locations have been tested to-date. Results from the MIC assays show a higher copper tolerance (200mM) in Vibrio strains isolated from Point Loma, our sampling location with the highest levels of anthropogenic input and disturbance. Furthermore, Vibrios from Point Loma showed higher resistances to antibiotics including chloramphenical, erythromycin, and oxytetracycline. The 96-well phenotypic array results are currently being analyzed to determine the carbon and nitrogen nutrient compounds that are being utilized among the Vibrio strains isolated from our four strains. As a result of this study, we will be better able to predict the changes that will occur in microbial communities, which has implications on the health of the associated environment and macro-organisms. This study is relevant as anthropogenic perturbations continue to increase in frequency and magnitude worldwide.

163 Poster #20
The Effect of Alcohol Consumption on the Gut Microbiome
Artemisa A Zuazo, Biology (U)
Scott Kelley, Biology

The gut microbiome serves as an indicator for the overall health of an organism; a lack of microbiome diversity is correlated with poor health. This study serves to identify the change in microbial diversity associated with the excessive consumption of alcohol. Using the model organism Rattus norvegicus, the effect of alcohol consumption on the gut microbiome was studied in a controlled experiment. Treatment consisted of alternating between voluntary access to water during 22-hour abstinence periods, and voluntary access to a 20% alcohol solution, (comparable to alcohol consumption of a binge drinker) during 22-hour exposure periods. Fecal pellets were collected every two weeks. For this initial study, DNA was extracted only from samples collected every four weeks using the MoBio PowerSoil® DNA Isolation Kit. The DNA from the fecal samples was isolated and PCR was performed to amplify the 16S ribosomal RNA gene sequences. Future procedures include PCR amplification using a universal primer set with an error-correcting barcode for each sample. These samples will then be sequenced using Illumina MiSeq. QIIME will be used to filter reads and assign taxa through the clustering of operational taxonomic units (OTUs). These results will be used to characterize the diversity of the gut microbiome in relation to alcohol consumption. We expect to see an overall decrease in microbial diversity as well as a prevalence of specific taxa in response to the selective pressure of ethanol on the gut microbiome.
164  Poster #21
Characterizing Unknown Viral Genes from the Human Gut
Matthew Gallagher, Biology (M)
Anca Segall, Biology

The majority of viral genes currently carry no known function and elude most characterization via bioinformatics (such as BLAST, et al.). Additionally, it is thought that this virome makes significant contribution to many physiological processes in bacteria, and humans (via both commensal flora and pathogenic bacteria). It is therefore of great importance to make progress characterizing unknown genes obtained from metagenomic analyses of the gut microenvironment. We propose to characterize a group of 72 ORFs chosen from a pool of approximately 29,000 ORFs obtained from human fecal samples using phenotypic microarrays designed to test for metabolic activity or stress protection. The samples come from over 108 twin samples (representing 19 families and three time points per person) who are discordant for obesity (i.e. one twin is obese and one is not), and following removal of bacterial and eukaryotic DNA represent the gastrointestinal virome. The final pool was chosen based on the following criteria: ORF length greater than 400 base pairs, prediction of a non-structural gene by artificial neural networks trained to identify phage structural proteins, proximity to att sites, enrichment in either obese or non-obese populations, and a lack of annotation in GenBank. Following selection, the ORFs were synthesized into plasmids carrying an arabinose-inducible promoter and an ampicillin resistance gene. These plasmids were then cloned into E. coli K-12 cells and are currently being tested using phenotypic microarrays to determine possible metabolic functions. Additional tests using various stressors found in the human gut (acidic pH, hydrogen peroxide, and bile salts) were found to diminish most growth in a dose-dependent fashion, revealing several clones that showed enhanced growth. An antibiotic resistance screen was also performed using the parental strain and a clone containing a gene that shows homology with the MATE family of efflux pumps. This pilot screen showed streptomycin resistance in the MATE-like clone, and further testing of all clones is underway.

165  Poster #22
Macro-organism Influence via Shedding and Induction on Coral Reef Microbial Communities
Kevin Walsh, Ecology (M)
Elizabeth Dinsdale, Biology

Corals are key organisms in the building of coral reef ecosystems, the most diverse areas of the ocean. Unfortunately coral decline is happening worldwide with coral dominated reefs transitioning to algae dominated reefs, otherwise known as a phase shift. Causes of coral decline have been associated with overfishing, disease and increased water temperatures. Despite these findings, a definitive reason for the loss of coral, as well as the role macro-algae plays in coral loss, has never been fully established. Recently there is evidence that microbes associated with algae either directly or via dissolved organic carbon (DOC) stimulation are detrimental to coral health, inducing mortality. As reef’s shift to one dominant macro-organism, the water column around the reef is affected in its microbial composition and abundances. This in turn can have drastic effects back on the reef, and a positive feedback loop may be created. To investigate how macro-organism influences microbes, a study in 2011 was conducted that isolated individual reef macro-organisms and had their DOM induce changes in microbial communities. Results saw a significant increase in potential pathogenic Vibrios in the algae treatment (Fdf = 15, 9 = 4.103, p > 0.001). There was also variation between metabolic pathways with an increase of Carbohydrates (Fdf = 3 = 8.532, p = 0.004), Membrane Transport (Fdf = 3 = 17.600, p < 0.001), Iron Acquisition (Fdf = 3 = 11.561, p = 0.001) and Virulence, Disease and Defense (Fdf = 3 = 3.462, p = 0.05) in the algae treatment. To further support this laboratory experiment, a field experiment was conducted. Macro-organisms in the Abrolhos Archipelago (Eastern Brazil) were examined in the field to determine their influence on microbial communities. Water above various reef macro-organisms (as well as in the open water) was collected, sequenced, and analyzed. Results showed differences in the microbial communities influenced by different macro-organisms as well differences with the microbial communities in the open water column. This suggests microbial communities in the waters on reefs are heavily influenced by reef organisms. By understanding the influence macro-organisms have on microbial communities, we can better understand the roles microbial populations play on coral reefs. Once these dynamics are understood at an individual organism level, broader implications can be made when examining coral reefs.
Genomic assessment of microbes associated with Macrocystis pyrifera versus the water column

Kristen N Aguinaldo, Biology (M)
Elizabeth Dinsdale, Biology

The kelp surface colonizing microbes have been suggested to positively influence the growth, development, and morphology of the macroalgae. In return, the kelp provides organic substances creating a nutrient rich surface habitat for the settling microbial community. Whether a similar phenomenon exist between the epibiotic microbes on the surface of Macrocytsis pyrifera will be the focus of this study. This research will aim to identify genomic variation across microbes isolated from the surface of M. pyrifera versus the water column. Abiotic and biotic factor influence various characteristics and introduce selective pressures distinct to the two ecotypes (kelp surface and water column). Therefore, we hypothesized that microbes isolated from the two ecotypes will respond with varying gene content relative to their environment. To analyze genomic variation, whole genome sequencing on the Personal Genome Machine (PGM) was executed for the model organism Vibrio cyclitrophicus. RAST annotations of the genomes displayed an increased percentage of sequences matching genes associated with: protein, RNA, DNA, sulfur, potassium, carbohydrates metabolism, regulation and cell signaling, nucleoside and nucleotides for the kelp versus the water column associated V. cyclitrophicus. Differences in protein content were investigated further to describe the adaptations occurring in the two ecotypes. Results showed microbes from the two ecotypes shared approximately 3,289 genes. Of the 46 genes unique to the water column V. cyclitrophicus, 24% were associated with Vibrioferrin synthesis, a siderophore used in iron acquisition. This finding indicates that iron is captured in solution then transported to the kelp surface. In addition, the kelp surface associated V. cyclitrophicus includes the VgrG Protein. The VgrG protein is apart of the Type VI secretion system utilized in bacterial warfare. The VgrG subunit is specific to puncturing and releasing toxins into neighboring cells as a response to population density. However, the water column associated V. cyclitrophicus lacks this gene which suggests that the water column microbes are not space limited, reducing the need for the VgrG protein. Investigating genomic variation of microbes isolated from the two ecotypes will provide a better understanding of the relationship and ecological importance of the microbes colonizing the surface of M. pyrifera.
168 Poster #25

Assessment of Nutritional Practices Among Preschools and Child-Care Centers in San Diego, CA.

Keturah J Platt, Psychology (U)
John Elder, Graduate School of Public Health

Introduction: In the United States, about 70% of 4- and 5 year-old children and 43% of 3-year-old children attend early childhood education centers. Therefore, these particular settings are a great place to teach healthy eating and drinking habits. Childhood obesity is the number one health concern among parents in the United States, topping drug abuse and smoking. Child care nutritional practices were thus assessed in San Diego County. Methods: The YMCA Childcare Resource Service offered resources and training to childcare providers on healthy eating practices and then data to measure compliance was collected through surveys. Surveys completed by childcare providers examined the food and beverages given to 2–5 year old children on site. Results: When asked about types of milk most often served to children 82.6% of childcare providers said they served 2/1%, 9.3% skim/ non-fat, and 8.3% served sweetened milk. When asked about water availability most providers said water was readily available outside of the classroom (77%) and inside the classroom (81.8%), however when asked about meal times 64.1% said water was rarely or never provided at the table with meals or snacks. For about half of centers (48.5%) meals and snacks are served family style (self-served), whereas 24.2% of centers portion served meals for students. 56.8% of centers report having staff sit with students all of the time. 4.5% of childcare providers talk to students about cleaning all of their plates, and 14.6% of providers encourage students to finish all their food, and 36.4% speak to children about healthy eating. 18.9% of providers stated menus are not posted for parents to see regularly. Most centers do not let children bring food from home (63.1%). Conclusion: Overall, the child care centers observed are modeling the recommended nutrition practices that are ideal to improve weight status among children. However, there needs to be more water provided at the table during meal and snack time. Water or reduced fat milk should also be substituted for sweetened milk to prevent excess weight gain.

169 Poster #26

Analysis of Young San Diego Craft Beer Drinkers’ Craft Beer Consumption in Relation to Total Beer Consumption: The Role of Knowledge, Awareness and Drinking Motivations.

Andrew Coco, Marketing (U)
Andrew Baker, Marketing

The craft beer industry has seen rapid growth in the last decade and is continuing to expand and acquire market share from large macro breweries. I will investigate the relationship between someone’s total beer consumption that is craft beer, total beer spending that is spent on craft beer, as well as the difference in price someone is willing to pay between craft beer and domestic beer. I test to see whether a consumer’s knowledge level, awareness of breweries, beer tourism level, and drinking motivations have an effect on their craft beer as a function of total beer consumption and spending using a linear regression model. I use data compiled from a craft beer survey created by San Diego State University marketing students in the spring of 2014. When it comes to craft beer consumed compared to total beer consumed percentage as well as the price premium between craft beer and domestic beer, my findings suggest that the most significant variable is craft brewery awareness level. My findings suggest that the most important factor affecting craft beer spending compared to total beer spending percentage is whether or not someone prefers the alcohol aspect of beer, followed by whether or not they enjoy the craftsmanship aspect of craft beer, both of which have a negative effect. While I anticipated preference for alcohol as a drinking motivation to negatively influence the dependent variables, the influence of valuing the craftsmanship aspect of craft beer was very surprising. Other variables that have an effect on craft beer compared to total beer consumption, spending, and price premium are objective knowledge and subjective knowledge. My findings highlight the importance of raising awareness of craft breweries and knowledge level of craft beer consumers. The results also make the case that high alcohol content and the craftsmanship that go into making craft beer are not factors that lead young San Diego drinkers to consume more craft beer compared to total beer, spend more on craft compared to total beer, or spend more on craft beer than domestic beer.
ABSTRACTS

170 Poster #27
Characterizing the small food store environment
Amelie A Wagner, Marketing (U)
Iana Castro, Marketing
The placement of product displays in grocery stores is crucial to product sales; therefore, it is necessary to understand the types of products marketed in displays that promote more sales. Shoppers most often notice end of aisle displays and their attention is captured at checkout registers. The purpose of this study was to better characterize the placement of food and beverage displays containing unhealthy (i.e., candy, chips, snack cakes/cookies, regular and low calorie sugary beverages, and ice cream/frozen dessert) and healthy (i.e., fruits and vegetables) products within small stores (i.e., stores with 3 or fewer checkout registers).

Store audit data were derived from a multi-site, cross-sectional study conducted in small stores. In total, 72 audits were conducted across 4 sites in the United States: San Diego, California (n = 20); Durham, North Carolina (n = 16); Minneapolis/St. Paul, Minnesota (n = 19); and Baltimore, Maryland (n = 17). Data were analyzed with SPSS.

Chips, snack cakes/cookies, and candy were the most frequently observed unhealthy products in at least one front endcap (81.8%, 69.6%, and 45.3% of stores, respectively). In 28.8% of stores, chips were in all front endcaps, while fresh fruits and vegetables were only in at least one front end cap in 7.5% of the stores. Sugary beverages were the most frequently observed unhealthy products in at least one back endcap (55.4%).

Candy, chips, and snack cakes/cookies were the most frequently observed products at checkout registers; such products were present at all registers in 75.0%, 57.4% and 35.3% of the stores, respectively. The average number of other displays dedicated to unhealthy products outside of aisle shelves, endcaps, and registers was 9, ranging from 1 to 25 displays. Most stores contained no more than 1 to 5 other displays per unhealthy product category.

Small food stores merchandise a limited amount of healthy food in high grossing areas of the store. This information can be used to inform future in-store interventions to promote healthier purchasing options. Additionally, this study suggests that there is a substantial need for collaboration between business and public health professionals.

171 Poster #28
Child eating behaviors, parent feeding practices, and weight perceptions among low-income Latino families.
Alma I Behar, Public Health (M)
John Elder, Graduate School of Public Health
Increased caloric intake is a key determinant of childhood obesity. Satiety responsiveness (SR), reflects a negative inclination to food intake over the course of a meal. Parental control in feeding strategies has been associated with decreased SE in children; however, little is known about this relationship among Latino families. This study set out to examine the associations between feeding practices and food intake in children, and explore if associations are guided by maternal misperceptions of body image. The present study is a secondary analysis of data obtained from Luces de Cambio, a community-based randomized controlled trial to prevent obesity among low-income Latino school-aged children and their parents. Analyses included baseline data obtained from children and their biological mothers/female caregivers (N = 287). Maternal and child BMI were derived from measured height and weight; health-related behaviors were self-reported through questionnaires. Child eating behavior was measured using 9 items from the Child Eating Behavior Questionnaire assessing SR on a scale of 1 to 5. Some items of the CEBQ were reversed so that low scores represent decreased responses to fullness. Five items from the Parenting Strategies for Eating and Activity Scale measured control in child feeding practices on a scale of 1 to 5; higher scores indicated greater use of control. For the exploratory analysis, maternal perceptions will be determined by comparing reported vs. measured weight status. Logistic regression will examine the associations between control and satiety, and perceptions and control. Preliminary results show mothers’ mean age as 35.6. The majority were born outside of the U.S. (70.0%), were homemakers (84.1%), had ≥ high school education (58.5%), and a monthly income of <$2,000 (63.1%). Just over forty-four percent of the children in the sample were categorized as obese, 39.0% as overweight, and 16.7% as having normal weight. Overall, mothers reported lower satiety responsiveness in their children (M = 2.57, SD = .61) and less use of control over feeding (M = 3.07, SD = .99). The results of this study have the potential to inform early childhood interventions that target harmful eating behaviors that lead to excessive energy intake among low-income, Latino children.
172 Poster #29
Ending on a Sweet Note: The Effect of Musical Genres on Taste Perception
Andrew Fiscella, Psychology (M)
Ryan Hawks
Claire Murphy, Psychology
Music can profoundly influence human emotion, but can it also influence human taste buds? This study examined the relationship between musical genres and perceived taste. Participants were 60 undergraduate students, recruited from the Psychology 101 Participant Pool at San Diego State University. Participants were asked to rate three different types of chocolate (white, milk, and dark) on 5-pt Likert scales of perceived bitterness/sweetness and pleasantness while listening to one of two musical genres (or no music for the control group). A marginally significant effect was found for the relationship between musical genre and perceived bitterness. Significant effects were found for age and perceived bitterness/pleasantness of dark chocolate and for gender and perceived bitterness of milk chocolate.

173 Poster #30
Physical Activity and Fruit/Vegetable Consumption Among Pacific Islands in San Diego. Are They Getting Enough?
Olumide Gbenro, Public Health (M)
Dr. Christina Holub, Center for Behavioral and Community Health
Background: Native Hawaiian and Pacific Islanders (NHPI) are a group disproportionately affected by a multitude of health issues. Recent studies have been conducted in the NHPI population that show high BMI, a high prevalence of hypertension and other health outcomes such as diabetes and high cholesterol. Few Community-based Participatory Research (CBPR) studies have been conducted to understand the relationship between exercise and fruit/vegetable consumption. Methods: Results of this poster are based on the data from the Pacific Islander Community Health (PIC Health) Study conducted from 2013–2014. This self-reported survey was administered to 163 NHPI participants in San Diego, CA and included items on physical activity, dietary patterns, and fresh fruit and vegetable consumption among the NHPI. Results: The study largely included Chamorro (42.9%), Native Hawaiian (29.4%), and Samoan (23.3%) participants. Physical activity per week, and fruits and vegetables consumed per month were averaged among the various subgroups. Consumption of fruits and vegetables per month was 19.6 and 19.4 times, respectively. Average Moderate to Vigorous Physical Activity (MVPA) was 442 minutes per week, much higher than the recommended 150min/week. Number of vegetables consumed per month and the amount of moderate physical activity per week were statistically correlated. There was a significant difference in vegetables consumed per month between Samoans and Native Hawaiians (p=.02). There was also a significant difference in moderate physical activity per week between the Samoan and Chamorro participants (p=.04). Discussion: Data suggests that NHPIs are engaging in adequate MVPA, but not meeting the recommended guidelines for fruit and vegetable consumption. Self-report bias from participants may explain high values around exercise. An improved measure of fruit and vegetable consumption (such as cup measurements) would improve the accuracy of the amount consumed. Overall, results show the need for further exploration of culturally-relevant measurements to better inform interventions that will target exercise and dietary needs of the NHPI population.

174 Poster #31
Mental health history and physical activity preferences among midlife Mexican American women
Nataly Arenas, Psychology (U)
Linda Gallo, Psychology
Regular physical activity is associated with improvement in symptoms of anxiety and depression, however, depression and other mental health problems can reduce motivation and interest in physical activity. The goal of this study was to examine the preferences in physical activity of midlife Mexican American women previously diagnosed with depression and/or anxiety, and to compare this to women who have no diagnosis of depression or anxiety. Participants of a previous cross-sectional study examining risk factors for cardiovascular disease in women in the South Bay area of San Diego were approached for participation. Participants included in analyses (N = 159) self-identified Mexican American women aged 45–70 who had given permission to be contacted for future studies. Trained bilingual
research assistants administered a 30-minute telephone survey to 159 women (Mean age = 56.93, SD = 6.62). Ninety-three (59%) participants completed the survey in Spanish. Information was collected regarding family composition and demographic information, health and mental health history, and preferences for potential health interventions. Women with a history of depression or anxiety (N = 39) rated walking (N = 32; 82%), dance (N = 32; 82%), and yoga (N = 26; 67%) as their top three preferences among eight physical activity options, whereas women with no diagnosis of depression or anxiety (N = 120) rated walking (N = 91; 76%), dance (N = 86; 72%), and aerobics (N = 73; 61%) as their three top preferences. Chi-square analyses revealed no significant differences across groups. Although the findings were not statistically significant, findings show a possible different pattern in physical activity preferences among women with and without a mental health history of depression and/or anxiety. Future research with a larger sample size should examine physical activity preferences among these groups. Improved understanding of Mexican American women’s preferences may inform interventions that aim to increase behavioral activation for reduction of depression and anxiety.

175 Poster #32
Social Contact and Cardiovascular Risk Factors
Margarita Robles, Psychology (U)
Linda Gallo, Psychology

Cardiovascular disease (CVD) is a leading cause of death among all United States ethnic groups, including Mexican Americans. Research suggests that social resource factors, such as regular social contact, may be significantly associated with cardiovascular risk factors (e.g., high blood pressure, blood cholesterol, body mass index [BMI]). To better understand the risk of CVD in Mexican American women, the present study examined the association between the degree of social contact with offspring (e.g., children and grandchildren) and CVD risk factors. A telephone survey study was conducted with a total of 176 women of Mexican descent (Mean age = 57.17, SD = 6.91). One hundred and four (59.09%) participants completed the survey in Spanish. Participants were asked to describe family composition and report the degree and frequency of contact with offspring (e.g., daughter, son, grandchildren) and health history, including physician-diagnosed high blood pressure and high blood cholesterol. Women who reported having children had 3.01 (SD = 1.43) children on average. A total of 132 (93.0%) of these women reported that they see or talk with their daughters and 138 (94.5%) reported that they see or talk with their sons at least once a week. A total of 39 (22.2%) women reported high blood pressure or hypertension, 64 (36.6%) reported high blood cholesterol, and 125 (71.4%) were overweight or obese (according to self-reported height and weight indicating BMI of ≥ 25). Correlation analyses revealed no significant association between communication with offspring and presence of high blood pressure or higher BMI. However, women who reported contact with their daughters once a week or more were less likely to have high blood cholesterol than those with infrequent contact. Findings suggest inconsistent associations of social contact with CVD risk factors. Future research should further examine the relation between social contact and CVD risk, including the type (e.g., emotional support) and quality of contact (positive or negative), to provide additional information regarding how social contact relates to CVD risk among women.

176 Poster #33
Comprehensive Analysis of Organic Contaminants in Human Breast Milk
Cuong Tran, Public Health, Environmental Health (M)
Eunha Hoh, Graduate School of Public Health

Contaminants found within the human body help to paint a picture of human exposure; understanding the health implications of these compounds, metabolites, and the toxicity of their mixtures first requires a method of screening and a library capable of identifying the compounds. Little is understood about the complexity and toxicity of these mixtures. We developed a method based on two-dimensional gas chromatography coupled to time-of-flight mass spectrometry (GC×GC/TOF-MS) using human breast milk, an ideal biomarker linking a mother’s exposure to an infant’s, to expand current applications of analytical investigation. A comprehensive non-targeted analysis of organic contaminants was performed resulting in conservative identification of 265 unique compounds of potential concern based on our criteria; 40 of these compounds were identified from everyday consumer products (food additives, fragrances and personal care products, dyes, UV stabilizers, and petroleum or diesel-related), occurrences of these chemicals indicate human exposure through daily product use. A significant proportion of the chemicals were unknown and unidentifiable using current databases and literature. This suggests the importance of the mass spectral database: the larger, the better for identification. In addition, compounds not yet labeled as toxic, but used as ingredients of industrial products, resulting byproducts, or ingredients of consumer goods are now being found within breast milk and deserve more attention and investigation.
177 Poster #34

**Breast Milk Contamination and Seafood Consumption of Breastfeeding Mothers in San Diego County**

Claire O’Brien, Public Health (M)  
Eunha Hoh, Graduate School of Public Health

Persistent organic pollutants (POPs) are recalcitrant organic compounds produced by both natural and anthropogenic sources that accumulate in the environment due to their lipophilic nature. These compounds readily enter the food chain where they bioaccumulate and biomagnify and, as such, higher trophic level organisms, such as humans, are exposed to many of these compounds in their diet at relatively high concentrations. Exposure to POPs, even at relatively low levels, has been associated with a wide variety of health effects including cancer, reproductive, neurological, and immunological problems. As such, it is important to monitor human exposure by quantifying POP levels in food products and by implementing biomonitoring programs that measure human body burden. Breast milk is an ideal candidate for POP biomonitoring programs because it is representative of total body burden, is readily available, noninvasive, and provides exposure data for both the mother and the breastfeeding infant. While global biomonitoring programs of anthropogenic POPs such as dioxins, PCBs, PBDEs, and organochlorine pesticides are underway, exposure assessments in the United States have been fairly limited. Moreover, the characterization of naturally produced POPs in human tissues is unknown. In this study, human breast milk from breast-feeding mothers was analyzed for a wide range of anthropogenic and naturally produced organic contaminants using a comprehensive two-dimensional gas chromatography coupled to time-of-flight mass spectrometry (GC×GC/TOF-MS). Additionally, pre and post pregnancy dietary and exposure data was collected in order to identify any associations between lifestyle and levels of specific chemicals in human milk. We hypothesized that seafood consumption may be associated with exposure to naturally produced POPs. The results of this study will aid in both the characterization of compounds in human breast milk and the effects lifestyle choices have on chemical body burden.

178 Poster #35

**The Role of Obturator Internus Muscle and Pelvic Floor Function**

Christine N Plotts, Physical Therapy (D)  
Stephanie Johnson  
Lori Tuttle, Physical Therapy

Purpose: Pelvic floor disorders are estimated to affect half of women in the United States. Rehabilitation strategies include Kegel exercises for pelvic floor musculature (PFM) strengthening, but this strategy is insufficient to resolve underlying issues. There is evidence suggesting that muscles surrounding PFM (specifically, the obturator internus [OI]) may play an important role in normal function and provide a target for rehabilitation that is easily amenable to a strengthening protocol. The purpose of this study is to investigate the effects of OI strengthening on PFM strength. Subjects: Forty women were randomly assigned to either an exercise group (EX) or a control group (CON). Methods: EX group completed an exercise program targeting strengthening of the OI muscle (hip external rotation [ER]). EX group performed 3 sets of 10 repetitions of each exercise 3 times per week for 12 weeks. CON group participated in testing sessions. Measures included hip ER strength and PFM strength based on vaginal squeeze pressure. The tester was blind to group assignment. Repeated measures ANOVA was used with $\alpha = 0.05$ to compare ER strength and vaginal pressure for each group after 12 weeks. Results are mean ± SEM. Results: EX and CON groups were not different at initial assessment in age, hip ER strength or PFM strength ($p>0.05$). EX group increased in PFM strength (24.21 ± 3.72 vs. 35.43 ± 3.13 cmH2O $p = 0.02$) and hip ER strength (16.44 ± 1.1 vs. 19.95 ± 0.69 lbs $p=0.05$). CON group did not change PFM strength (32.16 ± 3.54 vs. 27.37 ± 2.5 cmH2O $p = 0.32$) or hip ER strength (17.36 ± 0.54 vs. 17.45 ± 0.65 lbs $p = 0.18$). Conclusions: Strengthening of muscles surrounding PFM such as the OI and hip external rotators was able to improve PFM strength. This provides initial evidence that muscles other than the pelvic floor may be appropriate targets for rehabilitation.
ABSTRACTS

Session B-15
Poster: Border/Transborder Concerns
Friday, March 6, 2015, 11:00 am – 12:45 pm
Location: Montezuma Hall

179 Poster #36

Migration Related Trauma Events Among Recently Deported Latinos Living in Tijuana
Juan Peña, Psychology (U)
Elizabeth Klonoff, Psychology

Tijuana currently stands as the largest city in the state of Baja California, with an estimated population of 1.55 million people and one of the major routes for migrants who go to the United States (INEGI, 2010). However, during the past few years, rates of deportation for undocumented immigrants have reached its highest numbers in the United States. It is estimated that between 2009 and 2012, approximately 1.6 millions immigrants have been deported with around 368,000 immigrants deported in 2013 (ICE, 2013). This study aimed to assess the prevalence of migration related trauma events experienced among recent Latino deportees living in a high-risk area, and provide recommendations for future studies to inform culturally sensitive research in this population.

Methods: Data for this study came from a cross-sectional pilot study conducted among undocumented Latino immigrants. Undocumented adults (N = 50) living at migrant shelters for recently deported Latinos in Tijuana, Mexico completed in-person-structured clinical interviews in which personal mental health and well-being was assessed. Data collected include: Demographic information (e.g. sex, age, place of birth), immigration history and trauma experienced. These questions were modeled from the 2009 SDPRC Community Survey and the San Diego Labor Trafficking Survey Questionnaire (Zhang, 2012). The Harvard Trauma Questionnaire was used to assess traumatic events and PTSD symptoms. Scores indicated the number of traumatic experiences and symptoms an individual experienced. Analyses: Data are in the process of being analyzed. Descriptive statistics will be used to assess participants’ characteristics, as well as the prevalence of migration-related trauma events and reported symptoms. Chi-square analyses will be used to explore differences in symptom presentation across categories of migration-related trauma events and symptoms. ANOVA will be used to explore sex differences in frequency of migration-related trauma events and severity of symptoms. Significance: Results from this pilot study will be valuable to: inform subsequent studies on the mental health of deportees; validate the use of trauma-related measures included in this study for use with at-risk Latino immigrant populations; increase awareness among providers and researchers about the specific mental health needs of Latino deportees; and inform the development of context-sensitive interventions and policies.

180 Poster #37

The Experiences of Men of Color in the Community College Who Live Transborder Lifestyle in The San Diego, CA and Tijuana, Mexico Border Region

Isaac Marquez, Biochemistry (U)
Alex Nelson
Frank Harris, ARPE, Education

Statement of the Problem: Transborder immigration is a geographically unique regional phenomenon created by the social interaction of people between two nations (Ojeda; 2005, 2009). The transborder phenomenon is particularly prevalent along the most frequently crossed international border region in the world: the area encompassing the cities of San Diego, California and Tijuana, Mexico. In this region, transborder college students live on both sides of the U.S.-Mexico border while attending higher education institutions in San Diego, California (Chávez Montaño, 2006 & Relaño Pastor, 2007, Falcon, 2013). However, there is no information about how many college students live a transborder lifestyle in the San Diego-Tijuana border region and few researchers have explored their experiences. While researchers have found that men of color are underrepresented in higher education institutions in the United States (Harper, 2006; Saenz and Ponjuan 2009), this study will explore the experiences of male college students in the community college who live a transborder lifestyle in the San Diego-Tijuana border region. The common themes shared by the participants will be the findings.

Methods and Outcomes: Through a phenomenology informed research design, this study will explore the common experiences shared by male college students who live a transborder lifestyle in the San Diego-Tijuana border region. The overarching criterion of the participants will be for students to identity as male and to have transborder experiences in the San Diego-Tijuana border region. We will tap into the transborder lifestyle in the San Diego-Tijuana border region. The participating students enrolled in a community college in San Diego, California. The Experiences of Men of Color in the Community College Who Live Transborder Lifestyle in The San Diego, CA and Tijuana, Mexico Border Region? The participants of this study will consist of approximately 12 college students who live a transborder lifestyle in the San Diego-Tijuana border region. The Experiences of Men of Color in the Community College Who Live Transborder Lifestyle in The San Diego, CA and Tijuana, Mexico Border Region? The participants of this study will consist of approximately 12 college students who live a transborder lifestyle in the San Diego-Tijuana border region. The common themes shared by the participants will be the findings.

The Experiences of Men of Color in the Community College Who Live Transborder Lifestyle in The San Diego, CA and Tijuana, Mexico Border Region? The participants of this study will consist of approximately 12 college students who live a transborder lifestyle in the San Diego-Tijuana border region. The common themes shared by the participants will be the findings.
181  Poster #38  
**Health Care Access, Health Satisfaction, and Perceived Quality of Life in Recently Deported Latinos Living in Tijuana**  
Karen S Alvarado, Public Health (U)  
Luz Garcini, SDSU/UCSD Joint Doctoral Program in Clinical Psychology  

**Background:** In 2012, 6 million—52% of the undocumented population, came from Mexico alone. Despite a significant immigrant population, there is limited research regarding their well-being and quality of life. Limited access to health care and poor health caused by multiple undocumented related stressors, puts the well-being of this community at risk. In addition, several studies report that this community tends to have lower health care utilization and lower likelihood of having insurance or regular sources of care than their documented counterparts. The undocumented community contributes to our workforce significantly, and our economy depends on their well-being and ability to work. As an example, 177 million in income tax revenue would be lost in California if regulations like E-verify were set. Understanding what stressors affect their well-being, can help prevent stressors from progressing and resulting in costly health-care procedures. This research aims to look at self-reported quality of life, and how it is affected by access to long term health care services, and personal health satisfaction among deportees in Tijuana, Mexico.  

**Methods:** Data comes from a cross-sectional pilot study. Interviews were conducted in person, with 50 deported undocumented Latino adults living in migrant shelters in Tijuana, Mexico. The clinical interviews assessed the mental health and well-being of participants. Data collected consisted of demographics, quality of life, mental health, immigration history, and trauma. The World Health Organization Quality of Life (WHOQOL-BREF), was used to obtain self reported quality of life and health satisfaction responses. The Post Migration Living Difficulties Questionnaire was used for information about health care access.  

**Analysis:** Descriptive and correlational data will be used to explore associations of interest. Significance will be noted at 0.5 level.  

**Significance:** Benefits of these results include 1) Inform future studies about the well-being of deportees; 2) Further the awareness of researchers and providers about the mental/physical health care needs of deportees; 3) Provide information about long term health care access among deportees; and 3) Aid in the development of contextually appropriate interventions/policies.

182  Poster #39  
**Does BMI affect body image discrepancy among Mexican-American Women living near the United States Mexico border?**  
Rosaura S Wardsworth, Health Science: Public Health (U)  
Myra Hollis  
Hala Madanat, Graduate School of Public Health  

**Introduction:** Body mass index (BMI) and body image have been studied among various racial, cultural, and ethnic groups. Research Assessing the relationship between BMI and body satisfaction among low-income Latina adults is scarce. The present study aims to assess the relationship between body image and BMI by comparing BMI scores and self-reported body discrepancies using Stunkard's silhouettes.  

**Methods:** A total of 164 Latina women were recruited from South San Diego County. A sample of 54 of the Latina women (72.2% Mexican [n = 39], 16.7% Mexican-American [n = 9], 7.4% Hispanic [n = 4], and 3.7% Latina [n = 2]; with a mean age of 44.43 [SD 11.32] and BMI 31.33 [SD 5.26]) completed baseline measurements. The Baseline measurement used in this analyses was Chi square which was used to assess the association between body image and BMI.  

**Results:** Mean BMI score was 31.33 (SD = 5.26), mean Stunkard’s figure rating scale score was 5.57 (SD 1.159). Participants were categorized into -obese, overweight, normal weight, and underweight categories based on their BMI and current Stunkard figure ratings. Shapiro-Wilk test concluded scores were normally distributed. A chi-square test for association was conducted between BMI and Stunkard’s figure rating scale for current size. There was not a statistically significant association, \( \chi^2(6) = 6.069, p = .415 \). Conclusion: Computed BMI categories and current size categories are not related for Latina women. This may be due to the fact that Latina women prefer larger body sizes, acculturation, or cultural preferences for larger women.
**183** Poster #40  
**Effect of Resources in Childhood on Propensity to Plan and Debt Resolution**  
Sarah N Nakutin, Psychology (U)  
Georg Matt, Psychology  

Financial planning is an important behavior that can aid individuals in becoming fiscally stable. Previous research has found that individuals with unstable resources provided in childhood are less likely to plan with money when primed with a financial threat compared to those who were provided with a stable amount of resources in childhood. The purpose of the present study was to replicate this finding and determine whether debt collection notices act as a financial threat, thereby extending this finding. Two hundred eighty-one adult Amazon Mechanical Turk workers were randomly assigned to read an article priming financial threat, a mock debt collection letter, or a control article. Likelihood to plan was measured across three levels: short-term (a few days), long-term (one to two months), and very long-term (one to two years). Participants reported their likelihood to plan with money, the availability of various resources provided in childhood, and economic locus of control. Individuals who reported a high availability of resources in childhood reported a higher likelihood to plan when under financial threat than those with a low availability of resources, which supported previous research. Economic locus of control was found to partially mediate this effect, such that those with high resources in childhood tend to have an internal economic locus of control and thereby plan significantly more when under financial threat. These effects were found at all three levels of timing for planning with money. However, there was no difference in planning in the debt collection letter condition. These findings suggest that resources provided in childhood affect financial planning in adulthood and this effect may be mediated by locus of control.

**184** Poster #41  
**Understanding E-Sports Legitimacy**  
Thomas Bourus, Marketing (U)  
Andrew Baker, Marketing  

E-Sports has reached and engaged millions of valuable individuals worldwide. The industry has experienced enormous expansion yet still faces troubles with the overall perception of the industry. Game developers strive to create E-Sports that are just as successful as games such as League of Legends and StarCraft, but many fail. On top of that, Individuals who do not participate in E-Sports still possess a negative stigma towards gaming and in order for the industry to be perceived as a sport and in a positive light, it must find ways to reduce or eliminate such thought.

To understand ways to solve these problems, I surveyed consumers and interviewed industry experts on their thoughts and ideas of the subject. The survey aimed to grasp an idea of what E-Sports consumers believe to be required qualities within an E-Sport. The interviews aimed to grasp a knowledge of how E-Sports can adjust the perception of the industry in a more serious way.

According to the research findings, game developers must aim to make a game entertaining to the spectator, fair, be person vs person, and have a large variations of skill between players. Possessing these qualities would greatly increase the likelihood of creating a socially accepted E-Sport between E-Sports consumers. For increasing the seriousness of the industry, E-Sports must attract sponsors that reflect the industry in a positive way and display E-Sports in public settings such as bars. Doing so would increase the overall perception of the industry as being both valuable and enjoyable resulting in increased growth for E-Sports.
**185** Poster #42  
*Attribution theory and familiarity’s role on stigmatization.*  
Vito A Da Rosa, Psychology (U)  
Nathan Echols  
Allison Vaughn, Psychology  
Attribution theory explains an individual’s process of emotional or behavioral reactions to someone with a stigma-related illness in terms of the perceived causality of the illness. Stigmatization of individuals with mental and physical illnesses can be due to misattributions of the controllability and responsibility for a condition. Previous research has suggested that familiarity (i.e., either having the illness or knowing someone with the illness) diminishes prejudicial attitudes and increases helping behaviors such as charitable donations. Specifically, contact with individuals who have stigma-related illnesses elicited increased positive affective reactions, such as feelings of pity or likeability. Given that stigma familiarity can influence attitudinal perceptions of stability, controllability, emotional reactions, and behavioral judgments, the current study sought to examine these effects on 16 stigmas using the causal attributional model. A total of 156 participants, aged 18 to 57, were recruited through both the undergraduate participant pool (n = 77) and Amazon’s Mechanical Turk (n = 79). Participants completed an online survey using Qualtrics software and were given partial course credit or cash. They rated 16 stigmas on perceived controllability and changeability, elicited emotions (liking, pity, and anger combined to make a positive emotion index), and helping behaviors (personal assistance and charitable donations combined to make a helping index). 

Previous research suggested that familiarity reduced stigma effects; however the present findings are contradictory. Overall, familiarity was not a strong predictor of responsibility, blame, controllability or stability. Familiarity was not a strong predictor of any of the specific emotions or the positive emotion index. Familiarity was also not a strong predictor of either of the helping behaviors or the helping index. Demographics of gender, age, and ethnicity were not confounded with familiarity. These findings have methodological and theoretical implications for future research. Future research should not simply assume familiarity to be a moderator of behavior and attitudes in relation to stigma. Additionally, future research should evaluate the role of familiarity in stigma reduction interventions. If it is not predictive of emotional or behavioral responses future anti-stigma interventions may want to focus less on familiarity and more on education-based programs as the preferred option.

**186** Poster #43  
*Internal vs. external recruits for management: Who is more engaged?*  
Michael Petty, Industrial/Organizational Psychology (M)  
Alexa Young  
Mark Ehrhart, Psychology  
As organizations hire employees for positions either internally or from an external source, it is important for organizations to understand the outcomes this can produce. Currently, popular press argues internally hired managers are better managers than externally hired managers. Understanding the impact that internal vs. external recruits for management positions have on organization has several implications. 

The present study aims to examine the differences between internal and external recruits in a management trainee program on performance, job satisfaction, commitment and engagement. It is hypothesized that group differences exist between internal vs. external recruits for management positions and that these differences will moderate relationships between the predictors of outcomes related to job performance. 

The analyses were based off data collected over the course of a management trainee program at a large transportation organization. Management trainees were tracked for an average of 321 days starting right before the program began and continuing until after training was completed. These management trainees were surveyed at various time points including before the training began, during their management training program as well as after being placed in a management position. Supervisors’ ratings of the trainees were also obtained in a post placement survey. The implications of the findings will be presented.

**187** Poster #44  
*Perceptions of employee stress: The impact of supervisor-subordinate discrepancies on perceived supervisor support.*  
Sandra Martinez, Industrial/Organizational Psychology (M)  
Mark Reynolds, Ruth Topete  
Mark Ehrhart, Psychology  
In research on the job demands-resources (or JD-R) model of work stress, resources are viewed as a buffer of the negative outcomes of stress on employee outcomes. One of the most commonly studied resources in this line of research is support from various sources, including supervisors, coworkers, family, and the organization as a whole. This study extends research in this area in two ways: (1) by examining not only employee perceptions of their stress, but supervisor perceptions of subordinate stress as well; and (2) by testing how the alignment or discrepancy between these perceptions is related to the...
amount of support provided to the subordinate by his/her supervisor. It was hypothesized that perceived supervisor support would be lowest when nurse manager stress ratings were high and nurse director perceptions of nurse manager stress were low. To test the study hypothesis, we utilized archival data from a large survey study of stress in nurse leaders in over 35 hospitals in the southwestern United States. The dataset included 486 nursing managers and 144 of their supervisors (nurse directors). After matching the supervisor and subordinate data, there were 358 nurse managers with self-ratings and supervisor ratings of stress. Polynomial regression and response surface modeling provided support for the hypothesis. Specifically, support levels were high when nurse directors and nurse managers agreed on the nurse managers’ stress levels (whether they were high or low), as well as when the nurse manager self-reported low stress and the nurse director reported high nurse manager stress. Low levels of support were found only when nurse managers self-reported high stress but nurse directors reported low nurse manager stress. This research has important implications for nurse directors and their awareness of their subordinates’ stress levels in order to ensure that nurse managers are provided the necessary amount of support when needed.

Session B-17
Poster: Psychology
Friday, March 6, 2015, 11:00 am – 12:45 pm
Location: Montezuma Hall

188 Poster #45
The Effect of Cognitive Bias Modification Tasks Versus Exposure on a Behavioral Test of Contamination Fears
Riley A Johnson, Psychology (U)
Nader Amir, Psychology

Currently, exposure and response prevention is regarded as the most effective treatment available for individuals with obsessive-compulsive disorder (Foa, 2010). In the current study, we evaluated the efficacy of three computerized cognitive bias modification (CBM) tasks versus an exposure task in approaching feared objects. Our study consisted of 85 undergraduates from San Diego State University with subclinical obsessive-compulsive symptoms. Participants were randomly assigned to one of four study conditions. The first CBM condition consisted of 26 participants who completed a standard dot probe attention training task (DPAT) by identifying letters which replaced the neutral word in a neutral and contamination-related word pairing. The second CBM condition consisted of 14 participants who completed a similar task to those in the dot probe condition, however they completed an interactive attention training task (IAT) through cues that lead to levels with progressively more challenging goals. The final CBM condition consisted of 22 participants who used a joystick to push or pull contamination or neutral pictures to simulate avoidance or approach (AAT); participants were trained to pull the majority of contamination pictures and push the majority of neutral pictures. The exposure condition consisted of 23 participants who completed a self-directed exposure with contaminated tissues. All groups then completed a behavioral approach test (BAT) to assess their ability to approach in-vivo contaminated objects. There were no clinically significant differences in the effectiveness of DPAT, IAT, AAT, and exposure in the percentage of completed steps on the BAT. Our results suggest that these CBM tasks may be comparable to exposure tasks in assisting individuals with obsessive-compulsive symptoms approach feared objects.

189 Poster #46
The Effects of Ambient Sounds vs. Lyrical Music on Attention
Whitney C Oleman, Psychology (U)
Jacob Melendez, Danielle Hunt, Stephanie Sanz, Jason Sibal Claire Murphy, Psychology

No established research exists which tests the difference between ambient noise and lyrical music on attention. Researchers have examined the effects of ambient noise alone on attention and creativity as well as lyrical music on attention. Participants in this study were tested using a flanker task, a computer-based test measuring concentration and attention. They responded to arrow stimuli appearing on a computer screen for short periods of time. For each participant, half of the experiment included an ambient noise playing in the background while the other half included lyrical music playing in the background. There were eight blocks for each participant, four with each condition. One investigator used a separate computer to control the sound stimuli. A different investigator instructed the participant verbally between the experimental blocks. We hypothesized that the ambient noise would facilitate higher attention scores than lyrical music. The data was analyzed in an ANOVA comparing the two types of noise exposed during each task block. We obtained an F (1, 47) value of 1.953, p > .05. There was no significant difference in performance scores between the two sound conditions. Recommendations for future research are to use different types of sound stimuli to facilitate attention.
Sleepiness, Anxiety, and Depression in English- and Spanish-speaking Hispanic Americans
Sandra Challma, Psychology (U)
Vanessa Malcarne, Psychology

Previous research has found strong relationships among depression, anxiety, and disordered sleep. Depression and anxiety may cause sleep problems and sleep problems, may in turn, exacerbate symptoms of depression and anxiety. Previous research has examined these relationships among Hispanic Americans (HAs), but few studies have considered the role of acculturation. Depression and anxiety may present in HAs differently depending on their level of acculturation, and the relationship to disordered sleep may differ as well. Language preference can be used as a proxy for acculturation, whereby English and Spanish language-preference are associated with high and low levels of acculturation, respectively. The present study examined the relationships among depression, anxiety, and daytime sleepiness across English- and Spanish-speaking HAs.

HA men and women (N = 423) completed the Epworth Sleepiness Scale, a measure of daytime sleepiness, and the Generalized Anxiety Disorder-7 and Patient Health Questionnaire-9 scales, measures of anxiety and depression, respectively. Independent samples t-tests were used to compare sleepiness, anxiety, and depression scores across language-preference groups. Pearson-product moment correlations and z-tests were used to examine and compare the relationships among sleepiness, anxiety, and depression in both language-preference groups. Reports of anxiety symptoms were lower among English-speakers in comparison to Spanish-speakers (M = 4.17 v. 5.68, p = .003). Reports of sleepiness (English: M = 6.19; Spanish: M = 6.40) and depression (English: M = 4.50; Spanish: M = 4.87) were not significantly different across language-preference groups. Among English- and Spanish-speaking HAs, sleepiness was positively associated with depression (English: r = .26, p < .001; Spanish: r = .40, p < .001) and anxiety (English: r = .21, p = .002; Spanish: r = .41, p < .001). Greater reports of depression and anxiety symptoms were associated with greater reported sleepiness. Correlations differed statistically in magnitude across language-preference groups only for reports of depression (z = -2.27, p = .02). In sum, these findings suggest that depression and anxiety are positively associated with daytime sleepiness in low and high acculturated HAs. Future studies should examine why depression and sleepiness are more strongly associated in low acculturated HAs in comparison to high acculturated HAs.

Controllability of Stigmas When Onset is Defined As Responsible or Not Responsible
Zoe A Lewis, Psychology (U)
Sarah M. Haydock
Allison Vaughn, Psychology

People have a tendency to stigmatize others based on assumptions alone. Previous research found that the controllability of a disease can be altered by perceived responsibility of onset. In the current study, 16 common mental and physical stigmas (i.e., anxiety, cancer) were assessed to see whether information about responsibility of stigma onset would effect how individuals feel towards them in regards to causal attributions of controllability and stability, positive emotions, and helping behavior. In a previous study, a cluster analysis revealed a four-cluster solution based on controllability and stability. In the current study, it was hypothesized that onset not responsible stigmas would evoke more helping behaviors and positive emotions compared to onset responsible stigmas. Also, the no-information condition would “default” to the onset responsible condition for stigmas perceived as responsible and to onset not responsible for stigmas perceived as not responsible. To investigate this, an online survey was created through Qualtrics software and administered to a sample of 156 participants. The survey consisted of three conditions: no-information “control”, information onset “responsible”, and information onset “not responsible.” For the first cluster (Alzheimer’s disease, blindness, cancer, paraplegia, and schizophrenia), the control condition resembled the not responsible condition for helping behaviors. For the second cluster (AIDS/HIV), the control condition fell in between the responsible and not responsible conditions for controllability and positive emotion. For the third cluster (child abuse, drug abuse, obesity), the control condition was in between the responsible and not responsible conditions for both controllability and positive emotion. For the fourth cluster (heart disease, diabetes, COPD, stroke, major depressive disorder, anxiety), the control condition was in between the responsible and not responsible conditions for controllability, yet the control condition resembled the not responsible condition for helping behaviors. For the third cluster, the control condition was in between the responsible and not responsible conditions for both controllability and positive emotion. For the fourth cluster (heart disease, diabetes, COPD, stroke, major depressive disorder, anxiety), the control condition was in between the responsible and not responsible conditions for controllability, yet the control condition resembled the not responsible condition for helping behaviors. The effects of responsibility information on stability and helping behavior varied within the clusters and by the stigmas. Future research should look at the way in which information about onset responsibility is presented about stigmas to see if it impacts emotions like empathy and willingness to help.
192 Poster #49

Contextual Predictors of Foster Children's Relational Aggression

Kristin Perry, Psychology (M)
Joseph Price, Psychology

The aim of this study was to identify contextual predictors of foster children's relational aggression, specifically analyzing whether parent and sibling behaviors predicted the child's relational aggression over and above other contextual predictors. Relational aggression can be described as aggression through the peer relationship (i.e. gossip, retaliation, etc.) and was measured using an adaptation of Crick's (1996) Children's Social Behavioral relational aggression subscale. In the sample of 335 foster children, the five-question scale had a high internal consistency (Cronbach's Alpha = .86). A hierarchical linear regression was run to examine these effects. Potential control variables were tested and were not significant. The number of children in the home, the child's kinship status, the parent's education and income, the length of time the child has been in the home, and the parenting experience of the foster parent were examined as potential contextual variables and significant effects were entered in step one. The behavior variables, parent efficacy, parent stress, and sibling relational aggression, were entered in step two. The first model, containing contextual variables, was significant (F(4, 271) = 4.750, p = .001, R2 = .066). In this model, the child’s presence in a non-kinship home (B = .305, p = .011) and more children in the home (B = .083, p = .035) predicted higher relational aggression scores. The second model, which contained the contextual variables and the behavior variables, was significant (F(7, 268) = 16.205, p < .001, R2 = .297). The R2 change from model one to model two (R2 change = .23) was also significant (F change (3, 268) = 29.341, p < .001), which suggests that the behavior variables predicted a significant amount of variability in the child's relational aggression scores when controlling for the contextual variables. In this model, all three of the behavior variables significantly predicted the child's relational aggression score including the sibling's relational aggression score (B = .285, p < .001), the parent's efficacy score (B = -.566, p < .001), and the parent's stress score (B = .182, p = .007), in addition to kinship home status (B = .285, p = .008) and the number of children in the home (B = .072, p = .036).

Session C: Oral Presentations

Session C-1

Oral Presentation:
Antennas, Signal Conditioning & Underwater Vehicles
Friday, March 6, 2015, 1:00 pm
Location: Pride Suite

193 1:00 pm

Conductive Inkjet Printed Ultra-Wideband (UWB) Planar Monopole Antenna on Low Cost Flexible PET Substrate Material

Daria C. Lane, Electrical Engineering (M)
Alejandro Castro
Satish Sharma, Electrical Engineering

Printed antennas on flexible substrate material are highly desirable for flexible circuits and wearable applications. An ultra-wideband (UWB) printed planar monopole antenna operating at 3.4–12 GHz was designed, modeled, fabricated, and tested for scattering parameters and radiation pattern response. The measured reflection coefficient magnitude for the fabricated antenna exhibits a bandwidth of 8.6 GHz, with near omni-directional radiation patterns.

194 1:15 pm

S- and C-Band Antennas in MIMO Arrangement on Bent Ground Plane for a Conducting Cylindrical Surface

Tavis Hall, Electrical Engineering (M)
Satish Sharma, Electrical and Computer Engineering

An omni-directional antenna in multiple input multiple output (MIMO) arrangement is presented that covers S-band (2.2–2.4GHz) and C-band (4.4–5.0GHz). One pair of modified PIFA-like radiating structures is used for each of the two bands. These elements are placed on a bent ground plane which is cut out of a cylindrical conducting surface. The placement of the antenna elements aim to improve the pattern coverage and keep isolation sufficiently low. Simulated and measured MIMO parameters such as the total active reflection coefficient (TARC), envelope correlation coefficient (ECC), and channel capacity loss (C_loss) are computed, compared, and presented.
195  1:30 pm
**Frequency Tunable Dualband Printed Antenna for Wireless Communications**
Rafid N Damman, Electrical Engineering (M)
Satish Sharma, Electrical and Computer Engineering
A single feed independently tunable dual band printed antenna is designed and simulated which is covering 700MHz to 970MHz frequency range with individual bands of each 40MHz band along with a fixed 1.55GHz fixed frequency. The antenna uses a varactor diode on one of the meandered lines to induce the tunability in the 4G band (700MHz to 970MHz). The antenna uses the impedance matching criteria of ≤ −6dB and offers near omnidirectional radiation patterns. Additional results will be presented during the symposium.

196  1:45 pm
**The Application of Multivariate Empirical Mode Decomposition with Canonical Correlation for EEG Artifact Removal**
Siddhi Vasant Tavildar, Electrical Engineering (M)
Ashkan Ashrafi, Electrical and Computer Engineering
Electroencephalography (EEG) is designed to record the electrical activity of brain. However, it often records the electrical activities originating from sites other than brain. These electrical activities are known as artifacts. The presence of artifacts increases the probability of misinterpretation that may result in adverse clinical consequences. In this research, we present a novel method of motion artifact removal from the EEG signals. A majority of algorithms that have been developed for removing unwanted artifacts from physiological signals use Fourier-based analysis. These algorithms do not yield satisfactory results because in Fourier-based analysis signals are considered stationary and their combinations are considered linear. The real world physiological signals (EEG signals); however, are always nonlinear and non-stationary. The proposed method employs multivariate empirical mode decomposition with canonical correlation analysis (MEMD-CCA) for the removal of motion artifacts from EEG signal. Empirical Mode Decomposition (EMD) is a fully data driven method for the analysis of nonlinear and non-stationary real world signals. The Multivariate version of the EMD algorithm (MEMD) is used to find common oscillatory modes within multivariate data. This feature of the MEMD, which is called mode-alignment, is used in EEG signal analysis where a similarity between different channels is the key to decode the signals. The proposed method is compared with the existing methods for motion artifacts removal. The MEMD-CCA is shown to perform better with 16 % increase in the percent artifact removal. The computational cost of this method is higher but unlike the other competing methods, this method is totally algorithmic and does not require any manual intervention. In conclusion, the application of MEMD-CCA method yields positive results in artifact removal from EEG signals. This research acts as base to our extension of the same method for the analysis of Electrocorticographic (ECoG) signals.

197  2:00 pm
**Remotely Operated Underwater Vehicles**
Jeffrey G Sadural, Computer Science (M)
Robert Edwards, Computer Science
It is both costly and time consuming to have divers gather data and check conditions underwater. There are also areas where it may be difficult and dangerous for researchers to dive. We can avoid those dangers and reduce expenses by using remote operated vehicles (ROV) to explore the oceans. The technology for unmanned underwater robots currently exists, but the cost is very prohibitive for the current work we do in the lab. With commercial ROV’s costing upwards of thousands of dollars, we sought ways to make our own ROV at a fraction of the cost.

Thanks to the open source community, we were able to accomplish our goal of having an underwater ROV by building our own using the OpenROV project. Using the plans, we constructed the ROV using a laser cutter to fine cut the necessary structures. The entire ROV was fabricated on campus using readily available tools. The main computer used in the project is a BeagleBone Black mini-computer with an ARM processor acting as a web-server providing both video feed from the cockpit as well as keyboard controls to move the ROV.

Building the ROV in-house has allowed us to construct our ROV at a fraction of the price of a commercial product. The main issues encountered during fabrication and construction of the ROV was with waterproofing the cockpit house the main electronics and the battery tubes. Under the midday sun, viewing and controlling the ROV was difficult as the control is sent through the laptop screen. We were able to feed the controls through a tablet controller, which was easier to use in full daylight.

After several test runs, we were able to have our first successful launch, exploring the underside of the docks in Mission Bay, searching for sea squirts to be used in biology experiments.
Viruses are the most diverse and abundant biological entity in the world exceeding the number of cellular organisms including Bacteria, Archaea, and Eukaryotes. Phages, or viruses targeting bacteria, are important in regulating bacterial populations, increasing genomic versatility, and cycling nutrients in the marine environment. Global climate change is predicted to have profound effects on the world’s oceans, and while many studies have examined effects on larger organisms, this project examines the effects rising CO2 levels have on marine viruses. Since phage are difficult to culture, metagenomic techniques are used to observe viral diversity and genomic profiles. This project focuses on marine phages from controlled experiments involving kelp and rhodolith algae. The first experiment analyzes how viral assemblages changes in response to kelp with ambient CO2 and kelp with increased CO2 concentrations. The second experiment examines how viral assemblages associated with live and dead rhodolith algae are affected by increased partial pressure of CO2. The main goal is exploring how higher CO2 concentrations affect a highly abundant and pivotal feature of marine microbiology.

Parapontoporia sternbergi is an extinct species of river dolphin from the family Pontoporiidae. Several fossil specimens of P. sternbergi have been identified in various outcrops of the upper Pliocene (2.58–3.6 Ma) San Diego Formation in and around San Diego County. P. sternbergi was first described by Barnes (1985) in terms of its morphological differences between the two closely related extinct species, Parapontoporia pacifica and Parapontoporia wilsoni. These differences served as a basis for the establishment of P. sternbergi as a separate species. However, quantifiable morphological limits of P. sternbergi have never been determined. This study tests the validity of recognizing P. sternbergi as a distinct species based on examination of intraspecific variation in the cranial and mandibular morphology of fossil specimens.

The San Diego Natural History Museum currently contains 20 fossil specimens of P. sternbergi in its collection that will be used in this study. The cranial and mandibular characteristics of these specimens that define P. sternbergi as a species are identified as regions of focus. Variations of these characteristics are quantified as follows: ratio of mandibular symphysis length to mandible length, length of zygomatic arch, length of mastoid of petrosal, ratio of sagittal to coronal measurements of the brain case, ratio of coronal to transverse measurements of facial region, length of posterior projection of occipital condyles, and ratio of temporal fossa width to height. These measurements are recorded for P. sternbergi as well as Pontoporia blainvillei and Inia geoffrensis as a basis for comparison.

With this collection of data, statistical analyses are applied to determine overlap and/or significant variation of the compared species. The focus is placed on the size ranges of P. sternbergi measurements, with identification of any outliers and determination of mean sizes. Statistical models are used to analyze any significantly different measurements obtained from the related species. An analysis of variance (ANOVA) model enables the comparison of the means of measurements from the different species. 2-sample t-tests are conducted to compare each P. sternbergi measurement to the corresponding measurement of a compared species to test for significant difference of mean. Any result indicating a significant difference of mean supports P. sternbergi as an independent species.
200  1:30 pm

**Measuring success: combining ethology and ethnography to explore habituation progress in moor macaque monkeys (Macaca maura)**

Katherine T Hanson, Anthropology (M)
Erin Riley, Anthropology

Ethnoprimateology is the study of the ecological and cultural interconnections between human and nonhuman primates. Since the field’s emergence, ethnoprimateologists have examined overlapping human-primate resource use and conflict, human-primate disease transmission, primate folklore and its impact on conservation status, and primate tourism. However, habituation, a process by which wild animals learn to accept human observers as neutral elements in their environment, remains largely unexplored from an ethnoprimateological perspective. Researchers have previously investigated appropriate habituation methods, observer effects on habituated primate behavior, and habituation’s ethical implications. However, despite habituation’s role as a hallmark of field primatology, little attention has been paid to the intersubjective nature of the process; that is, as a mutually modifying experience for both primatologists and their study groups. My primary objective was therefore to explore habituation as both a scientific and subjective process by integrating quantitative behavioral measures with qualitative impressions of habituation “success” in an attempt to gain a multifaceted understanding of what constitutes “successful” habituation. Accordingly, I assessed progress in habituating a group of wild moor macaques from two perspectives: 1) the observed behavioral changes in moor macaques and human participants that occur during the habituation process and 2) researcher and field assistant perceptions of habituation progress. Using a mixed-methods approach, I collected comparative behavioral data of habituated and unhabituated macaque groups (Group B and G, respectively) while also collecting behavioral data from and conducting interviews with researchers and field assistants involved in the habituation process. Preliminary analysis of macaque behavioral data indicates that over the 7-month study period, Group G became more accustomed to human presence. For example, flight, avoidance, and display responses decreased while ignore responses increased. Although contact durations were expected to increase with increased levels of habituation, observer-primate contact durations remained constant. Researchers’ and field assistants’ impressions of habituation progress, however, did not match these behavioral indicators; namely, most did not perceive Group G to be fully habituated by the end of the study. These results suggest that “successful” habituation may be more nuanced than previously demonstrated in primate literature and should therefore be reexamined.

201  1:45 pm

**Taxonomic revision of the assassin fly genus Acronyches (Diptera: Asilidae)**

Allan Cabrero, Evolutionary Biology (M)
Marshall Hedin, Biology

The Asilidae genus *Acronyches* Williston, 1908 is reviewed. *Acronyches* is distinguished from other Leptogastriinae by the face being wide ventrally and narrow dorsally, the long antennal postpedicel, the absence of setae on the metathoracic femur, the short and wide abdominal segments 1-3, and a closed wing cell cup. *Acronyches* is known from 10 species that occur from northern Mexico to southern Paraguay. The last review of these large robber flies was published in 1971. Since then new material has accumulated in many natural history collections extending the known range of several species and also including a potentially new species from Brazil. This revision is based on external morphological characters of the adult flies and includes studies of the male and female terminalia. All 10 currently recognized species and potentially new species are re-described, a dichotomous key for their identification will be developed, and illustrations and photographs are provided to support the descriptions and facilitate future identification. In addition, the biogeography of *Acronyches* will be discussed.

202  2:00 pm

**Altered microbial abundance and community composition affect development in gametophytes of giant kelp, Macrocystis pyrifera**

Megan M Morris, Biology/Ecology (M)
Elizabeth Dinsdale, Biology

Marine microbial communities associated with kelp forests are important to overall ecosystem health, yet the role of microbes to kelp recruitment and reproduction is not well understood. In this study we experimentally tested the effects of altered microbial cell abundance and community composition on survival and development of giant kelp *Macrocystis pyrifera* propagules by growing them in the laboratory under different microbial conditions. Microbial cell abundance and composition in seawater was altered through filtration and inoculation with antibiotics. In addition, microbial communities were sampled from two kelp forests with distinct anthropogenic influence—Point Loma and Catalina Island. Experimental results were supported with next-generation metagenomic sequences that characterized the taxa and metabolic function of the microbial communities associated with the kelp forest waters. Because microbes are beneficial to ecosystems and their associated hosts, we hypothesized that removing microbes would reduce the settlement success and growth of *M. pyrifera* propagules. Furthermore, we hypothesized...
that microbial communities from an anthropogenically-influenced environment (Point Loma, CA) would decrease *M. pyrifera* propagule settlement and growth. Contrary to our hypothesis, a reduction of microbes in seawater enhanced *M. pyrifera* zoospore germination and growth in gametophytes. Removal of microbes through filtering resulted in increased gametophyte abundance ($\bar{x} = 10.222$) and size ($\bar{x} = 0.176$ mm), compared to treatments where microbes were maintained ($\bar{x} = 6.333$) ($\bar{x} = 0.135$ mm) ($p = 0.007, p < 0.001$). Mean gametophyte abundance and size also differed across antibiotics treatments. Erythromycin prevented *M. pyrifera* zoospore settlement and germination to gametophyte, while kanamycin, ampicillin and streptomycin increased gametophyte abundance compared to the control group ($p = 0.018$). With anthropogenically-influenced microbes from Point Loma, *M. pyrifera* gametophyte abundance and size was highest in low microbial abundance treatments ($p < 0.001$). In Catalina microbial treatments, gametophyte abundance and size was highest in intermediate microbial abundance treatments ($p < 0.001$). Metagenomic analysis showed that microbes from Point Loma, California lacked quorum signal producing genes which stimulate algal spore settlement, negatively influencing kelp recruitment. Our results suggest microbes may determine a threshold for kelp recruitment levels and influence the reproductive success of foundation kelp species *Macrocystis pyrifera*. These findings illustrate the importance of understanding microbial community structures in kelp forest recruitment and population dynamics.

203 2:15 pm

**Environmental influences on the bacterial community structure associated with competing corals and algae**

Eric R Hester, Bioinformatics & Medical Informatics (M)

Forest Rohwer, Biology

Coral and algal holobionts are ecological assemblages of macro-organisms and viruses, Bacteria, Archaea, dinoflagellates, protists and fungi. The degree of flexibility of these associations is important in understanding the ecological implications of these assemblages as the competition of corals and algae influence the structure of the reef ecosystem. Here we present a study that first robustly characterizes the bacterial fraction of the holobiont associated with corals and algae across a set of the Line Islands spanning a 1500km latitudinal gradient. We find two types of associations that are important to individual holobionts as well as demonstrate the importance of these associations in the context of competition between corals and algae. Finally, we assess these findings within an environmental gradient to determine the influence of the environment on the community structure.

Session C-3

**Oral Presentation:** Graduate Biotechnology

Friday, March 6, 2015, 1:00 pm

Location: Tehuanco

204 1:00 pm

**Expression, purification, and crystallization of the antigen binding fragment of the genomically-encoded precursor to the murine anti-sphingosine-1-phosphate antibody**

Elinaz Farokhi, Biochemistry (M)

Tom Huxford, Chemistry and Biochemistry

Sphinosine-1-phosphate (S1P) is a biologically active lipid that plays important signaling roles in angiogenesis, heart disease, and cancer. In recent years antibodies that can recognize biologically active lipids have been studied as potential therapeutic agents. We previously determined the 1.9 Å x-ray crystal structure of a humanized version of the murine anti-S1P antibody and reported the novel finding that it employs two bridging calcium ions in binding to its lipid antigen. In an effort to determine whether the incorporation of metals arose during affinity maturation of the antibody or if it was inherent to the antibody prior to any genetic alterations, we used database searching methods to identify the most likely germline light and heavy immunoglobulin genes that served as precursors to the mature anti-S1P antibody. These sequences have been engineered into a plasmid vector for recombinant expression in *E. coli*. Recovery of soluble protein required that both light and heavy genes be directed to the periplasm of the Gram-negative bacteria through implementation of PelB signal peptides on both genes in a co-expression plasmid. Routine preparations of five milligrams recombinant Fab fragment from two liters of liquid culture are now possible. Curiously, the affinity chromatography purified protein partitions into two well resolved pools upon further purification by size exclusion chromatography. Efforts are currently under way to crystallize this murine anti-S1P Fab in the absence and presence of metals for x-ray crystallographic analysis of the metal binding properties of the genome-encoded metalloantibody precursor antibody.
205  1:15 pm

**Implementation of “aldehyde tag” chemistry for investigation into the NF-κB p50 homodimer: IbBζ complex**

Samantha N. Cohen, Chemistry (M)
Tom Huxford, Chemistry and Biochemistry

The nuclear IkB protein κBζ binds with specificity to the NF-κB p50 homodimer. Mouse knockout studies revealed that IkBζ is necessary for NF-κB-dependent expression of interleukin-6 (IL-6) in response to lipopolysaccharide or interleukin-1. Researchers in our lab recently solved the 2.0 Å x-ray crystal structure of IkBζ bound to the p50 homodimer, revealing a “hotspot” in the protein:protein interface that might be possible to target with small molecule inhibitors. In order to support future studies aimed at identifying small molecule inhibitors of NF-κB p50 homodimer: IkBζ complex formation, we are developing fluorescence-based tools for monitoring binding *in vitro*. In this study, we employ a bioorthogonal site-specific protein modification technique developed by the Bertozzi group at Berkeley called the “aldehyde tag” method. Under this approach, a bacterial sulfatase-derived formylglycine generating enzyme (FGE) converts a cysteine residue within the FGE recognition motif LCTPSR to a formylglycine (FGly) residue with an aldehyde moiety. The highly reactive aldehyde functional group can be used as a chemical handle to which fluorophores can be covalently attached. We have encoded the FGE recognition motif into the IkBζ protein in bacterial expression plasmids and are testing co-expression and co-purification with FGE. Introduction of the aldehyde tag will permit fluorescent labeling of the proteins. These fluorescently labeled proteins will be used in Förster resonance energy transfer (FRET) experiments to monitor complex formation and identify small molecules that inhibit binding.

206  1:30 pm

**SUPER-FOCUS: A innovative tool for an agile functional analysis of metagenomic big data**

Genivaldo Silva, Computational Science (D)
Robert Edwards, Computer Science

Microbes are more abundant than any other cellular organism, and it is important to understand which organisms are present, what they are doing, and how they are doing it. In many environments a majority of the microbial community members cannot be cultured, and metagenomics is a powerful tool to directly probe uncultured genomes and understand the diversity of microbial communities by using only their DNA.

Analyzing the functional profile present in a microbial community from unannotated shotgun sequencing reads is one of the goals in metagenomics. Functional profiling has valuable applications in biological research because it answers what are the organisms present in the metagenomic sample doing. Currently available tools do not scale well with increasing data volumes, which is important because both the number and lengths of the reads produced by sequencing platforms keep increasing.

Here we introduce SUPER-FOCUS, Subsystems Profile by database Reduction using FOCUS, an agile homology-based approach using a reduced SEED database to report the subsystems present in metagenomic samples and profile their abundances. SUPER-FOCUS uses FOCUS (Silva et al., 2014) to predict the organisms present in the metagenomic sample and creates a reduced database containing only the subsystems present in the organisms present into the microbial community. The tool was tested with over 100 real metagenomes, and the results shows that our approach accurately predicts the subsystems present in microbial communities, and it is over 1,000 times faster than other tools.

207  1:45 pm

**Development Of Highly Efficient Synthetic Biology Cloning System: LBC For Use In High Throughput Cloning on Automated Robots**

Greg A Peters, Biology (D)
Thomas Cujec, Sciences

Recombinant DNA Technology was first developed in the 1970’s as a tool to manipulate DNA, Deoxyribonucleic Acid, by Paul Berg, Stanley Cohen, and Herbert Boyer. Also known as Genetic Engineering, this technology allows scientists to join together pieces of DNA into one desired construct of DNA. The technique was originally developed by using *Escherichia coli*, commonly referred to as *E. coli*, as the host organism for the manipulated DNA. It takes advantage of the use of Plasmids, Restriction Enzymes, and T4 DNA Ligase. It is currently the most common type of cloning system and millions of reactions have been carried out using this technique.

Recently recombination based cloning technologies are becoming more popular among the scientific community and are very easy to use. However with this ease and efficiency there is a high cost. This is good for a few reactions but is not cost effective for a high number of reactions. Overall the simplicity of this cloning technology makes it very powerful.
We have developed a new cloning method named LBC and it was developed by using Virus enzymes in vitro. Our first experiments using this new technique showed very promising results. The best of all is that the technique is amenable to high throughput systems and we scaled the system up to 96-Well reaction format and can automate it on our Beckman-Coultier Fx robots.

This tool will greatly aid in biology and biomedical research. This provides a novel and alternative mechanism, which is very efficient, which can be further used in research labs. Some examples of uses are High Throughput Cloning of Open Reading Frames in Viral sequence discovery, High Throughput Cloning for Structural Biology and Protein Crystallization, High Throughput Cloning of sequences to construct genomes or DNA sequences, and High Throughput Cloning of sequences in Drug Discovery.

Future directions for research related to this study would be to scale up the technology to even higher scales of 384 wells and further optimize the protocol. LBC is a very powerful technique and it and others will become more popular to allow for much easier cloning.

208  2:00 pm
Simultaneous and Ultrasensitive Detection of Three Types of Bacterial Meningitis by Multi-Photon Nonlinear Laser Wave-Mixing Optical Detection and Capillary Electrophoresis
Jean Sebastien Pradel, Chemistry (D)
William Tong, Chemistry

Hypothesis: Bacterial meningitis is well known for its rapid onset and high mortality rates, and hence, rapid detection of bacteria found in cerebral spinal fluid (CSF) and subsequent effective treatments are crucial. We present a new assay format with simultaneous hybridization of a complementary DNA probe to a target sequence followed by l-exonuclease digestion of double stranded DNA and UV detection of the digestion product using laser wave-mixing absorption spectroscopy. Our patented multi-photon laser wave-mixing absorption-based methods offer ultrasensitive (zepto mole) detection of three types of bacterial meningitis (early diagnosis). Laser wave mixing offers inherent advantages over conventional optical methods including excellent detection sensitivity, small probe volumes, small sample requirements, compact portable detector designs, and high spatial resolution suitable single-cell analysis. Method: In a typical wave-mixing setup, two laser beams are focused and mixed inside the sample and the resulting interference gratings generate the signal in a propagation direction that is different from those of the input beams. The signal is a coherent laser-like beam, and hence, it can be collected with excellent collection efficiency levels and high signal-to-noise ratios. Results: DNA absorbs in the UV wavelength range and we can use a 266 nm UV laser to probe biomolecules in their native form without using labels. As an alternative approach, we can use FAM, TAMRA or Cy3 to label DNA so that it can be probed using a more convenient visible 532 nm laser. We compare detection sensitivity levels of these two different approaches and those of fluorescence-based detection methods. Our wave-mixing signal has a quadratic dependence on analyte concentration, and hence, wave mixing is especially effective for monitoring small changes in analyte properties. Conclusion: Our wave-mixing detection sensitivity levels are comparable or better than those of fluorescence detection methods and wave-mixing detection is applicable to both fluorescing and non-fluorescing samples. Potential applications include detection of biomarkers and single cells, early and rapid detection of diseases and the analysis of protein interactions. Our nonlinear multi-photon detectors can be easily configured as battery-powered portable devices that are suitable for clinical use in the field where resources are limited.

209  2:15 pm
Accessorizing helical proteins with short beta-hairpin sequences
Melissa E Lokensgard, Chemistry (D)
Melissa Lokensgard, Chemistry

In this study, we document our efforts to explore changes in biophysical properties of small helical domains upon addition of beta-hairpin motifs to their peptide sequences. The original motivation for this work was empirical; some small helical protein domains our lab has worked with express poorly in the E. coli BL21 DE3 cytosol. The reasons for this are not precisely known, as exploration of this topic is a biologically complex question involving protein homeostasis, made yet more difficult by virtue of the fact that this system is heavily modified from its native context. Additionally, the biochemical basis of recombinant expression difficulties has been of little import to most protein scientists, because other avenues to protein production exist for nominal increases in the cost of purification. What is known is that certain protein sequences are more likely to be degraded rapidly due to recognition pathways inside the cell, most of which are understood to act primarily at the amino-terminal end of targeted sequences in both prokaryotes and eukaryotes. Serendipitously, we have found that we can overcome degradation to accumulate large amounts of our study proteins by adding as few as twelve amino acids of a beta-hairpin motif from thermostable proteins to either terminus of the original sequence. Ordinarily, structural biologists and others interested...
in *in vitro* experiments would utilize significantly larger moieties to stabilize an expression-recalcitrant domain. Our results have led us to hypothesize additional regulation of degradation recognition mechanisms based not only on primary sequence, but also on structure and biophysical properties. We have worked to characterize the changes in thermodynamic behaviors of eight beta-hairpin chimeras of a small helical domain primarily through the use of circular dichroism spectroscopy, a technique sensitive to global changes in secondary and tertiary structure. The significance of this work is two-fold: in addition to representing an additional biotechnological tool for protein production, we believe our system can be utilized to study protein homeostasis questions in a reduced-complexity environment.

**Session C-4**  
**Oral Presentation:** Imaging Technology  
**Friday, March 6, 2015, 1:00 pm**  
**Location:** Aztlan

**210**  
1:00 pm  
**PlanTracker: Radiation Oncology QA and Modern Informatics**  
Daniel Zaks, Medical Physics (M)  
Laura Cervino, Physics

Hypothesis: Literature research suggests that the aggregate analysis of data and automation of data processing in clinical radiotherapy may improve QA outcomes in radiotherapy, and allow for superior time use among medical physicists. This presentation explains the current model of physics QA at the UCSD department of radiation medicine, highlights potential benefits of automation, and discusses the development and testing of an online process automation tool, PlanTracker. Methods: Primary steps involved a survey of existing academic literature, surveying clinical medical physicists on time-use, analysis of survey results, and collaboration with a software development team to build the online tool PlanTracker. Outcomes: Survey results show that ~30% of time spent on physics QA checks is spent on non-physics related, highly automatable tasks. We also demonstrate the functionality of PlanTracker, and the way in which it improves on the existing method of physics QA for radiotherapy. Summary: Updating the clinical radiation oncology informatics backbone is an essential direction for research and clinical radiation medicine. An early benefit is improvement in QA, which will improve treatment plan quality, patient outcome, reduce treatment error, and highlight further areas for research and discovery.

**211**  
1:15 pm  
**3D nano-cavities with hyperbolic dispersion from Al:SiO2 layers: an approach for optical mode confinement.**  
Carla M Bacco, Physics (M)  
Lyuba Kuznetsova, Physics

Today’s technological needs are demanding for faster and smaller components within the field of photonics. In silicon wafers, optical cavities can be incorporated in a small volume to enhance light matter interactions and to produce directional emission. These cavities need to achieve high emission rates and efficiency with sub-wavelength radii [1]. A nano-layered metamaterial is created from different concentrations of aluminum doped silicon oxide which introduce hyperbolic dispersion to further confine the mode and increase the rate of the emission [2]. Aluminum doping can be performed with sputtering or deposition during the silicon wafer fabrication process. Applications include optical communications, ultrafast LEDs, and biological nanoparticles sensing. This presentation gives results of a numerical study for an approach to mode confinement using nano-layered metal dielectric with different fill fractions of aluminum. The fundamental properties of the optical modes and resonance frequencies for the nano-cavities are studied using the finite-difference time-domain numerical technique. Using this technique in a 20 layer sample, the light can be adequately confined to a space 22 times smaller than a silicon oxide disk. Reducing the cavity size further doubled the Purcell factor for the disk with aluminum doping. Beyond this point, the cavities exhibited antenna-like properties. This paper will also focus on other variables of mode confinement such as quality factor, loss, and fill fraction which may lead to stronger mode creation with smaller cavity disks.

References:  

**212**  
1:30 pm  
**Studying the Effects of Lung Tumor Motion in Imaging and Stereotactic Body Radiation Therapy Using a Novel 4-D Positron Emission Tomography Phantom**  
Dima Soultan, Medical Physics (M)  
Laura Cervino, Physics

Non-small cell lung cancer (NSCLC) constitutes 80% of all cases of primary lung cancers and is one of the most common tumors worldwide. Positron emission tomography (PET) is a medical imaging modality of the lung provides data on biological properties of
tumors, allowing identification and characterization of the tumors based on their molecular metabolic activity or proliferation rate.

Stereotactic Body Radiation Therapy (SBRT) involves precise delivery of ablative radiation doses to localized malignancies using image guidance and/or tumor tracking. SBRT has become a common treatment strategy for NSCLC.

Respiratory motion has an important impact on imaging the tumor concerning delineating the apparent size and shape in PET images. The common practice to reduce motion artifacts is to segment the PET volume over scan time. Whereas in treatment, the lengthy time required to deliver each treatment fraction contributes to motion during delivery of radiation fraction due to immobilized patient discomfort in treatment position.

Thus, respiratory motion jeopardizes the imaging process and the delicate therapeutic index (TI is the ratio of the radiation dose causes therapeutic effect to tumor cells the dose causes toxicity to surrounding healthy tissues).

Gating, which is delivery of radiation in certain windows of time during the respiratory cycle, is an approach to minimize the geographical miss of the tumor despite respiratory motion. Unluckily there is always unavoidable irradiation of healthy tissues surrounding the tumor. This is even more critical in SBRT, which entails delivery of large dose each fraction.

The project proposes the construction of several novel phantoms using 3D printing for 4DPET studies, gated radiation dose measurements, and cell survival assays for gated SBRT of NSCLC. The known size of the targets in the phantoms are used to test segmentation strategies in 4DPET. One target is made of variable density mimicking the capillarity around the tumor, enabling the study of the study of its effects. These phantoms are able to hold ion chambers to perform dosimetric studies with a moving platform, and test tubes with NSCLC cells to test survival with high-dose rate, low-dose rate, and different gating windows, and over all treatment time.

213  1:45 pm

Far-field seismic spectral responses resulting from complex rupture behaviors

Yongfei Wang, Geophysics (D)
Steven Day, Geological Sciences

Many earthquake physical properties, such as seismic moment, rupture extent and stress drop, can be estimated from far-field seismic wave spectra. Corner frequency and the high-frequency fall-off rate of the spectra are often measured in order to make an assessment of dynamic stress drop and other source parameters such as radiated energy. Based on specific theoretic models, some quantitative relations have been established between far-field spectra and source properties. The most widely accepted model is described in Madariaga (1976), who performed a finite-difference simulation of a circular crack model. An important relation is \( f_c = k\beta/a \), where \( f_c \) is azimuthally averaged corner frequency, \( \beta \) is S-wave speed, \( a \) is circular radius and \( k \) is an empirical constant with different values for P and S wave spectra. Many other models have been proposed, including the recent dynamically realistic rupture simulations of Kaneko and Shearer (2014), all of which have yielded a variety of different values for \( k \). However, models to date have been for relatively simple ruptures and the effect of rupture complexity, including heterogeneous stress and slip, on stress drop and scaled energy estimates has not been fully explored. Here, we consider complicated ruptures, which include fault roughness and complex pre-stress distributions, and compute the spectra that would be recorded by realistic distributions of surface stations. We then process the synthetic data using methods commonly applied to real data and attempt to quantify which fault properties can be reliably estimated from the observations and the most likely sources of errors in the analysis.

214  2:00 pm

Non-Spherical Models of Neutron Stars

Omair M Zubairi, Computational Science (D)
Fridolin Weber, Physics

Conventional models of compact objects such as neutron stars assume they are perfect spheres. However, due to high magnetic fields, certain classes of neutron stars such as magnetars and neutron stars containing color-superconducting quark matter cores are expected to be deformed (non-spherical). In this work, we seek to examine the stellar structure of such objects in the framework of general relativity. We derive the stellar structures equations of non-spherical neutron stars and calculate stellar properties such as masses, radii, along with pressure and density profiles and investigate any changes from standard spherical models.

This work is supported through the National Science Foundation under grants PHYS-1411708 and DUE-1259951. Additional computing resources are provided by the Computational Science Research Center and the Department of Physics at San Diego State University.
A comparison of demons image registration algorithms to monitor longitudinal changes in knee cartilage: Data from the OsteoArthritis Initiative (OAI)

Uyen N Hoang, Computational Science (D)
Usha Sinha, Physics

Osteoarthritis (OA) is a slowly progressing disease characterized clinically by pain, deformity, enlargement of the joints, and limitation of motion. OA causes, among other changes, loss in cartilage volume that increases as the disease progresses. OA is a complex disease and objective documentation of disease progression or response to treatment is challenging. Approximately 27 million adults age 25 and older have clinically diagnosed OA; however, cartilage loss with disease progression is small and localized to sub-regions of the cartilage. Detection of these changes is challenging and manual methods are tedious and error prone.

Magnetic resonance imaging (MRI) is a non-invasive modality that provides high-resolution, 3-dimensional images with high contrast between cartilage and the surrounding anatomy. Highly accurate measures of cartilage volume, and thickness (global and local) can be extracted from morphological MR images. The focus of this research is on development of accurate tools to quantify the small and localized changes in cartilage morphology to facilitate comparisons between patient cohorts with varying degrees of OA as well as to track longitudinal changes (normal progression and response to treatment). The application area is the femoral cartilage but the methodology can be readily extended to the patellar and tibial cartilage.

We explored a fast, readily implementable algorithm called the ‘Demons Algorithm’. We implemented and compared the registration accuracy of four variants of the algorithm on cartilage image volumes. The registration algorithms were also evaluated for the accuracy of the average Jacobians. Evaluation was performed on 36 subjects using the baseline and later time point images acquired after 12 months. The symmetric evolved demons algorithm provided the best in registration accuracy evaluated using quantitative metrics of mean squared error and voxel overlap. The average Jacobian of the cartilage was compared to the ratio of volume change for validation. The symmetric simple demons and symmetric evolved demons performed equally well in terms of the Jacobians. The techniques developed here will be used, in future studies, to explore differences in cohorts segregated by disease severity and correlation of local changes to clinical variables.

Poetry: The Most Nude Form of Artistic Expression

Lillian K Safarian, Philosophy (U)
Sandra Wawrytko, Philosophy

Let us begin by considering two different poems;

Old pond,
frogs jumped in,
sound of water.

Some say the world will end in fire,
Some say in ice.
From what I’ve tasted of desire
I hold with those who favor fire.
But if it had to perish twice,
I think I know enough of hate
To say that for destruction ice
Is also great
And would suffice.

The first poem is one of the most famous haikus in history and written by Matsuo Basho (1644–1694). As a general note, this haiku translated in English does not follow the traditional 5-7-5 syllable structure of a traditional haiku, but does so in Japanese. The second poem was also popular for its time and was written by Robert Frost (1874–1963), a famous American poet. The theme of the second poem has been showcased heavily in American pop culture, the most transparent example being the HBO television series, Game of Thrones. The theme of the first poem has been encapsulated by Japanese culture, and is most obvious and apparent in animated Japanese films such as Studio Ghibli’s Princess Mononoke, Spirited Away and most recently, The Tale of Princess Kaguya.
This study will pursue the development of the two themes presented in the poems above and compare them in order to support my thesis that poetry is the most “naked” form of artistic expression. To be clear, although this study will focus on American poetry and its Japanese counterparts, the philosophical significance of Chinese, Korean and Hindu aesthetics will also be addressed, compared and contrasted. In addition, the significance of music, film and television will be the primary works of art that will be researched and compared to poetry. For example, Lena Dunham has been heavily criticized for themes she pursues in her hit dramedy, Girls, on HBO, but during interviews, states that she was more nervous about sharing often personal themes, then stripping naked for the camera. This type of mentality is somewhat prevalent in American culture and supports my conclusion that pursuing certain themes in art are often more personal than even sex.

217  1:15 pm
The Limits of Language
Brendan Carolin, Philosophy (U)
Steven Barbone, Philosophy
My presentation will acknowledge the importance of language while focusing on its limitations. Everyday, a variety of languages are used in society. Sometimes it happens without our conscious knowledge of their usage. In many cases, these languages we use fail to communicate what they cannot communicate. I will explore possible limitations, and also examine cases where language is useless. In some cases, only meaning can be expressed through experience. I will relate these ideas to the diversity of people, their experiences, and how language can fail to express exact meaning.

218  1:30 pm
Artificial Intelligence Semantics
Monica Gonzalez, Philosophy (M)
Steven Barbone, Philosophy
Can a machine think? The reply is an affirmative YES. Artificial Intelligence semantics is viable when analogous to a human being’s acquisition and cognitive development of language through the application of a scientific worldview approach. A philosophical interpretation of semantics within the branch of semiotics is utilized to conceptualize the scientific possibility of an Artificial Intelligence prototype. The principle of inductive adequacy requires that the knowledge structure (i.e., data structures) of a functional Artificial Intelligence system incorporate a learning mechanism with the ability to generate new constructs. The hybrid process of induction (PI) system expresses concepts that activate generalizations, specializations, concept formations, and abductions. Learning mechanisms, such as the system applications of both the processes of induction and abduction, are capable of generating Artificial Intelligence concepts without the need of empirical means. The Artificial Intelligence prototype, equipped with a robotic interface, infers through the detection of empirical features derived from the generalization IF to the specialization THEN. The further application of algorithms into the learning mechanism in turn generates ever increasing complex Artificial Intelligence concepts through both the robotic interface detection and inductive leaps of innate knowledge already present in the system applications. Ours is indeed a conscious universe that is in itself in a constant symbolic conversation. Consciousness then is present if there is the potential for the individual to alter the environment (and be altered by it) through an evolutionary process.

219  1:45 pm
Why questions concerning Realism and Idealism in Heidegger are non-starters
Alexander Misthos, Philosophy (M)
Steve Barbone, Philosophy
Heidegger is regularly appealed to in order to weigh in on issues that he felt philosophy ought to leave well enough behind it. One of the most common such debates concerns the question of whether or not one ought to characterize Heidegger as a realist, or an idealist. Those who busy themselves with trying to search for evidence of Heidegger’s being either a realist or an idealist are in error insofar as they have failed to ask the prior question of whether or not the positions of realism and idealism can be justifiably applied to Heidegger at all. These debates often center themselves on Heidegger’s early masterpiece Being and Time, and consequently, so will the following discussion. We shall focus our investigation to those sections of the work that most directly addresses the issue of realism versus idealism (section 43, Dasein, Worldhood, and Reality, and section 44, Dasein, Disclosure, and Truth). First, we shall show how these sorts of readings can be problematic by showing that even within just these two sections, one can find ample evidence to support either a realist or idealist interpretation of Heidegger’s position. Once this has been accomplished, we shall attempt to construct an account of Heidegger’s actual position in these sections, which will show why debates over realism and idealism in Being and Time are non-starters.
220 2:00 pm

**How Does Heidegger’s notion of Being-in-the-world undercut the Cartesian Subject-Object Starting Point?**

George L Tibbitts, Philosophy (M)
Peter Atterton, Philosophy

The basic challenge of traditional epistemology arises from skepticism about the existence of the external world. Such skepticism is directed at how the ‘knower’ relates himself to the things ‘know’. This is commonly known as the “subject-object” distinction. In this paper, I will present the subject-object distinction first articulated by Descartes and show that it makes for a poor foundation for epistemological ambitions. I will then show how Martin Heidegger resolves this “alleged” problem in his treatise *Being and Time* through his existential analysis of “Dasein.” According to this analysis, the subject-object distinction is an arbitrary one insofar as Dasein’s basic state is essentially “Being-in-the-world.” Heidegger disputes any claim that grounds “objectivity” on the basis of “subjectivity” and vice versa. He argues instead that Dasein and the world are inseparable and are both equally primordial, which is to say that neither are the primary starting point for a proper ontology (or epistemology). In order to properly set up Heidegger’s argument an analysis of the unique entity, “Dasein”, is crucial. This entity is characterized by having amongst its possibilities, the possibility to be concerned with its own “Being” (i.e. that which determines entities as such). Heidegger claims that any investigation of Being can only be disclosed from a “being” (i.e. entity) that has amongst its possibilities, concern for its “own” Being. Accordingly, Dasein is the starting point for an ontological investigation of the meaning of Being. Such an investigation entails an existential analysis of this entity in regards to the fundamental structures by which Daein is possible at all. This analysis in other words will uncover the *primordial ways* in which Dasein ‘is,’ thereby revealing that Dasein is essentially “Being-in-a-world.” Upon completing the task of setting up the context of Heidegger’s argument, I will show that his notion of Being-in-the-world undercuts the Cartesian Subject-Object starting point altogether and consequently all theories derivative of this starting point have no foundation.

221 2:15 pm

**Deleuzian Conceptions of Truth**

Kevin Siefert, Philosophy (M)
Mark Wheeler, Philosophy

It is the intent of this presentation to explicate in a critical manner the concept of “truth” as formulated within the philosophic framework of Gilles Deleuze. The main text I will focus on in coming to understand Deleuze’s “truth” is his *Proust and Signs*. This work, while being devoted towards understanding Proust’s *A la Recherche du temps perdu*, is not just an explication of Proust’s own thought but is rather Deleuze’s own thinking within the Proustian “world.” Deleuze will argue that Proust’s Search is a search for truth, which is derived entirely from the multiplicity of signs and their relationship to the different lines of time. In order to further understand what Deleuze’s conception consists of, I will look to Alain Badiou’s criticism of Deleuzian thought as presented in his *Deleuze: The Clamor of Being*. I hope to show that Badiou’s characterization of Deleuze as a Neoplatonist is a misreading. In order to do this I will investigate into the greater Deleuzian canon to show that the conception of truth is intimately related to the multiplicity of signs, and the “essence” of which they are a product of. This essence, while sounding Neoplatonic, does not in fact come to resemble anything like the intelligible realm of Plato.

Session C-6

**Oral Presentation: Analyses of Learning**

Friday, March 6, 2015, 1:00 pm

Location: Templo Mayo

222 1:00 pm

**Surveying for the future: Which mode of survey administration is best suited for social science research?**

Alexander J Hyland, Psychology (U)
Marc Taylor, Psychology

Background: Advancements in portable technology, such as internet-enabled, hand-held computers, have made possible a variety of tasks once considered impossible. One area that is changing due to technology is scientific research, particularly social sciences that rely on self-reports of health and behavior. Preceding the emergence of portable technologies, paper-and-pencil surveys were the main method of collecting survey data; however, researchers are now using tablet-based surveys, despite limited research detailing how the change in survey mode affects participants or researchers. This study compared the use of tablet versus paper-and-pencil administered surveys.
on the following dimensions: participant perceptions of ease of use and anonymity, cost of required raw materials, and research personnel time. It was hypothesized that participants' perceptions of anonymity and overall research costs would be lower for the tablet than the paper-and-pencil survey. Methods: A 29-item survey was administered to 62 adults (69% female) randomly assigned into a tablet or paper-and-pencil group. The survey was anonymous but participants created an identification code using segments of their identity. The survey included a validated 22-item personal hygiene scale, 4 items assessing participants' perceptions of anonymity and ease of completion, along with 3 demographic questions. Chi-square and t-tests were used to determine group differences for all survey variables. Additionally, two researchers were interviewed to obtain data regarding the resources required for each survey mode, including equipment costs and personnel. Results: Several differences were observed between survey modes. Tablet participants took significantly longer to complete the survey ($t(45)=2.4, p<.01$) and reported experiencing significantly more technical difficulties ($X^2=34.9, p<.001$). No group differences were observed in participants' comfort level with answering sensitive questions ($p>.05$), but paper-and-pencil participants felt more confident their data was anonymous than tablet participants ($t(31)=1.71, p=.09$), although the difference only approached significance. Data from the researchers showed that while cheaper ($$488.34 paper versus $3419.88 tablet), data from paper surveys took longer to manage (21.05 hours versus 17.82 hours). Conclusion Study results indicate that while researchers may benefit from using tablet-based surveys, participants may experience more difficulties or feel uncomfortable using tablets. Researchers should carefully weigh the costs and benefits of survey administration mode.

223 1:15 pm

**Project AWARE Program Evaluation**

Dezmon Monroe Robinson, Interdisciplinary Studies (U)
Joey Estrada, Counseling and School Psychology

Adolescence for many individuals represents a challenging developmental period. Youth who experience multiple psychosocial risk factors, such as low self-esteem, hopelessness, exposure to trauma, and associations with negative peer groups, are significantly more likely to participate in antisocial behavior including drug use, violence, delinquency, and early sexual activity (Morton & Montgomery, 2013). Recent research has found interventions that strengthen protective factors in adolescents' attitudes, skills, and relationships may be able to have long-term impacts on adolescents' ability to overcome, "adversity and make successful transitions to adulthood" (Morton & Montgomery, 2013).

Project A.W.A.R.E., in partnership with the San Diego County Office of Education, provides Social and Emotional Literacy (SEL) evidence-based prevention programming. The SEL prevention model is prevalent in youth prevention programs throughout the world. Project A.W.A.R.E. will empower youth, schools, and communities through providing SEL prevention programming for San Diego County ages 10–19. Project A.W.A.R.E.'s intent is to replicate this model throughout California and the nation.

Hypothesis: Youth (10–19 years old) students in San Diego County schools who participate and complete the 8 sessions of Project A.W.A.R.E. will increase their knowledge and awareness of SEL skills. Methods and Outcomes: Quantitative data included 93 pretest-posttest questionnaires, which were utilized by Project A.W.A.R.E. The pretest evaluated the program objective and was used as a basis of comparison with the posttest results (Unrau, Grinnell & Gabor, 2012). Additionally, extant qualitative data were used and consisted of 113 testimonials written by participants. Respondents included participants of Project A.W.A.R.E who completed the program between 2011–2013. Access to the data was granted by the program director via signed consent forms. Conclusion: The collection of the quantitative data used for this study was insufficient for analysis. The pre-existing data were in no dated order and contained an array of different documents. As such, the analysis focused on the qualitative data. Preliminary findings indicated that participants were benefiting from the program and increase social and emotional literacy skills.

224 1:30 pm

**Early Alert Practices Among 100 Community Colleges**

Amalia Cristiano, History (U)
James Bolden, Arts and Letters

For non-traditional students, factors related to employment, socioeconomic status, and family obligations, have been found to have ramifications on student success outcomes, such as retention and attrition (Hagedorn, Maxwell & Hampton, 2001; Mohammdi, 1996; Pascarella, Smart, & Ethington, 1986; Tinto, Russo, & Kadel, 1994; Walleri, 1981; Wyman, 1997; Wild, & Ebbers, 2002). Specifically, students who work full-time, are lower-income, are older adults, and have dependents, are less likely to persist (Bean & Metzer, 1985).

A way to address attrition in community colleges is the implementation of effective intervention approaches, which emphasize initiating contact with students at the early stages of difficulty.

This study examined community colleges nationwide and the structural components of their early alert systems. More
specifically, the study looked at positive practices and areas that could benefit from improvement, to improve the effectiveness of early alert systems.

Schools were randomly selected and pre-identified using stratified random sampling. Schools were sampled using the web to identify community colleges within certain geographic regions. Once schools have been identified, document analysis would be performed in order to identify web page content pertaining to early alert systems associated with each campus. A matrix will then be designed to interpret and categorize the implementation of specific early alert systems. Once the matrix has been completed it will be analyzed to identify prevailing themes in order to develop a hierarchical taxonomy. The goal of this taxonomy will be to classify essential elements of early alert systems that are being used by colleges across the nation. The results of this study are pending analysis and will be included during the presentation.

Although the findings for this study have yet to be identified, we hope that our research will emphasize the importance of having an effective Early Alert system. This will hopefully motivate higher education professionals to make a change in the current community college system, or educate others on the importance of Early Alert systems.

225 1:45 pm
**Success, as the God-Term: A Rhetorical Analysis of San Diego State’s Strategic Plan**

Tomas Nieto, IDS3 (U)
Suzzane Bordelon, Rhetoric and Writing Studies

This analysis examines the rhetoric of San Diego State University’s Strategic Plan, particularly the cultural context and assumptions behind the deployment of the term “success”. This study explores the document’s rhetoric through an overarching frame of epideictic rhetoric and then hones in on the cultural adhesive, “success” the god-term, which upholds this framework. Second, the project draws on of the sociological concepts to explain the internal formation of “success,” the god-term, within the identity of the student, and externally how “success” is seen in the larger context of higher education within society. The goal of this project is to understand the motivations of the stakeholders at SDSU (students, faculty, and alumni/contributors) and how the university centers its rhetoric on this ideal.

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226 2:00 pm
**A Study in Reading Comprehension—Tablets or Printed Text**

Heather M Galyn, Reading Specialist (M)
Sharan Gibson, Teacher Education

This study works to analyze whether or not a student’s reading comprehension and fluency varies when they are reading on paper as opposed to on a tablet. Working with nine sixth graders within an elementary school with a high percentage of English Language Learners, this study worked to analyze how quantitative data showing reading comprehension and fluency results for both reading on paper as well as for reading on an iPad. Overall, the research showed that students were able to read more words, on average, with a lower number of errors when they were working on an iPad. However, they were able to answer more comprehension questions correctly when they were reading on paper.

227 2:15 pm
**Undergraduate Research, Scholarship, and Creative Activity: Analyzing ‘What Counts’ through Qualitative Research Methods**

Kassandra Nearn, Anthropology (M)
Geoffrey Chase, Undergraduate Studies

Undergraduate research, scholarship, and creative activity can take many forms and involve a variety of skill sets that differ contextually between disciplines. As part of an initiative by the Undergraduate Research Working Group at San Diego State University (SDSU), qualitative research was conducted to begin defining ‘what counts’ as undergraduate research and to identify the differences that occur. For example, how a student conducts research in the humanities will be different from how a biology student participates in research, which will also differ from how art students develop an exhibition. The concept of research was viewed as a developmental process; one that a student undergoes with varying levels of autonomy during a training process.

The variety of characteristic skill sets students may acquire during training were analyzed in eight generalized disciplines that encompass the variety of departments and academic programs at SDSU. Interviews and consultation of existing curriculum records, such as course syllabi, were used to develop a matrix displaying these developing skill sets. The matrix is meant to be seen as a continuum. This continuum includes pre-training foundational skills followed by advancing skill sets during training defined as “initial”, “emerging”, “developed”, and “highly developed”. The completed matrix has applications for providing contextual information of ‘what counts’ as research in order to support efforts to assess the status and level of participation in undergraduate research, scholarship, and creative activity.
Session C-7
Oral Presentation: Health & Risky Behaviors
Friday, March 6, 2015, 1:00 pm
Location: Visionary Suite

228  1:00 pm
Examining Knowledge of HIV/AIDS Among SDSU Students
Rachael Wax, Public Health (U)
Michael Grillo, Graduate School of Public Health

The current research on young adults’ knowledge of HIV/AIDS suggests that individuals in this population possess a satisfactory level of knowledge regarding the epidemic. However, research also suggests that this knowledge does not indicate whether the individual will practice safe sexual behavior (Marsiglia et al, 2013). The objective of this study is to determine and compare the level of knowledge regarding HIV/AIDS between freshman and senior students at San Diego State University. Male and female freshmen and senior students over the age of 18 will be invited to complete an anonymous, online survey through Survey Monkey. The survey will remain open for two weeks, or until 100 viable responses have been received. Viable survey results will be analyzed in order to determine the level of HIV/AIDS knowledge among participants. These data may be useful in determining whether additional sexual education would be advantageous to the student population at San Diego State University. There are no major risks to participants in this study and minor risks such as discomfort caused by the answering of personal questions will be mediated by completing the survey anonymously and online.

229  1:15 pm
Association between HIV Risk Perception and Condom use in a Sub Saharan Military Population
Adepeju Sanni, Epidemiology (M)
Richard Shaffer, Graduate School of Public Health

Sub-Saharan Africa has the highest regional HIV prevalence rate of all age groups. (UNAIDS, 2013). Heterosexual transmission is the primary mode of HIV transmission in Africa. HIV prevalence rate is 3 times higher in the military than that of the general civilian population. This alarmingly high rate led to the speculations that HIV/AIDS will destroy the stability of the African military. (Lloyd et al., 2014). The increasing quality of treatment and care coupled with decreasing number of deaths due to AIDS has given HIV positive individuals the ability to conceal their diagnosis for longer time period thereby increasing their likelihood of transmitting the disease to another person. The number of new case of HIV infection in Sub Saharan African countries occurs in sero-discordant couples that reported low condom use and HIV disclosure. (Bunnell et al., 2006; Medley et al., 2004). A secondary analysis of the 2013 Department of Defense HIV/AIDS Prevention Program (DHAPP)’s 2013 Sero-prevalence and Behavioral Epidemiology Risk Survey (SABERS target respondent is about 1200 military personnel) was conducted to study the association between HIV risk perception and condom use. Regression analysis was conducted to assess the relationship between HIV Risk Perception and condom use controlling for Age, Number of sexual partner, HIV knowledge and having multiple partner. The result of this study will help improve future HIV prevention and intervention program among African Military. The study found out that after adjusting for Marital Status, the odds of using condoms during sexual intercourse with a regular partner are 2.3 times higher for those who are already HIV positive compared to those who perceived themselves as not likely to have HIV (95% CI 1.189 – 4.617, P Value = 0.0139 < 0.05). Also, adjusting for HIV perception risk, the odds of using condoms are 66% lower for those who are married or in a polygamous marriage compared to those who are single never married or single with a partner outside base. (OR 0.336, 95% CI 0.238–0.475, P<0.0001).

230  1:30 pm
Influence of Mental Health Indicators on Associations between Structural Stigma and Cigarette Smoking in Non-heterosexual and Heterosexual Young Adults
Cheryl Ann B Valdez, Epidemiology (M)
Heather Corliss, Graduate School of Public Health

Objectives: Tobacco use is the leading cause of preventable disease and death in the United States. Mental health and social factors such as stigma and discrimination contribute to risk for tobacco use. While social acceptance of non-heterosexual orientations has been improving, sexual minority (e.g. lesbian, gay, bisexual) populations may be more likely than the general population to experience social stigma and associated consequences such as negative mental health outcomes. Drawing on theories of Minority Stress and Self-Medication, this study will (1) examine patterns of tobacco use in heterosexual and non-heterosexual young adults, (2) determine if structural stigma is associated with tobacco use in sexual minorities, and (3) observe if mental health risk factors influence the hypothesized relationship between structural stigma and tobacco use. Methods: Data from this analysis comes from the Growing Up Today Study (GUTS). GUTS is a national, prospective cohort study of children whose mothers are participants in the Nurses’ Health Study II (NHSII). After soliciting mothers for their children’s involvement, the first wave of GUTS participants were enrolled in 1996 and included a total of 16,882 children aged 9–14. This study will
employ a cross-sectional analysis of the GUTS 2010 survey data (n = 7,703 young adults, mean age 25 ± 1.6, 16.75% sexual minority). Planned Analyses: This study will use descriptive, bivariate, and logistic regression analyses to fulfill the study aims. An objective measure of structural stigma will incorporate the percentage of same-sex households, number of protective policies, and mean public opinion toward sexual minorities in each state. The outcomes of interest are nicotine dependence and smoking frequency. Covariates include age, ethnicity, gender, state smoking prevalence, state-level income inequality, and state median household income. Additional analyses will examine if mental health conditions (depression, anxiety) influence the hypothesized association between structural stigma and tobacco use. Potential Benefits: The current study addresses a need for research examining the social environment and behaviors of sexual minority individuals. Study findings will inform policies and targeted tobacco cessation programs.

231 1:45 pm
Exploring the Influence of Social Norms, Risk and Social Identity on Youth Smoking Behavior
Jazmyne A Sutton, Communication (M)
Anuja Majmundar
Perry Pauley, Communication

Background: Even though there were dramatic decreases in youth and adolescent tobacco use in the 1990s, since 2008, the rate of decline has slowed. In order to better understand youth smoking behavior, this study examines how smoking risk perceptions and smoker identity influence smoking within the framework of the Theory of Normative Social Behavior (TNSB). Objective: This study examines the role of social norms and smoker identity in shaping perceptions of smoking behavior among young smokers and nonsmokers. Method: A secondary data analysis of the “National Annenberg Risk Survey of Youth, 2004”, a dataset publicly available through the Annenberg School of Public Health website, was conducted. Participants (N = 1502) consisted of both males (n = 749) and females (n = 752), aged 14–22 years (M = 17.69, SD = 2.55), were telephone interviewed. This study assessed the risk perceptions of smokers and nonsmokers’ along with social norms using independent t-tests. In addition, correlation analysis was used to examine the relationship between smoker identity, social norms and their perceptions about role models. Results: Analyses revealed that smokers perceive smoking as less risky and have more favorable (a) descriptive and (b) injunctive norms for smoking than nonsmokers. However, for those who identified as nonsmokers, there was no correlation between norms and perceptions towards role models. Discussion: These findings indicate a difference between smokers and nonsmokers’ smoking risk perceptions and in social norms. These differences indicate the necessity to understand the normative mechanisms that influence smoking behavior among young adults and adolescents.

Furthermore, interventionists should consider normative constraints when developing anti-smoking campaigns for youth and adolescents.

232 2:00 pm
The Role of Peer Victimization and Bullying in the Relationship between Sexual Orientation and Substance Disorders
Tenaya Siva, Epidemiology (M)
Heather Corliss, Graduate School of Public Health

Background: Adverse childhood experiences (ACE) encompass a variety of experiences that are described as being a “traumatic experience in a person’s life occurring before the age of 18 that the person remembers as an adult”. Adverse childhood experiences have been shown to be positively related to the development of substance disorders. One population that experiences a disproportionate burden of both ACE and adulthood substance disorders is gay, lesbian, and bisexual individuals. A small, but growing body of research suggests that the elevated risk of substance use and disorders in those with a minority sexual orientation compared to heterosexual individuals may be partly attributable to their elevated risk for ACE. Building on this literature, this study will examine responses from the Cal-QoII, and elucidate the role of specific types of ACE (i.e., childhood maltreatment and bullying) in contributing to the disparate burden of substance disorders among individuals with a minority sexual orientation. Methods: The study participants in Cal-QOL II were drawn from 5,000 eligible persons systematically selected from nearly 49,000 adult respondents in the population-based 2007 California Health Interview Survey. The surveys were structured telephone interviews and all participants provided anonymous responses. The Cal-QOL II survey was contingent on specific eligibility requirements and included: 18-70 years of age at the time of the CHIS interview, interviewed in English or Spanish, and the agreement to be re-contacted for future health surveys. Analyses: Analysis will be conducted using SAS statistical software version 9.3. First, descriptive analyses will examine how sexual orientation is associated with substance disorders and the analyses will examine how sexual orientation is associated with ACE. Further descriptive analysis will then examine how ACE is associated with substance disorders in the overall sample. Multivariable logistic regression will be used to examine associations between sexual orientation and substance disorder outcomes, sexual orientation and ACE outcomes, and associations between ACE and substance disorders, and all regression will be adjusted for potential confounding by demographic factors. Sexual-orientation-by-ACE interaction terms will be included in multivariable models to test for effect measure modification by sexual orientation in the association between ACE and substance disorders.
Session C-8
Oral Presentation:
Academic Engagement, Achievement & Success
Friday, March 6, 2015, 1:00 pm
Location: Legacy Suite

233  1:00 pm
Counseling and Advising Men of Color in Community Colleges for Academic Success
Cory D Allen, Psychology (U)
Soua Xiong
Luke Wood, Education

Given that community colleges are the primary pathway into postsecondary education for men of color and the complexities of challenges these students face in college, community college counselors may help to facilitate the success (e.g., persistence, achievement, completion, transfer) of these men. While some studies have examined the experiences and factors impacting the success of men of color in community colleges, few studies have specifically addressed the counseling and advising needs of men of color. Therefore, this study examines effective counseling and advising strategies to advancing the success of men of color in community colleges.

234  1:15 pm
Academic Engagement of Male Community College Students of Color as Influenced by Stressful Life Events, Familial Obligations and Commute/Transportation
Mariana S Padron, Psychology (U)
Angelica Palacios, Education

It is commonly expressed that student engagement is critical to the success of students, however student engagement has become problematic following the rise of mass and universal forms of higher education. (Kahn, 2014) Moreover, one fundamental aspect of engagement in higher education is faculty-student interaction (FSI). FSI has been associated with student success and persistence in both four- and two-year institutions. (Wirt & Jaeger, 2014) Seeing that the success rates for men of color are disproportionate, with only 12% and 14.6% of Black and Latino men graduating in three years, respectively (Harris & Wood, 2014), much attention has been drawn to improving success rates among men. Although research has addressed men of color, very few have touched on the underlying factors that may influence a student’s interpersonal relationship with tutors as it influences the success of one’s education. Social influences associated with the interactions among faculty/tutors and students are hypothesized to be most significant when developing positive student experiences and scholastic engagement. Through preliminary findings of a piloted qualitative study, data suggested that underlying factors could have further influences on the interactions carried between male students of color and their tutor/instructor, thus influencing the student’s level of engagement. This pilot study influenced future research. As such, this quantitative study will examine whether background factors of men of color, i.e., stressful life events, familial obligations, and commute/transportation would have an effect on engagement level. Drawing data from the Community College Survey of Men (CCSM), the researchers of this study will conduct an ANOVA based analysis aimed to test whether external background factors would have an effect on engagement levels. This study will focus on Latino community college men of color. The findings of this study will contribute to the advancement of education practices and training among teaching professionals. Recommendations for research and practice would serve as a tool that would emphasize the importance of student individualism so that tutors could understand the necessity of catering to individual student needs and not generalizing them.

235  1:30 pm
A Retrospective Trajectory Analysis of Men of Color who Succeed in Community College
Nathan G Klein, Sociology (U)
Arthur Tovar
Frank Harris, ARPE, Education

Student success research on men of color in postsecondary education often focuses on patterns of failure and underachievement. This study seeks to reframe deficit-oriented research by way of trajectory analyses of men of color who began postsecondary education in community colleges and transferred to four-year institutions. Narratives that focused deeply on how participants navigated community college and strategies they employed to overcome challenges will be presented, as will implications for policy, practice, and future research.

The methods employed in this study followed the tenets of phenomenology (Moustakas, 1994). Phenomenological research is aim primarily towards understanding participants’ lived experiences and meaning making after experiencing a particular phenomenon or set of conditions (Harper, 2007). The phenomenon of focus in this study was being a man who represented a racial/ethnic group that has been historically underrepresented and underserved in education (particularly postsecondary education) who successfully navigated the rigors of community college and transferred to a four-year institution.

In addition, participants were asked to construct a trajectory analysis statement (Harper, 2007) that focused deeply on how they navigated community college, critical moments in their
students should seek to address the discriminatory systems of education as students did in the 1960s thereby improving the psychological wellbeing and overall livelihood of all ethnic groups. That is, by analyzing public systems of continued discrimination and creating opportunities and safe environments for their exploration, ethnic studies could contribute to the empowerment of those who both perpetuate and are victims of these systems. This research project explores the disconnect between ethnic studies serving in this capacity and the degree to which Filipina/o students seek the opportunity to understand and participate in this forum. I do this by exploring how Filipina/o American students perceive the use-value of ethnic studies. Quantitative and qualitative research grounded in perceptions and engagement with ethnic studies is limited in academic literature and more of this research will be needed for educational reformers to make informed decisions about education systems and the future of ethnic studies programs.

237 2:00 pm

Student affairs profession: The entry and purpose for Chicana first-generation college graduates

Chia S Her, Education (D)
Marva Cappello, Teacher Education

Student affairs professionals are integral members of higher education institutions. Among their many functions, student affairs professionals provide support and guidance to students, serve as role models for students, and engage in leadership roles for the campus community. While there is a need to recruit ethnic minorities into the student affairs profession (Sagaria & Johnsrud, 1991), the current literature does not address the reasons that led ethnic minorities to select student affairs as a profession (Taub & McEwen, 2006). The purpose of this study is to contribute to the professional literature by exploring the decision to pursue a career in student affairs from the perspectives of two Chicana student affairs professionals. Individual interviews following a semi-structured protocol were conducted with two Chicana student affairs professionals who are first-generation college graduates working with first-generation college students at a large, public four-year university on the west coast. An analysis of the data revealed that the participants in this study had not originally aspired to become student affairs professionals. However, they now view the student affairs profession as an avenue to address social inequity by equipping first-generation college students with the knowledge they have gained through their educational, life, and professional experiences.
Session C: Poster Presentations

Session C-9

Poster: Aerospace Engineering
Friday, March 6, 2015, 1:00 pm – 2:45 pm
Location: Montezuma Hall

238 Poster #1

SDSU Water Tunnel
Tom Hackleman, Aerospace Engineering (U)
Marlon Gerson
Xiaofeng Liu, Aerospace Engineering

This research focuses on the design and construction of the SDSU water tunnel, which will be used to study turbulence, unsteady fluid dynamics, fluid-structure interactions and cavitation. The pressurized tunnel will have a test section of 5" X 4" and flow rate in excess of 660 gallons per minute. While the subsonic and supersonic wind tunnels at the Aerospace Engineering department are suitable for conventional aerodynamic measurements of testing models, they are not readily conducive to the application of the state-of-the-art particle image velocimetry systems due to difficulties in achieving homogeneous distribution of seeding particles in large cross-section wind tunnels. The design and construction of the water tunnel facility will not only enable the establishment of the advanced time-resolved 3-D non-intrusive velocity and pressure diagnostic capabilities at SDSU, but also lay a solid foundation to attract research funding from government agencies as well as local and national companies. Extensive research activities in fluid dynamics boosted by the erection of the water tunnel will provide plenty of research opportunities to both graduate and undergraduate students in the college of engineering so as to enhance their professional competence before their graduation. The research involved in this project includes optimization of fluid flow through contraction and diffuser sections, turbulence suppression, structural integrity of key designed components, power and mechanical system integration, and flow integrity under pressurized and depressurize conditions. These factors are investigated from both theoretical and experimental point of views. In addition, the project also incorporates heavily real engineering practices, including budget, scheduling, parts procurement and fabrication, and interdisciplinary collaboration. Collective efforts in all the above areas result in the current design, and will produce a water tunnel that will be one of the cornerstones of the Aerospace Engineering department for decades to come.

239 Poster #2

Control of Lagrangian Mixing in Fuel Injector Flows into Supersonic Cross Stream
Josue S Quinonez, Aerospace Engineering (U)
Jastine Ortiz
Gustaf Jacobs, Aerospace Engineering

Particle-laden flows with shocks are found in applications ranging from high-speed combustors to volcanic explosions. The mixing and transport processes of particles and fluid are of critical importance to the stable operation of high-speed combustors and pollution in environmental flow. Transient flow structures downstream of oblique shocks are studied by utilizing the link between the Froude number in shallow water flows and the Mach number in compressible gas dynamics. We develop an experimental water table setup to compliment the computational analysis of flows containing shocks and particles. Our computational solver models particle transport phenomena and interactions with shock waves and turbulence at high-speed. However, it is very difficult to analyze supersonic gas dynamics experiments because of the short time scales involved that prevent even high-speed cameras from obtaining proper imagery. As a result, many of the complex features in high velocity shocked flows are not well understood. The much lower velocities and hence larger time scales of a shallow water experiment enable a more detailed characterization of flow dynamics using less advanced and more affordable measurement devices and experimental procedures.

240 Poster #3

Introduction of Controlled Delamination in Carbon-Epoxy Composite Laminate Specimens for Bolted Joint Tests
Jeff Erickson, Aerospace Engineering (U)
Nicola Giorgi
Satchi Venkataraman, Aerospace Engineering

Bolted composite joints in composites are a region of interest to aerospace structural engineers trying to improve damage tolerance and durability of composites. The fastener sites in composite wing skins on aircraft removed from service have been shown to have delamination at fastener hole sites. Life extension of aircraft with composite skins requires understanding how this delamination grows over the extended service life and at what stage (or size) they become critical damages. To understand this we are embarking on an ONR funded research project to test thick composites laminates with chamfered drilled holes under bearing and bypass loads at fastener hole sites with embedded delamination. This requires producing test specimens for bolted joints with embedded delamination of known size at these sites. At present there are no ASTM standards for creating such damage. The goal of this project is to design three different
methods to create delamination at fastener hole sites, to identify the control parameters (load, geometry or process parameters) for each method and perform a series of experiments in which the control parameters are varied and the delamination created in the composite is measured and characterized. Possible choices for characterization of delamination include x-ray radiographs of laminates with dye penetrants or ultrasonic C-scans. The goal is to identify the most controllable method for creating delamination damage and the optimum control parameters to create required delamination damage.

241 Poster #4

**Post buckling Analysis and Optimization of Frame-Stiffened Stitched Composite Panels**

Gabriela J Sanz-Douglass, Aerospace Engineering (M)
Satchi Venkataraman, Aerospace Engineering

New aircraft configurations such as the Blended Wing Body (BWB)—are being explored to investigate the potential to attain higher fuel efficiencies and reduce the environmental impact of civil air transport. BWB aircraft smoothly merges the wing structures and fuselage creating a lack of a distinct separating line. The flattened and airfoil shaped BWB craft provides efficient high-lift wings and a wide airfoil-shaped body contributes to lift generation, which increases lift over drag ratio and results in improved fuel efficiency and range.

Large bending stresses arise in pressurization of noncircular fuselages. Until recently BWB planes could not be realized because conventional structural designs of durable and damage tolerant non-circular fuselages are too heavy and inefficient. NASA, the Air Force Research Laboratory, and the Boeing Company have collaborated in the development of a new low-cost, light-weight composite structural concept to enable BWB design; a new concept called PRESEUS, Pultruded Rod Stitched Efficient Unitized Structure, which uses fiber-reinforced stitched composites. In the PRESEUS concept skins, frames, stringers and tear straps are stitched together during assembly in the dry fiber form then are infused with the polymer and cured in an out-of-autoclave process. The translaminar reinforcement through stitching significantly improves the strength and durability of the layered composite materials by suppressing delamination under bending loads and stiffener or frame debonding failure modes due to bending or buckling.

Traditional aircraft composite stiffened panels are designed to avoid buckling of the skin at service loads, to avoid initiation and growth of delamination damages. In stitched composites, the stitching provides reinforcement against delamination; therefore, the structure can be designed for operation in a post buckled state with local skin buckling. This paper presents the non-linear postbuckling analysis and optimization of the PRESEUS concept. The effect of varying the frame sizing on the non-linear response of the panel under compression loading is investigated using finite element non-linear analyses. A surrogate model based optimization methodology for optimum design of the frame with constraints on local buckling load, ultimate panel collapse load and maximum allowable constraints are presented.

242 Poster #5

**Investigation of the influence of the subgrid-scale stress on non-intrusive spatial pressure measurement**

Rachel J Rybarczyk, Aerospace Engineering (M)
Xiaofeng Liu, Aerospace Engineering and Engineering Mechanics

The instantaneous pressure distribution in a turbulent flow field can be measured non-intrusively by integrating the measured material acceleration using particle image velocimetry (PIV), as demonstrated by Liu and Katz (Exp. Fluids, 2006 and JFM 2013). However, due to the finite spatial resolution of digital PIV, which is usually one or two orders of magnitude larger than the smallest turbulence length scale (Kolmogorov length scale), the pressure reconstructed from PIV is actually subjected to the effect of spatial filtering. Consequently, the reconstructed pressure is imbedded with the influence of the sub-grid scale (SGS) stress, which is a term appeared in the filtered Navier-Stokes equation as a result of the spatial filtering of the flow field.

To quantify the effect of the SGS stress on non-intrusive spatial pressure measurement, we use box filtering to filter the 3D velocity components in a time-varying isotropic turbulence flow field available to public from the John Hopkins University Turbulence Database (JHUTD). We then apply the material acceleration calculation and pressure reconstruction procedures implemented in Liu and Katz (2006 and 2013) to the filtered velocity fields, and compare the reconstructed pressure with the pressure filtered directly from the database so as to obtain the quantified SGS stress influence on the reconstructed pressure. Preliminary results show that the pressure error caused by the SGS stress is about 5% of the maximum pressure and is confined to certain localized areas.

To compensate the SGS stress influence, the SGS stress term calculated using the similarity model (Menouveau and Katz, Annu. Rev. Fluid Mech. 2000) is included in the pressure reconstruction. In addition to the SGS stress related pressure error quantification, the progress and results of the research effort about the error correction will also be presented in the paper.
Pattern Formation in Granular Systems
Kevin L Joiner, Computational Science (D)  
Ricardo Carretero, Mathematics and Statistics

Pattern formation is of interest when studying biological, chemical and physical systems. In particular, granular materials lend themselves as an excellent physical medium for which one can study pattern formation in the context of two dimensional surface waves. Despite their substantial importance to many industrial processes and natural sciences, little is known about the macroscopic dynamics of granular materials. A kind of pattern phenomenon called oscillons is a type of localized solitary wave found on the surface of fluidized granular beds. Interestingly, oscillons are a large scale phenomena resulting from small scale interactions and have attractive and repulsive properties which resemble that of fundamental particles. Two oscillons with the same phase will repel while out of phase oscillons will attract. Therefore, the purpose of this project is to investigate the formation and behavior of oscillons in granular media in order to advance our understanding of granular dynamics and the emergence of macroscopic phenomenon via microscopic interactions.

We have developed an Event Driven (ED) algorithm which simulates an ensemble of interacting rigid hard spheres with no intrinsic material elasticity. In the simulation, time advances from collision to collision with, analytically exact, ballistic motion between collisions. The ED algorithm advances through collisions by using equations which map the velocities and angular velocities of each particle before and after the collision. The types of collisions considered are particle-particle, particle-wall and particle-floor.

Computer experiments using the ED algorithm may be used to reliably predict oscillon behavior under various spatio-temporal conditions. We have been able to replicate well documented simulations of granular beds subjected to vertical vibrations. When a granular bed is excited via forcing from a flat (spatially uniform) floor the appearance of oscillon waves depends only on the forcing frequency and forcing amplitude. One approach we intend to employ to investigate the spatio-temporal behavior of oscillons is to couple the model of a fluidized granular bed to that of a spatially non-uniform membrane. Utilizing a curved membrane instead of a flat floor to force the granular bed may allow spatially variable forcing amplitudes to serve as a “controller” of oscillon emergence and behavior.
246 Poster #9
Cyclic Voltammetric Studies of Nitroimidazoles in Aqueous Solution with Additions of Cysteine.
Ghazwan M Darzi, Chemistry (U)
Diane Smith, Chemistry and Biochemistry

Nitroimidazoles are antibiotics used to treat many infections by killing the bacteria that causes the infection. For example, metronidazole is a drug that belongs to the class of nitroimidazole antibiotics, and it is used to treat bacterial and protozoal infections. Nitroimidazoles need to be activated by a reduction reaction. Although it has been believed that the active form of this drug was the radical anion, there is increasing evidence which suggests that further reduced forms, such as the nitroso and hydroxylamine, are the active forms of this drug. Both species are known to react with cysteine and this may lead to cell death either by deactivation of key proteins or upsetting the redox balance in the cell.

Because of the high reactivity of the nitroso and hydroxylamine imidazoles, it is not generally possible to prepare and isolate them to study their reactivity directly. However, they can be studied indirectly using cyclic voltammetry since upon reduction of the nitro group in aqueous solution new peaks due to the oxidation of the hydroxylamine and reduction of the nitroso can be seen. By varying the scan rate, information on the stability of these species in aqueous solution can be obtained. Further information on the activity of the nitroso and hydroxylamine forms can be obtained by adding equivalents of cysteine to the cell in order to monitor the rate of reaction between cysteine and the nitroso and hydroxylamine forms of different imidazoles.

This paper will describe the cyclic voltammetry of 1-methyl-5-nitroimidazole and 1-methyl-2-nitroimidazole in aqueous solution in greater detail. Rough estimates of the lifetimes of nitroso and hydroxylamine derivatives in water will be determined using the current vs. time data at different scan rates. If possible, better estimates of the lifetimes and the rates of reaction with cysteine will be obtained by simulation of the voltammograms.

247 Poster #10
Iodine Speciation in the Marine Environment
Jennifer L Gonzales, Geological Sciences (U)
Carl Carrano, Chemistry and Biochemistry

The biogeochemical cycling of iodine predominantly occurs in the shallow epipelagic zone, where oceanic primary productivity is fueled by photosynthesis. This project examines the influence of population dynamics in planktonic algae and iodine exchange in macroalgae. Previous studies have suggested that the oxidation of iodide to iodate is driven by cellular senescence and apoptosis, where phytoplankton coalesce in pools, resulting in periodic algal blooms. Additionally, studies on kelp have found that these organisms have a natural capacity to uptake iodine and release methyl iodide when under stress. The Carrano lab is utilizing electrochemical techniques to measure the concentrations of iodine species using square wave stripping voltammetry (SWSV). Our hypotheses are that an accumulation of phytoplankton would result in an increase in iodine concentrations in surface waters, and that biogeochemical cycling drives the exchange of iodine in macroalgae. Currently, we are collecting and measuring seawater samples on a monthly basis near kelp beds, surface waters, and various regional waters.

248 Poster #11
Nicotine Detection By Ultrasensitive Laser Methods for Second-Hand Smoke Studies
Zarina Munshi, Chemistry (M)
William Tong, Chemistry

Ultrasensitive detection methods for nicotine and its major metabolites are needed in order to study first-, second- and third-hand smoke effects on children. We present our ultrasensitive laser spectroscopic methods as inexpensive, portable, compact detectors that are suitable for field use for a wide range of applications in environmental and biomedical fields. The primary focus is to detect nicotine in environmental samples. The sensitive detection for nicotine is essential because it has numerous health and psychological effects if it is consumed through first-, second- and possible third-hand smoking specifically by children. Our preliminary results indicate that nicotine could be detected natively without labels using a 266 nm UV laser or a visible laser if a label is used. In a typical laser setup, the laser beam of the desired wavelength is split into two input beams and then focused and mixed inside the sample cell. Since the signal is a distinct laser-like coherent beam, it can be collected by a simple photodetector with high resolution and excellent signal-to-noise ratio (S/N). Since our method only requires a small amount of sample (nanogram), it can be interfaced to microarrays, microfluidics, chip-based capillary electrophoresis and other liquid-and gas-phase flow systems and still obtain excellent detection levels (picomolar or femtomole). Potential applications include separation of nicotine and its major metabolites (cotinine), detection of biomarkers, monitoring of environmental samples and early detection of diseases.
Applications of Precise In-Situ Measurements of Stable Water Vapor Isotope from Advanced Laser Spectroscopy

Joshua Miu, Ecology (M)
Chun-Ta Lai, Biology

Isotopic signatures of $\delta^{18}O$ and $\delta D$ (Deuterium) are essential tracers in understanding global water cycle processes. Continuous stable isotope measurements of atmospheric water vapor ($\delta^{18}O$ and $\delta D$) became available with the advance in laser spectroscopy technique, which can help overcome limitations in obtaining high-resolution in-situ observation. For isotope-enabled general circulation models (GCMs), these measurements can provide useful constraints to studying isotopic variations of precipitation, water vapor, and terrestrial ecosystem water fluxes, such as evapotranspiration. This study utilizes a LGR spectroscopy water vapor isotope analyzer (Los Gatos Research Inc.) at Scripps Pier in La Jolla, San Diego, California. We present high level of accuracy and precision of $\delta^{18}O$ and $\delta D$ in ambient water vapor measured over seawater from spring to fall in 2014. Isootope variations were measured at 1 Hz and data were reported as hourly averages with an overall accuracy of ±0.1‰ for $\delta^{18}O$, ±0.5‰ for $\delta D$. Observations were compared to isotope-enabled GCM (IsoGCM) simulation, suggesting day-to-day variations in $\delta^{18}O$ and $\delta D$ due to strong influences from synoptic weather events. Here we demonstrate influences of Santa Ana winds and tropical storms (hurricanes Norbert and Odile) on surface atmospheric moisture and its isotopic variation in 2014. These local extreme weather events resulted in rapid changes in near-surface atmospheric moisture content and its isotope ratios. Future study is suggested to investigate the impacts of thermodynamic and transport processes.

Poster #12

Standoff Detection of Ammonium Nitrate Improvised Explosive Devices (IED) Using Ultrasensitive Multi-Photon Laser Methods

Jeffrey W Gilmour, Chemistry (M)
William Tong, Chemistry

Our patented multi-photon nonlinear laser methods are presented as compact portable detectors for improvised explosive devices (IED) with remote standoff capabilities. Our novel laser methods offer important advantages including excellent detection sensitivity levels (zepto-mole or parts-per-trillion), high chemical specificity levels, small sample sizes (pico-liter or femtogram), minimal background noise, high signal-to-noise ratio (S/N), and minimum false positive or negative levels. In a typical multi-photon laser wave-mixing setup, the laser beam is split into two input beams and mixed inside the analyte of interest. The two input beams create dynamic diffraction gratings that generate two coherent laser-like signal beams and they can be collected with high S/N by a simple photodetector. It allows detection of trace amounts of explosive compounds commonly used in improvised explosive devices. Detection of these compounds could be achieved through derivatization with color-forming agents using visible lasers or detecting them in their native form without reagents using UV lasers or mid-IR lasers (quantum cascade laser). Initial testing has been accomplished using Coomassie Brilliant Blue G250 and a 20 mW 633 nm He-Ne laser. We have obtained promising detection sensitivity levels using a few different sample types including gas- and liquid-phase samples in different sample holders (microarrays, capillary cells, microchannels, microfluidics, etc.). Cubic dependence of nonlinear wave-mixing signal on laser power yields a higher degree of sensitivity that can be achieved even when using low-power lasers. Quadratic dependence of signal on analyte concentration yields a more reliable monitoring of small changes in analyte properties. This detection method can be expanded to a wide range of explosive compounds (TNT, TATP, RDX, etc.) in different gas, liquid and solid-phase samples on different surfaces.

Poster #13

Optimization of a QPCR Assay for the Detection of Phage-encoded Shiga Toxin Gene in Environmental Samples

Tess Condeff, Biology (U)
Stanley Maloy, Sciences

It is not uncommon for public beaches along San Diego’s coast to be closed directly following a rainfall event due to contamination of local waterways. Potential contamination is currently monitored by cultivation of fecal coliform indicator bacteria (FIB), although disease associated with contaminated waters is often due to enteric viruses as well. Testing for phage-encoded exotoxin genes via molecular assays may yield more accurate results in identifying potential pathogen presence in recreational waterways. Results from a previous study comparing four impacted coastal recreational areas in San Diego County indicated high levels of phage-encoded shiga toxin gene (stx). Shiga-toxin-producing Escherichia coli causes bloody diarrhea and can be fatal if it develops into hemolytic uremic syndrome. Since the previous study was conducted, technology has improved and molecular assays have become more sensitive. To keep up with the increased sensitivity provided by this
new technology, we were interested in re-optimizing a QPCR assay for the detection of stx in the environment. We assessed existing primers at varying concentrations as well as compared annealing temperatures, and cycle length in the presence of varying concentrations of magnesium chloride cofactor and BSA. New primers were developed and compared to the results of the existing primers. This comparison showed that the original primers provided optimal results at a final concentration of 200nM, an annealing temperature of 60°C, and with 35 rounds of amplification. Ideal concentrations of MgCl₂ and BSA were found to be 200nM and 1.2ng/μL, respectively. Future directions include examining additional primers for specificity and enhanced sensitivity while maintaining robustness of the assay.

252 Poster #15
CRISPR Technology for Regenerative Applications: Inducing genomic instability in human osteosarcoma cells with nuclease-deficient Cas9.
Oscar Munoz, Chemistry: Biochemistry (U)
Quan Zhu, Sciences
Cancer is known to be the main death contributor worldwide with an array of different behaviors that make them difficult to cure or contain. In the search to develop adequate means for treatment against these diseases, we use the very efficient CRISPR technology to target tumorigenic cells. RNA transcripts have been observed to be prevalent in tumorigenic cells, so we have developed a tool to explore the effects of endogenous satellite transcript over-expression through a drug-inducible lentiviral system. With the use of CRISPR technology, we have designed an inactive Cas9 plasmid by creating point mutations in two catalytic residues through genetic editing. The pRARm2Cas9VP64 is being used with human osteosarcoma cells to test if the intent to generate genomic instability is achievable. What will allow this dCas9 to generate structural instability in the centrosome of these cells, will be its ability to attach to target dsDNA, but the cleaving effect on the helix is neutralized. We hope that this plasmid construct opens the door to novel cancer treatment due to its powerful properties.

253 Poster #16
Advancing CRISPR-Cas Technologies for Effective Gene Perturbations in the Ascidian Ciona intestinalis
Karl Garcia, Cellular and Molecular Biology (U)
Robert Zeller, Biology
Eliminating or silencing a gene's level of activity, whether by antisense morpholinos, TALE nucleases or RNAi, is one of the classic approaches developmental biologists employ to determine a gene's function. A prokaryotic adaptive immune system that protects against invading viral DNA, called the CRISPR-Cas System, was recently adapted for use in eukaryotic cells. This technology has been established in several model organisms as a powerful and efficient tool for knocking out or knocking down the function of a gene of interest. This simple system requires the coexpression of Cas9 nuclease and a specifically designed guide RNA that in combination targets and cleaves a sequence of interest introducing an indel-forming double-stranded break. CRISPR-Cas functions with fidelity and efficiency in our lab's model organism, the marine invertebrate chordate Ciona intestinalis. Previously, we designed and built guide-RNAs that targeted the transmembrane domain-coding region of the Tyrosinase (tyr) gene. Co-expressing these guide-RNAs and the Cas9 nuclease in the pigmented sensory cells produced albino embryos suggesting that the system functioned as a genome editor. Here, we expand the use of CRISPR-Cas in Ciona and show that gene knock-ins can also be efficiently generated. We also show that a highly effective transcriptional repressor can be built by fusing a co-repressor-recruiting domain to the C-terminal end of a nuclease-dead Cas9. This repressor can then be targeted to any gene of interest by using the appropriate guide-RNAs.

Our lab's focus is the study of the genetic regulatory network of the C. intestinalis peripheral nervous system during embryogenesis. A critical component of this research requires the reduction of gene function, which until this work has been inefficient, difficult and tedious. We believe that these variations to CRISPR-Cas technology will be invaluable tools for illuminating the genetic regulation of nervous system development in Ciona.
254  Poster #17

In Vivo Reprogramming of Muscle cells into an Endoderm Lineage Within the Vertebrate Model Danio Rerio

Zachary A Achen, Biology (U)
Ralph Feuer, Biology

Recent studies using in vivo cellular reprogramming have shown that through the ectopic expression of certain transcription factors, somatic cells can be induced into a pluripotent state (iPSC cells). In a similar fashion, fully differentiated cells can be directly transformed from one cell lineage to another. This transdifferentiation has been accomplished in producing cardiac myocytes from cardiac fibroblasts, macrophages from B-Cells, and pancreatic Beta-cells from exocrine cells. Despite these advances in cell-fate alterations, in vivo reprogramming of cells has been restricted to those derived from the same germ-layer. The ability to break this barrier and transdifferentiate cells across germ layers will not only help to illuminate the processes governing cell fate, but will also expand the potential applications of in vivo reprogramming, and ultimately provide a powerful tool for the creation of new therapeutic applications. This presentation describes the initial results of the first successful reprogramming of a mesoderm-derived cell within a live vertebrate model into an endoderm cell. Reprogramming of differentiated mesoderm-derived muscle cells into endoderm cells was accomplished through the forced expression of a specific combination of transcription factors. This was done in transgenic lines to visualize endoderm cells within a live zebrafish, Danio rerio. By utilizing immunofluorescent imaging, whole mount in situ hybridization, and qPCR data, we can observe the beginnings of direct in vivo transdifferentiation, based on the simultaneous expression of muscle and endodermal markers. This is the first demonstration of in vivo cell fate reprogramming of cells derived from one germ layer to that of another, thereby suggesting that somatic cell fate within animal can be altered without limitations.

255  Poster #18

Comprehensive screen for antibodies to replace the four Yamanaka factors

Nadja El-Mecharrafie, Cell and Molecular Biology (M)
Ralph Feuer, Biology

In the area of stem cell research and regenerative medicine much progress has occurred through the use of induced pluripotent stem cells (iPSC), somatic cells that were coerced into returning back to a state equal to that of embryonic stem cells in a process called reprogramming. These cells are characterized by the ability to indefinitely self-renew and give rise to all embryonic tissues. Hence, iPSC offer immense potential for disease modeling, personalized drug testing, and creating patient-specific tissue replacements that are not subject to immune rejection.

Currently, the mechanisms underlying iPSC reprogramming remain largely elusive. This lack of understanding yields heterogeneous iPSC and creates a reliance on reprogramming methods with potential to alter genomic integrity in a way that can possibly disrupt normal cell function and cause cancer. To address these limitations, we hypothesized that reprogramming via altering cell surface signaling could lead to more homogeneous iPSC free of genomic integrations. In addition to these advantages, this approach will help in gaining insight into the pathways leading to reprogramming. To test the hypothesis, we developed an antibody screening platform to screen for cell surface regulators of pluripotency.

Initially, a library of 10⁹ distinct antibody specificities encoded in lentiviral vectors was screened to identify antibodies that can replace each of the four Yamanaka transcription factors Oct4, Sox2, Klf4 and c-Myc which are essential to reprogramming. During screening, the use of integrating lentiviruses allows us to recover the sequence of potentially useful antibodies which can subsequently be individually tested using soluble antibodies. From the initial screen we selected candidates that may be able to replace either Oct4 or Sox2. We are validating their abilities to generate iPSC and are examining their pluripotency by differentiation into the three germ layers and immunocytochemical stainings. Next, we are working on uncovering the signaling pathways and mechanisms involved.

256  Poster #19

Genomic Editing of a Single Nucleotide Polymorphism (SNP) Associated with Progressive Supranuclear Palsy (PSP) Using CRISPR-based Technology on Human Isogenic iPSCs

Jordan A Dizon, Cellular and Molecular Biology (M)
Ralph Feuer, Biology

Progressive supranuclear palsy (PSP) is a primary tauopathy, which is caused by the insoluble accumulation of hyperphosphorylated forms of the microtubule associated protein tau (MAPT gene). Recent studies suggest that the single nucleotide polymorphism (SNP) at rs242557 confers risk of the H1c sub-haplotype that is characteristic of PSP. The rs242557 SNP resides in a highly conserved repressor domain of the MAPT promoter suggesting that it may confer risk to PSP through instable regulation of MAPT expression. While previous studies have noted rs242557 allele-specific differences in the
transcriptional repression, no causative relationship has been established between rs242557 alleles and tauopathy in human neurons. To address this question, and to control for variance associated with genetic heterogeneity that we have observed when comparing patient-derived human induced pluripotent stem cell (iPSC) lines, we engineered an isogenic allelic series at the rs242557 locus of human iPSCs from a common donor, whose diploid genome has been fully sequenced in high resolution.

One challenge of this project was the necessity to target RNA-guided nuclease activity to a single nucleotide in a non-coding region, and to perform homology-directed repair without disruption of the surrounding sequence. Using CRISPR-based genome editing, we targeted the rs242557 locus to generate a series of iPSC lines carrying the risk-associated rs242557A/A, non-risk rs242557G/G, and heterozygous rs242447A/G alleles in an otherwise identical genetic background. We plan to interrogate human iPSC-derived neurons from these lines for MAPT expression, aggregation, and viability. Ultimately, the goal of this project is to support future biomarker and drug discovery efforts for PSP and related tauopathies for which rs242557 is a known risk factor. Additionally, these studies provide insight into the challenges of genetic engineering at a non-coding SNP locus.

Session C-12
Poster: DNA/RNA
Friday, March 6, 2015, 1:00 pm – 2:45 pm
Location: Montezuma Hall

257 Poster #20
Characterization of the novel RNA methyltransferase Mettl14
Alicia V Zamudio Montes de Oc, Biology, Psychology (U)
Jing Zhao, Sciences

More than 100 RNA post-transcriptional modifications have been discovered in eukaryotic cells. Such modifications alter many aspects of RNA behavior and thus are physiologically relevant. m6A is the most common internal mRNA modification and is catalyzed in vivo by a protein complex comprised of Mettl3 and Mettl14. However, molecular mechanisms underlying m6A formation remain unknown. Mutant Mettl14 proteins were generated and tested in vitro to identify catalytic amino acids involved in m6A formation. In addition, short RNA probes with different folding patterns were tested as substrates for Mettl14 in vitro. Two amino acids in Mettl14 were identified to have catalytic activity: E286 and W357. An RNA probe containing a stem-loop structural motif was identified as a preferred substrate for Mettl3 and Mettl14. This was the first study investigating structural requirements for the Mettl3 and Mettl14 to form m6A. Two catalytic amino acids were identified to play a role in m6A formation, however future studies need to be conducted to assess all required amino acids that contribute to this complex’ catalytic activity. This study also shows that RNA structure can alter Mettl3 and Mettl14. Since all of our findings were performed in vitro, it will be important to determine if similar dynamics are also true in vivo.

258 Poster #21
Examining Double Strand Break Repair in Vivo
Markel Farley, Microbiology (U)
Anca Segall, Biology

DNA encodes the genetic instructions of life. It consist of two strands, known as sister chromatids, that match together perfectly in order to form a double stranded DNA helix. DNA strand breaks occur from UV radiation, ionizing radiation, oxygen radicals, and various other agents. These breaks are negative and can lead to cell death if not resolved. Therefore, DNA goes through homologous recombination that repairs DNA strand breaks. This process requires varying exonucleases that work together to repair damage while using a sister chromatid to serve as a template. In E. coli, the exonucleases RecBCD, RecJ, and RecQ initiate the homologous repair pathways. RecA induces strand invasion that creates a toxic intermediate when the template DNA strands and damaged DNA strands are connected. These intermediates are known as Holliday junctions and can be resolved by RuvC or RecQ and topoisomerase III. Although this process repairs DNA, the exonucleases involved also degrade DNA during the initiation of recombination. Therefore, we have developed an assay that compares the degradation and repair of the recombination process. The assay analyzes the activity of the nucleases involved in repairing double strand breaks. DNA breaks are induced by the controlled expression of the endonuclease I-CeuI which recognizes seven specific sequences within the E. coli MG1655 genome and cleaves the DNA creating a double strand break. Strains lacking variations of the above mentioned nucleases were created and grown to exponential or stationary phase. The fragments were separated by using pulse field gel electrophoresis. After identifying the seven fragments created by I-CeuI the gels are quantified using Gaussian distribution in Matlab. Results illustrate that double strand break processing is more efficient in exponential phase. Furthermore, DNA fragments are highly susceptible to degradation at specific locations.
Dynamics of bacteriophage lysis

Krystsina Kezikava, Biology (U)
Anca Segall, Biology

Phages are the most abundant biological entities on earth. They play major roles in the marine nutrient cycles. Bacteriophages affect microbial communities by controlling their populations through infecting and lysing bacteria, thus impacting the overall ecosystem. In addition, they are major agents of genetic exchange. Phages have two distinct life cycles: lysogeny, when they replicate passively by integrating into their host’s genome, and lysis, when they infect the host, assemble progeny phages, and lyse the bacterial hosts. My project uses a microfluidic device to characterize different bacteriophages’ lytic properties. These properties are determined by the phages host’s morphology as observed by microscopy. The microfluidic device, called the Mother Machine, allows observation of individual bacterial cells over time in an inverted epifluorescence microscope. The goal of the project is to determine what morphological changes happen to bacterial cells that are lysed. Previous results of host cells undergoing lysis showed that different phages lead to various outcomes. When cells lysed, the membrane may either be “punctured” by a discrete hole, causing leakage of cytoplasmic material, or the cell may be completely disrupted. This difference is ecologically important due to the affect on the size of the cell husks and the particles left after lysis. Some organisms can only consume very small “dissolved” organic matter where as other organisms can consume nearly intact bacterial cells. My results with bacteriophage P1 and E. coli show that lysis of the host cells happens between 1.5 and 2.5 hours after the start of an infection. Additionally, I observed unique cases of homogeneous lysis where the host and its immediate two to three generations were all lysed in a similar fashion within short time period. Lastly, I observed an increase in the host’s generation time from the start of infection to the lysis of cells, showing that phage P1 infection significantly reduces the growth rate of E. coli. Future experiments are planned to monitor the infection of the host where phages are labeled with fluorescent dye. Additional experiments are also projected to observe membrane damage during lysis through using membrane fluorescent markers.

MyVariant.info and its application to discover novel genetic variants in rare mendelian disease.

Adam Mark, Bioinformatics and Medical Informatics (M)
Andrew Su, Bioinformatics and Medical Informatics

Whole exome sequencing (WES) is a technique for identifying genetic variation in patients with rare Mendelian disorders. WES requires sequencing only the exons, or protein coding regions of DNA, using high throughput DNA sequencing technology. This technique shows promise for unraveling the genetic basis of human diseases. However, filtering and prioritizing variants for their role in disease remains a hurdle. While software tools have been developed that utilize annotations from several databases and existing frameworks to annotate genetic variants, none provide an interface for querying across multiple databases at a sufficient level to comprehensively annotate and discover novel variants. MyVariant.info is a unified, queryable web service that provides a REST API for systematically annotating genetic variants and proves to alleviate the challenge of distinguishing causal variants in disease. Here, I demonstrate a framework that leverages MyVariant.info’s services to reveal candidate genes responsible for pathogenesis in rare Mendelian diseases.

Genome Binning to improve the quality of genomes identified from Metagenomes

Bhavya Nalagampalli Papudeshi, Bioinformatics and Medical Informatics (M)
Elizabeth Dinsdale, Ecology Department

Typically to study microbial communities, pure cultures were first isolated prior to sequencing. This process proved to be inefficient as less than 1% of microbes present in the community could be cultured. Metagenomics on the other hand bypassed this drawback by directly extracting the entire microbial DNA from an environment, which is then sequenced and annotated. This culture independent method has quickly become widely accepted because detailed description of the microbial community can be obtained. However challenges arise at assembly of the sequence reads into individual genomes, because of the complexity of the microbial community, sequencing depth and short sequence reads. To improve the quality of an assembled genome and identify the novel population genomes additional steps are being developed. Genome binning is a popular computational method that groups the assembled reads into specific phylogenetically related bins. There are two techniques for binning, 1) Similarity based and composition based genome binning. Similarity based
binning relies on comparison of the sequence to databases of known genomes using BLAST. The second binning method; sequence composition binning is based on factors like GC content, tetranucleotide frequencies and scaffold coverage. In order to assemble quality genomes and identify the rare species accurately, we will be using a combination of both the binning methods. First replicate metagenomes were collected from sea water in the presence of Coral, Algae, Crustose Coralline Algae (CCA) and no macro organism control. The metagenomes were prepared using DNA extraction and sequenced using the Ion Torrent 316 chip. The sequenced data was trimmed through Prinseq where an average of 1,913,755 sequences per metagenome with a mean length of 211 base pairs per read. Primarily sequence based binning was adopted where the sequences were uploaded on MG RAST, a computational tool that classifies the reads based on comparing them against both protein and nucleotide databases. For the other binning method, the trimmed sequences were assembled using SPAdes assembler. The assembled contigs is scaffolded against the most abundant species identified from MG RAST. The replicates for the sample type will be plotted based on scaffold coverage, helping us identify the common population genomes among the replicates. These genomes will then be further refined taking into account GC content and tetranucleotide frequencies. This will help us overall improve the quality of the population genomes identified and even identify certain novel genomes.

**262 Poster #25**

*Investigation of LEF-1 Flexibility vs DNA Binding Activity*

Ariana Pientka, (M)  
John Love, Chemistry

This study will investigate the potential correlation between the flexibility of LEF-1 and its DNA binding activity, which bends DNA approximately 96 degrees while adopting a stable conformation. It will investigate various means of stabilizing the free structure of LEF-1 without changing the conformation of the bound site.

The backbone-stabilizing lysine-rich C-terminal tail that LEF-1 inserts into the curve of the bent DNA will be partially removed, which will reduce the binding affinity by a relatively large set amount. The wildtype and truncated LEF-1 proteins will have their binding affinities measured via either thermophoresis or gel shift. This affinity difference will be used as a reference when comparing stabilizing mutations.

LEF-1’s configuration means there will be few stabilizing interactions that do not alter the binding site in some way. LEF-1 has two well-conserved hydrophobic cores that act as joints for the binding conformation. The larger core has contributions from all three alpha helices, and is relatively stable when free in solution. The focus will be on the smaller joint between the polylysine C-terminal tail, N-terminal tail, and adjacent alpha helix.

Potential stabilizing mutations will involve the interactions between Pro-6 and His-63, and/or Ile-3 and Trp-67/70. A Pro-6/His-63 replacement is predicted to be more stabilizing than a Ile-3/Trp-67/70 replacement, since the former involves an alpha helix and the latter involves only disordered terminal tails. However, a Pro-6/His-63 replacement could potentially stabilize the protein so much it cannot induce the necessary conformational change for DNA binding. This would support the argument that the flexibility of the protein is required for its binding activity.

The impact of this would be a greater understanding of the LEF-1 domain’s binding mechanism. The knowledge gained could aid future studies of LEF-1 mutants, as well as homologous proteins like HMG-1, associated with various cancers. Information on the nature of flexible proteins that cannot be gained by crystallization or NMR alone is always valuable. In addition, investigating the characteristics of flexible proteins contributes to ongoing efforts to design novel proteins with desirable characteristics de novo.

**263 Poster #26**

*A nonparametric approach in covariate-modulated local false discovery rate for genome-wide association studies*

Rong W Zablocki, Computational Statistics (D)  
Richard Levine, Statistics

Genome-Wide Association Studies (GWAS) have presented a new challenge to statisticians as such associations need to be detected from many genetic variants, each with individually small effects, but from relatively large sample sizes. In this scenario, Bonferroni-derived thresholds are severely underpowered. The local false discovery rate (fdr) provides and approach to detect non-null associations, but is limited in its ability to discover non-null loci due to an assumption of exchangeability between single nucleotide polymorphisms (SNPs). Different approaches to a covariate-modulated fdr (cmfdr), to incorporate important covariates into the fdr and break the exchangeability, have been proposed but themselves are restricted by parametric distributional assumptions. The current work proposes a novel nonparametric Bayesian extension to cmfdr through a two-group semi-parametric mixture model, utilizing B-splines for the nonparametric component, and develops a Markov chain Monte Carlo fitting routine. We illustrate our proposed methods on a large GWAS application. In particular, we show that our approach dramatically improves power and demonstrate that SNPs declared significant by our method replicated in much higher numbers, while maintaining the comparable replication rate relative to the usual fdr.
Session C-13
**Poster: Common Experience: Food II**
Friday, March 6, 2015, 1:00 pm – 2:45 pm
**Location: Montezuma Hall**

**264 Poster #27**

**Feasibility of a Prolonged Nightly Fast among Overweight/Obese Postmenopausal Women**

Zena Aladdin, Public Health (U)  
Linda C. Gallo, Psychology

Postmenopausal women experience elevated centralized adiposity, and a high prevalence of obesity. It is well established that obesity increases the risks of cardiovascular disease, diabetes, and postmenopausal breast cancer. Conventional approaches for weight loss have been shown to be challenging and thus, innovative intervention strategies are needed. In animal studies, a prolonged nightly fasting regimen has been shown to positively influence health by reducing obesity and improving metabolic biomarkers linked to chronic disease. Therefore, studies aimed at translating these promising health effects in humans are warranted.

We conducted a pre-post pilot study to test if a habitual prolonged nightly fasting regimen would be feasible and would show preliminary efficacy in reducing weight. Participants were 20 overweight/obese (body mass index ≥ 25) postmenopausal women aged 50 years and older (50% Hispanic/Latina) free of diabetes who reported overnight fasting < 12 hours nightly at baseline. During the one-month intervention, participants were asked to fast at least 12 hours nightly. Participants received five motivational interviewing calls and used a short message service (SMS) texting program to record start/stop times of their nightly fast, receive reminders of their target end time of the overnight fast and support texts promoting protocol adherence.

Participants increased their nightly fasting hours by a mean of 22.4% on average and fasted ≥12 hours on 95.7% of the nights. Average fasting duration was 10.7 hours at baseline (SD = .77) and 13.1 hours at follow-up (SD = .63) Participants reported that the intervention was acceptable (90%) and pleasant (90%). Overall, the intervention yielded high compliance (>95.7%) and completion rates (100%); and showed evidence of weight loss (M = -1.07 kg; SD = 1.30).

A prolonged overnight fasting regimen is a feasible and promising intervention with potential to promote modest weight loss and possibly improve metabolic health. Replication of findings in a fully powered randomized controlled trial is warranted to determine if a prolonged overnight fasting intervention can reduce chronic disease risk by improving chronic disease biomarkers such as lipids, insulin or inflammatory markers and potentially improving other health behaviors such as sleep.

**265 Poster #28**

**Exercise and Nutrition Goal Setting Outcomes Among San Diego County Families: Are some goals easier to accomplish than others?**

Juan M Cabrales, Psychology (U)  
Marisa Alvarez  
John Elder, Graduate School of Public Health

Background: Childhood and adult obesity rates maintain a steady upward trend. The CDC reports childhood obesity has more than doubled over the past 30 years. Obesity is associated with numerous health complications later in life making it imperative for the public health community to focus on reversing this trend. A proper nutrition and physical activity (PA) regime are well-documented methods of healthy weight management, but for many this requires serious behavior change. This study will examine the correlation between type of goal set and how often the goal was accomplished. Methods: Data was pulled from the MOVE study, a randomized community trial, to evaluate recreation center-based obesity prevention. Control and intervention recreation-centers included children between the ages of 5 and 8 and their families. Food and nutrition goals were given to each family on a monthly basis. Family health coaches collected data regarding goal compliance at the end of the month. Descriptive data was analyzed using SPSS and STATA was used to run a test of proportions. Results: At baseline, the MOVE study had 54.9% of female child participants, 42.2% Latino, the average age was 6.6 years, and 49.4% of the families had a monthly household income of over $5,000. Of the 541 families enrolled and measured at baseline, 489 completed the 2-year follow-up. This study used a sub-sample of 85 participants from the MOVE study. A significant difference was found between choosing behavior goals (p<0.01) with more families choosing physical activity (53.8%) compared to nutrition (46.2%). A significantly higher proportion of participants completed nutrition goals than those...
who set physical activity goals (p<.004), with 73% of participants completing nutrition goals compared to 65.7% of physical activity goals. Conclusion: The data shows that even though more physical activity goals were set, participants were more likely to accomplish their nutrition goal. Making time for exercise is a common barrier across socio-economic demographics, however nutritional behavioral changes may be easier to complete. Future research should explore why individuals might be more likely to adhere to nutritional goals versus exercise goals. This may help improve the effectiveness of future health interventions.

266 Poster #29
Weight Perception and feeding practices among Latina mothers of overweight and obese children
Antonio Mixquitl, Accounting (U)
Cynthia Alba
John Elder, Graduate School of Public Health
Specific feeding practices used by parents may be associated with misperceptions of their child’s overweight. The purpose of this study is to explore if parents’ child-feeding strategies differ according to their perceptions about their child’s weight status.

Participants were enrolled in the Luces de Cambio study, which involved the collection of anthropometric and survey data. Child BMI was classified according to CDC weight categories. Mother’s perception of child’s weight was assessed via self-report. Weight perception accuracy was determined if the mother perceived her child to be normal or overweight/obese (OW/OB) when their child was indeed classified as normal or OW/OB. Child feeding strategies were assessed through items measuring pressure to eat more food during meals and use of limitations for unhealthy foods. Mean feeding scores were dichotomized into low and high scores, where high scores indicate greater use of specific feeding strategies. Descriptive and regression analyses were used to examine differences in feeding strategies between accurate and inaccurate perceptions.

A majority of mothers preferred Spanish (93.1%) and had an education level of high school or greater (59.3%). More than half were classified as obese (56.2%). Thirty-nine percent of total children were overweight, 44.2% were obese, and 16.3% had normal weight. More than half of mothers of overweight children underestimated their weight and 86.9% of mothers of obese children failed to identify their child’s excessive weight. No significant differences were found between mothers with accurate perceptions versus mothers with inaccurate perceptions in either pressure (p = .16) or limit feeding scores (p = .46). T-tests showed a significant positive association between mothers who accurately identified their child’s overweight and use of limitation for the amount of soda consumption (p = .014). Maternal age (p = .03) and child’s measured weight status (p = .001) predicted use of pressure. Maternal education (p = .02), marital status (p = .03) and child age (p = .05) predicted greater use of limitation.

The majority of mothers underestimated their obese or overweight child’s weight, suggesting future research interventions focus on providing health and weight management education to identify the difference between overweight and obese.

267 Poster #30
Activation of Selected Brain Regions Correlates with Hunger Subscale of Three Factor Eating Questionnaire
Laura Gramling, Psychology (U)
Claire Murphy, Psychology

Obesity has become a worldwide epidemic. As well as having other negative health implications, obesity has been shown to be a risk factor for dementia later in life. The current study investigated dimensions of eating behavior measured by the Three Factor Eating Questionnaire (TFEQ), which measures cognitive restraint of eating, disinhibition, and hunger. In this study we investigated the relationship between hunger scores on the TFEQ and activation in specific regions of interest. The participants were 85 individuals, 40 of whom had metabolic syndrome (MetS) and 45 did not. To meet the criteria for metabolic syndrome, participants met three of seven risk factors outlined by the International Diabetes Federation: central obesity, insulin resistance, dyslipidemia (elevated triglyceride and low high-density lipoprotein [HDL] cholesterol levels), elevated blood pressure, and impaired glucose tolerance or diabetes mellitus. Participants were administered the TFEQ and completed two fMRI scans. Before each scan participants fasted, and completed one scan hungry and one scan satiated, after a preload. Participants rated the pleasantness of sucrose, saccharine and caffeine presented in water during the scan; water was also used as a rinse and baseline comparison. Pearson correlations were computed between participants’ scores on the TFEQ hunger subscale and activation levels of specific brain regions known to be affected by taste, hunger and reward processes. When rating saccharine in the hunger condition, there were significant positive correlations between TFEQ hunger scores and activation in the hippocampus, entorhinal cortex and parahippocampus. In the satiety condition there were significant correlations in the entorhinal cortex and parahippocampus. In response to sucrose, there was a significant positive correlation between hunger scores and activation in the hippocampus in the hunger condition and in the caudate and posterior cingulate in the satiety condition. These results were only present in the MetS participants. These findings raise intriguing questions about the implications for memory deficits in later life.

Supported by NIH grant # AG004085-26 from NIA to CM.
Examining correlations between different obesity indices and perceived stress among Native Hawaiian and Pacific Islanders in San Diego

Adrian M Bacong, Public Health (M)
Christina Holub, Graduate School of Public Health

Native Hawaiian and Pacific Islanders (NHPI) are one of the fastest growing ethnic groups in the U.S. and are disproportionately affected by obesity. Past studies examining Body Mass Index (BMI) and perceived stress were inconclusive. However, little research has examined different obesity measures and perceived stress amongst NHPI. METHODS: From 2013–2014, self-administered surveys (n=163) were given to NHPI participants in San Diego, CA. Survey questions included nutrition, physical activity, subjective height and weight, health status, and perceived stress. After survey completion, height, weight, triceps skinfold, and waist circumference were measured. Perceived stress was scored using Cohen's 4-Item Perceived Stress Scale (PSS). Subjective and objective BMI, percent body fat, and waist-to-height ratio (WHtR) were calculated with anthropometric measures. RESULTS: This study included Chamorro (42.9%), Native Hawaiian (29.4%), and Samoan (23.3%) participants. Subjective and objective BMI, waist circumference, triceps skinfold, percent body fat, and WHtR all averaged at or above obesity cutoffs among participants. Objective BMI (F(2, 148) = 5.35, p = 0.006), waist circumference (F(2, 136) = 3.27, p = 0.04) and WHtR (F(2, 137) = 3.91, p = 0.02) were significantly different among Chamorros, Native Hawaiians, and Samoans. Mean PSS score was 6.1 (low stress). Percent body fat negatively correlated with PSS, r(153) = -0.17, p = 0.04. When controlling for gender, percent body fat displayed no correlation with PSS, r(150) = -0.14, p = 0.09. Subjective and objective BMI, triceps skinfold, waist circumference, and WHtR were not statistically correlated with PSS, with and without controlling for other variables (e.g., age and gender). However, the tendency was to be negatively correlated. DISCUSSION: Counterintuitively, increased body fat percentage appeared protective against perceived stress. Previous studies have shown that NHPIs may accept larger body image as fit and attractive. Inconsistencies in potential predictability of obesity and PSS may be due to the appropriateness of the PSS to the NHPI population and cultural views around body image. Future research should consider the use of other objectives measures of obesity and stress (e.g., biomarkers) and the cultural sensitivity of the perceived stress scales.

Association between acculturation and intuitive eating among Latina women

Amanda S Gonzales, Public Health: Health Promotion and Behavioral Science (M)
Hala Madanat, Graduate School of Public Health

Introduction: Intuitive eating is a non-dieting approach to weight management that teaches participants to re-learn eating according to physiological hunger and satiety cues. In studies, intuitive eating has been associated with decreased BMI, blood pressure, cholesterol, and total energy intake as well as improved psychological health. Conversely, acculturation among Latina women has been associated with increased fat consumption, BMI, and preference for thinner body silhouettes. The purpose of this study is to assess the relationship between acculturation and intuitive eating among Latina women residing near the United States-Mexico border. Methods: A total of 164 Spanish speaking Latina women were recruited. Of them, 109 attended the 10 session intuitive eating intervention. A convenience sample of 54 (83.3% born in Mexico with a mean age of 44.43 years SD 11.32, mean BMI of 31.33 SD 5.26) completed baseline surveys and anthropometric measurements. Baseline measurements used in this analyses include the Intuitive Eating Scale-2 (IES-2), BMI, age, Marin’s Bi-dimensional Acculturation Scale-2 (BAS), country of birth, and years residing in the United States for foreign born. Pearson’s correlations were used to test the strength and direction of the relationship, if any, between intuitive eating and multiple measures of acculturation. RESULTS: Mean IES-2 score was 3.42 (SD .529), mean BAS non-Latino domain score was 2.19 (SD .716), mean BAS Latino domain score was 3.59 (SD .458), 83.3% were born in Mexico (n=45), and average years residing in the United States among foreign born was 18.07 (SD 12.65). Shapiro-Wilk test concluded IES-2 scores were normally distributed. There was no significant relationship between acculturation and intuitive eating. However, the relationship between BMI and intuitive eating (p=.132) approached significance. Conclusion: Multiple measures of acculturation did not have a significant relationship with intuitive eating scores in this sample of Latina women. Possible reasons for lack of significance include volunteer bias from convenience sampling, frequent border crossing, and low levels of acculturation due to social networks. Further research is needed to validate the translation of the complete IES-2 scale into Spanish and to include a group of Latina women with more variance in generations and ethnic groups.
Session C-14
Poster: Interdisciplinary
Friday, March 6, 2015, 1:00 pm – 2:45 pm
Location: Montezuma Hall

270  Poster #33
Human Impacts on California Mussels: A 9,500 Year Old Record From San Miguel Island, California
Chyna M Lee, Anthropology (U)
Todd Braje, Anthropology

Recently, interest in the application of archaeological data to modern environmental issues in order to enhance our understanding of the consequences of human decision-making through time has grown tremendously. Archaeological shellfish sizes have become an important method for reconstructing past environments and assessing human impacts on near shore ecosystems across time and space. Changes in California mussel (*Mytilus californianus*) size throughout the Holocene have been a particularly important proxy for natural changes to and anthropogenic impacts on near shore intertidal communities on North America’s Pacific Coast. Archaeologists are often limited, however, by taphonomic processes that cause California mussel shells to fragment. Recently, a new technique was established and provides a statistically reliable method for estimating mussel length from hinge measurements.

To assess the human impacts on California mussel populations throughout the Chumash occupation of San Miguel Island, we used this new methodology to measure a robust sample of hinge fragments excavated from five archaeological sites. We then compare our results to records of paleo-sea surface temperature changes. Finally, we contrast our results to modern size data for California mussels collected by Channel Islands National Park during the Spring 2014 monitoring session. Ultimately, our findings can be used as a proxy for California mussel size through the Holocene and used to establish deep historical baselines for the modern management of this critical intertidal marine resource.

271  Poster #34
Religious Fundamentalism and Conflict in Iraq and Syria
Andrew Nguyen
Cheryl O’Brien, Political Science

Developing nations that are devoid of a stable government and have religious tensions among the native population are prone to experience state failure and the ascendance of terrorist networks to positions of illegitimate power. The Middle Eastern nations of Iraq and Syria have been under enormous amounts of political strife and religious conflict over the last decade. The prompt rise of terrorist organizations has upset peace in these regions and alarmed the rest of the world. The formation of terrorist networks can be predicted significantly by severe political and domestic instability and the intensity of a state failure. These factors limit the government’s reach of domestic authority giving them less power to control the population. Widely accepted gender norms create distinct opportunities for young boys and men to join rebel groups and terrorist networks when they feel their reigning government is unjust. In Iraq and Syria today, these men are being recruited and forced into camps where they are trained and sent out to complete the mission of jihad and martyrdom, hiding behind a façade of the Islamic faith. In recent years, Iraq and Syria have experienced a turbulent series of events that thwarted the reach of their governments and hindered the immediate prospect of political stability in the region. Both of these regions have been systematically declared under the control of a radical militant terrorist group known as ISIS. Along with the radical interpretation and harsh implementation of Islamic traditions, this organization has managed to terrorize and evoke fear in the people of Iraq and Syria. Extreme interpretation of Islamic traditions have created instability in society and combined with a weak the political system contribute to the ascendance of well-organized terrorist networks to power. Rigid gender norms and cultural grievances have become commonplace and have encouraged the perpetuation of practices that further limit the reach of governance. The lack of legitimate political governance and the limited availability of social and political goods because of the violent instability currently contribute greatly to the fragile state status of Iraq and Syria.
**Poster #35**

*Sonderkommando: Behind the Ashes*

Danelle M Paul, Computer Science (U)

Jeff Hay, History

The Nazi Holocaust saw death on an industrialized scale. How did the natures and differences of the death camps mold workers who would be known as the Sonderkommando? How did the Sonderkommando originate? The Sonderkommando is defined as “special commando” where Jewish male prisoners were forced into activities ranging from moving corpses off the trains to escorting new arrivals to the ‘showers’. The need for a death brigade first arose in Aktion 1005. Initially these prisoners started out exhuming bodies and cremating them in large pits - which continued simultaneously while the gassing and cremation of transports occurred, but Aktion 1005 was short lived—lasting from 1942 to 1944. Aktion 1005 and its group of Jewish prisoners, the Sonderkommando 1005, would influence Kommandants Rudolf Höss at Auschwitz and Christian Wirth at Chełmno by providing a template for liquidation techniques. The combine experiences of Wirth’s expertise and Aktion 1005 would influence future Sonderkommando brigades who experiences would begin after a two week quarantine.

Research has combine readings of secondary materials with use of memoirs and personal accounts when available. The availability of resources proved to be challenging as some camps had no surviving Sonderkommando members. The life expectancy varied—some as little as four hours to three years—what determined that varied from the number of transports to occupation. Occupations from camp to camp had little variation with a significant need for fire and ash brigades. Four out the six death camps had surviving members who shared their personal accounts, with Auschwitz survivor Filip Müller lasting five selections. Janowska, a transit and forced labor camp was highlighted to demonstrate their death brigade’s similarities and differences in regards to the Sonderkommando at the extermination sites. Post war, those who had survived either had gone into hiding or went on to testify like Rudolf Reder. Some survivors chose to write memoirs in order to be the voice for those who did not survive. In the end, the surviving Sonderkommando members wanted the world to see they were victims too, not Nazi collaborators.

**Poster #36**

*Variation and comparison of stature on a historic skeletal collection from India: A practice in methodology.*

Shawn Vineyard, Anthropology (U)

Arysa Gonzalez

Arion Mayes, Anthropology

The anthropology department at San Diego State University enables its students to better understand human biological and cultural diversity. It does so by providing its students with the necessary materials as well as teaching a range of methodological and theoretical approaches. One of these materials is the biological anthropology's vast collection of skeletons; including a historic collection of 18 individuals from India dating back to before the 1960’s. Stature comparisons were made of all 18 individuals using an Indian regression analysis and values acquired by using the Caucasian regression formula. It was later found that an Indian regression equation either does not exist or is inaccessible. In response, the Caucasian regression analysis was used to determine the collections height. Sex determined using the diameter of the femoral head, and the values assigned to one of five possible sexes: female, possible female, intermediate, possible male, and male. These sex assignations were then compared with the skull morphology of every individual. We determined the collection is weighted with females (N=16/18). The collection was then compared to that of a European, Portuguese (Caucasian) population, finding that the Portuguese population’s average stature was larger than the Indian collection. The data has led to more questions than answers regarding population variation and the applicability of standard stature formulas across geographic populations. Additionally, health indicators suggest the Indian population was biologically compromised compared to the European population.
Session C-15
Poster: Health Care Delivery
Friday, March 6, 2015, 1:00 pm – 2:45 pm
Location: Montezuma Hall

274  Poster #37
The Effects of Age and Mental Health Status on the Likelihood of Hiring a Healthcare Advocate
Symone A. McKinnon, Psychology (U)
Terry Cronan, Psychology

As the baby boomer generation continues to age, the prevalence of mental health disorders increases. Late-life depression and dementia, in particular, significantly affect the older adult population and can lead to negative physical and emotional outcomes, affect victims’ quality of life, and reduce their ability to engage in activities of daily living. Both depression and dementia can be burdensome for older people, because their care requires proper coordination between providers of physical and mental health care. Healthcare Advocates (HCAs), whose sole allegiance is to the client, are professionals who are trained in how the health care system functions, are familiar with the symptoms and treatments for both physical and mental health conditions, and can offer their services to people facing these problems. Given that late-life depression and dementia are growing concerns, it is important to determine the likelihood of hiring HCAs for this population. The purpose of the present study was to determine the effects of age and mental health status on the perceived likelihood of hiring an HCA. Data were collected in a large urban park in San Diego, California. Using a random sampling method, eligible participants (n = 663) were selected and asked to read vignettes that required them to imagine themselves as aged either 70, 80, or 90, with either depression or dementia. They were then instructed to indicate their likelihood of hiring an HCA to perform various services. A 3 (Age: 70, 80, 90 years old) by 2 (Mental Health Status: depression or dementia) analysis of covariance (ANCOVA) controlling for participants’ education indicated that when participants were asked to imagine themselves as having dementia, they reported a greater perceived likelihood of hiring an HCA than when they imagined themselves as having depression (\( p < .05 \)). There were no other significant main effects or interactions. Preparing for the large number of older people who will become seniors and who may experience mental health issues is important; this study is a first step in examining the perceived likelihood of hiring HCAs to access mental health services and coordinate the patients’ other health care needs.

275  Poster #38
The Effects of Comorbidity and Mental Health Status on the Likelihood of Hiring a Healthcare Advocate
Timothy J. R Little, Psychology (U)
Terry Cronan, Psychology

The current healthcare system is a complex, fragmented system that continues to become more overburdened as the population continues to age. Older people are more likely to develop chronic illnesses. Having one or more chronic illnesses can contribute to disability and lower quality of life. The mental health status of a patient can also complicate medical treatments and navigation of the health care system. A healthcare advocate (HCA) is an individual who works exclusively for the patient, helping to coordinate health care appointments, manage daily medical regimes, and provide social/emotional support. This research project is part of a larger study in which a 3 (age 70-year-old, 80-year-old, or 90-year-old) by 2 (mental health status: dementia or depression), by 2 (comorbidity: hypertension and arthritis or healthy) study design was used. The purpose of the present study was to examine how mental health status (dementia or depression) and comorbidity (hypertension and arthritis or healthy) affect the perceived likelihood of hiring an HCA. Participants (N = 663) were randomly recruited in a large urban park. They were asked to read a vignette that varied in mental health status and comorbidity and asked to complete a brief questionnaire. A two (mental health status dementia or depression), by two (comorbidity hypertension and arthritis or healthy) between subjects analysis of covariance (ANCOVA) was performed on the likelihood of hiring an HCA, controlling for participants’ education. The results indicated that, when participants were asked to imagine themselves with dementia, they reported a significantly greater likelihood of hiring an HCA than when asked to imagine having depression (\( p < .001 \)). No other significant main effects or interaction was found. The increase of comorbid health conditions and mental health disorders with age necessitates adequate preparation for this impending health care crisis, and HCAs are a potential key part of this preparation.

276  Poster #39
A Conversation Analytic Investigation on How to Improve Nurse-Physician Communication and Shared Leadership
James P Hennessy, Communication (M)
Wayne Beach, Communication

According to a study conducted this year in the British Medical Journal, in the United States alone more than 12 million people are misdiagnosed by nurse-physician teams each year. The missing link between this social issue and its solution lies in interactional communication research investigating the
communicative patterns of nurse-physician teams. Although nurse-physician communication research is burgeoning, there are very few studies examining the interactional communicative patterns between nurse-physician teams that do not employ quantitative self-report measures or qualitative ethnographic measures. This preliminary study seeks to fill that gap. Conversation Analysis (CA) will be employed to examine the interactional nature of the nurse physician-relationship, giving particular attention to the dynamic of shared leadership within medical settings. Data will be drawn from 5 video recorded and transcribed encounters between nurse-physician teams at various medical settings within the UCSD Health System. Implications are raised for furthering interactional research, improving care-provider team communication, advancing shared leadership roles between nurses and physicians, increasing diagnostic accuracy, and improving healthcare.

277 Poster #40
Risk Factors Associated with Symptoms of Depression in Nursing Students
Serena M Dubuque, Nursing (M)
Linda M. Kucinski, Maia Edwards
Sarah Livermore, Nursing

Depression is one of the most prevalent mood disorders in the United States. The American College Health Association reported more than 31 percent of college students suffered from some form of depression within the last year (2013). It is currently cited as the number one cause of college student dropout, and is a major precursor to suicide. Depression is also prevalent amongst nurses, who are the majority of healthcare workers. Therefore, the purpose of this study was to examine depression risk factors in undergraduate and graduate nursing students at San Diego State University. Both undergraduate and graduate nursing students from course NURS 458 and NURS 604A were invited to participate as subjects. There was no obligation to participate and participation was not related to course grades. The research design was a quantitative, non-experimental, descriptive correlational study. Subjects were given two self-report, Likert-like questionnaires at a single point in time during the Fall 2014 semester: BDI-II, and Risk Factors Associated with Symptoms of Depression. The hope was that the collective data will reveal a correlation between risk factors associated with symptoms of depression and actual depression in undergraduate and graduate nursing students. Results pending.

278 Poster #41
Fall Reduction on a Medical Surgical Unit through Purposeful Rounding
Hannah Marro, Nursing (M)
Willa Fields, Nursing

Hospitalized patients are at a greater risk of falling. The result of falls can be costly to both the patient and the organization. A reduction of fall rates on a medical surgical unit was examined through the use of purposeful rounding. Following the introduction of purposeful rounding, a marked decrease in falls on the medical surgical unit occurred.

Session C-16
Poster: Relationships
Friday, March 6, 2015, 1:00 pm – 2:45 pm
Location: Montezuma Hall

The Effect of Pre-Marital Cohabitation and Ethnicity on Marital Quality
Cinthia Sierra, Psychology (U)
Donna Castañeda, Psychology

Much research based upon European American couples shows that premarital cohabitation is related to lower marital satisfaction once couples marry (see Karney & Bradbury, 1995). Mexican American married couples are more likely than European American married couples to cohabit before marriage (12% and 8%, respectively) (Census 2000, February, 2003), but almost no research is available that examines this relationship among Mexican American married couples, nor is there research that examines whether level of acculturation may moderate this relationship. The purpose of this study is to determine 1) the relationship between premarital cohabitation and marital satisfaction in a Mexican American sample and 2) whether this relationship differs by level of acculturation. Premarital cohabitation is expected to be negatively related to marital satisfaction in this study. Acculturation is expected to moderate this relationship, but because no research is available that investigates the role of acculturation in premarital cohabitation, no hypotheses are given. Data collection is ongoing at this time, but a community sample of 60 Mexican American couples (120 participants) in their first year of marriage will make up the participants in this study.
Marital Satisfaction Inventory-Revised (Snyder, 1997); Minnesota Multiphasic Personality Inventory-2 Content Scales-DEP and ANX; and the Acculturation Rating Scale for Mexican Americans-II (Cuellar, Arnold, & Maldonado, 1995); and demographic questions such as age, education level, income, etc.

Couples are recruited through newspaper and cable TV ads, flyers distributed throughout the community and through email lists, and in-person solicitation at community events and on community college campuses. Each couple participates in a separate, face-to-face interview. Interviews last approximately 50 minutes. Twenty-five dollars is offered to each member of the couple for completion of the interview.

Marital satisfaction affects couple and family functioning and mental health of marriage partners (Cummings, et al 1989; Davies, Myers, & Cummings, 1996; Fincham, et al 1997; Horwitz, McLaughlin, & Raskin White, 1998; Laumakis, Mar golin, & John, 1998; Whisman & Bruce, 1999). Understanding how premarital cohabitation and acculturation are related to marital satisfaction in Mexican American couples will contribute to development of culturally competent services for them, particularly those who present with distress in their marital relationship.

280 Poster #43
The Role of Empathy in Violent Intimate Relationships
Salvador J Rubalcaba, Psychology (U)
Emilio Ulloa, Psychology

The present study employed a dyadic data analysis approach to examine the association between partners’ dispositional empathy and IPV. Data were collected from 1,156 couples, who were participants in Wave 3 of the National Longitudinal Study of Adolescent Health (Add Health). For both IPV perpetration and IPV victimization, significant actor effects for men and significant partner effects for men to women emerged: Men who were less empathic were more likely to perpetrate IPV and to be victimized. Similarly, women whose male partners were less empathic were more likely to perpetrate IPV and to be victimized. Findings partially generalized to analyzes assessing the associations between empathy and the different types of IPV (psychological, physical, sexual IPV, and occurrence of injury from IPV) separately. The present findings show that men’s levels of empathy may carry more weight in determining their own as well as their partners’ aggressive behaviors than do women’s levels of empathy.

281 Poster #44
An Overview of Happy Long Term Marriages
Erika G Meza, Psychology (U)
Rudy Contreras, Sciences

This study aimed to obtain a better understanding of long-term marriages by investigating the following research questions: (1) “How do couples explain their long-term marriage?” and (2) “Do husbands and wives perceive different factors as contributing to their long-term marriage?” The participants of this study consisted of 15 married couples (30 participants) who had been married for at least 10 years and who were in a self-reported happy marriage. This study took a qualitative approach on the topic, as individual interviews were conducted with each couple with the purpose to attain insight on what makes marriages last. The results demonstrate that there are no single factors which couples identify as essential in order to achieve a happy, long marriage. However, some of the most common factors reported by couples included love, communication, and being conscious of other’s feelings. These results could have several implications to be considered in the marriage and family therapy field.

282 Poster #45
Empathy and Relationship Quality
Nicole A Meda, Psychology (U)
Julia F. Hammett,
Emilio Ulloa, Psychology

Intimate relationships are important to individuals’ well-being. Dysfunctional relationships, such as those relationships marked by distress and dissatisfaction, have been found to be associated with a variety of negative consequences, including increased levels of stress and depression. In order to be able to avoid relationship distress, it is important to better understand potential risk factors that may decrease the quality of partners’ relationships. Empathy has been found to be associated with individuals’ relationship satisfaction in that individuals, who are compassionate and understand their partners’ feelings, may be more sensitive to their partners’ needs and may thus be better able to avoid relationship conflict. However, the inter-relatedness of the effects that individuals’ empathy may have on their own levels of satisfaction and love (actor effects) as well as on their partner’s levels of satisfaction and love (partner effects) remains largely understudied. The present study employed a dyadic data analysis approach to examine the association between partners’ overall levels of empathy and relationship quality (as evidenced in partners’ perceptions of relationship satisfaction, love towards their partner, and feelings of being loved). Data were collected from 1,156 couples, who were participants in the Wave 3 Romantic Pairs Subsample of the National Longitudinal Study of Adolescent Health (Add Health). To statistically account for the
effects that a partner has on an individual's outcome, the Actor-Partner Interdependence Model (APIM) was used. All actor and partner effects were found to be significant, indicating that men's and women's higher empathy was related to their own as well as their partner's perceptions of better relationship quality. Out of these four effects, the actor effect for women was the strongest one. The present findings are concordant with previous research in that they show that individuals' abilities to be understanding, compassionate, and sympathetic have a large impact in determining the overall quality of their romantic relationships. These data may have important consequences for clinical practice. Practitioner may consider incorporating exercises to enhance partners' feelings of empathy into individual as well as couple prevention and intervention programs for relationship distress.

283 Poster #46
**Stress and Life Satisfaction among College Students**
Shelley Condon, Psychology (M)
Wiston Rodrigues, Liz Hartman
Claire Murphy, Psychology

The way that we appraise situations in our lives, whether as within our control or requiring resources beyond our ability to cope, influences our perception of them as stressful or manageable. If situations are consistently perceived as stressful, it can negatively affect overall life satisfaction, which is the cognitive component of subjective well-being. While previous research has shown a link between stress and adverse health outcomes, there is little research examining the role of cognitive appraisal in stress and well-being. The current study aimed to evaluate this relationship among college students by analyzing their responses to an online survey comprised of two appraisal-based measures, the Perceived Stress Scale and the Satisfaction with Life Scale. Sixty-two participants completed the survey, and the analyses showed a significant negative correlation between perceived stress and life satisfaction, $r = -.600$, $p < .0001$, and gender differences on both the PSS, $t(62) = 3.798$, $p < .0001$, and the SWLS, $t(62) = -2.429$, $p < .0001$. The results of the correlation supported the hypothesis of the study that there would be a significant negative correlation between stress and life satisfaction, and the group differences between genders highlighted a very interesting area to explore in future research. The findings of this study support previous research linking stress to adverse health outcomes, and also suggest that cognitive appraisal plays a powerful role in our well-being.

Session C-17
**Poster: Experiences Across the Life Span**
Friday, March 6, 2015, 1:00 pm – 2:45 pm
Location: Montezuma Hall

284 Poster #47
**The Role of the Severity and Frequency of Maltreatment has on Children's Social Problem Solving skills.**
Aleena Gordon, Psychology (U)
Joseph Price, Psychology

Children who experienced abuse in the form of neglect or physical abuse have demonstrated maladaptive patterns in social information processing (Keil & Price, 2009). In this study, we extended earlier research by Keil and Price (2009) by examining the relation between social problem solving and maltreatment types and by examining the relationship between the frequency and severity of the type maltreatment and social problem solving skills. The sample consisted of 183 children of mixed ethnicity and were organized into one of three pre-existing categories; neglected, physically abused, or both neglected and physically abused. The children viewed age appropriate vignettes that presented social situations involving peer provocations or peer group entry. They were then asked to tell what their response would be in each situation. Responses were recorded as being, aggressive, competent, or inept. Correlational analyses revealed positive correlations between similar types of responses (i.e., competent, inept, and aggressive) across social situations (group entry and provocation). Two separate MANOVAs were run for each social situation with gender and maltreatment as the between subjects factors and the response types as the dependent measures. The results of the MANOVA for group entry situations revealed no significant differences for group entry responses. However, for provocation situations, there was a significant overall main effect, $F(2, 177) = 2.72$, $p < .05$ for maltreatment and a significant gender by maltreatment effect, $F(2, 177) = 3.27$, $p < .05$. Follow-up ANOVA and post-hoc analyses revealed a significant main effect for aggressive solutions, with physically abused children generating more aggressive solutions than non-maltreated children. Contrary to expectations, there were no significant correlations between types of responses, in either social situation, and the severity or frequency of maltreatment. The implications of this study further supports earlier research by Markel and Asher (1984). Children who do resolve conflicts in a negative or aggressive manner appear to be strictly dependent upon the situational context. These children may also be at risk for social rejection. Future research should examine the types of provocation situations that elicit aggressive responses from physically abused children and whether these responses have social consequences for these children.
Examining Parent Motivation in Child Mental Health
Raiyah S Harris, Psychology (U)
Rachel Haine-Schlagel, Psychology

Parent motivation to participate in their children’s mental health may contribute to the overall improvement of child treatment outcomes. Previous research has indicated that parents’ motivation for treatment could be a key determining factor in families’ successfully completing therapy and following through with therapeutic tasks (Nook & Photos, 2006). Additionally, research has shown that family level factors, such as poverty and single parent status, can potentially impact family engagement in their mental health services (Gopalan, Goldstein, Klingenstein, Sicher, Blake, & McKay, 2010). However, little to no research has been conducted to determine if family characteristics, such as socioeconomic and minority status, and child symptom severity influence parent motivation to be involved in their child’s therapy. As a result, the present study sets out to examine the association between parent and child characteristics and parent motivation to participate in their child’s therapy. Data on participant’s socioeconomic status (i.e., parent income and education level) and minority status (Latino/Hispanic) were collected. Child behavior problems were measured using the Eyberg Child Behavior Inventory (ECBI), and parent motivation was measured using the Parent Motivation Inventory (PMI). It is hypothesized that parents with minority and low socioeconomic status as well as low education levels will report lower parent motivation. Moreover, it was also hypothesized that parents who report higher scores on the ECBI will in turn report higher scores on the PMI. Understanding how parent and child characteristics influence parent motivation may assist clinicians better help engage families in mental health services and increase the overall effectiveness of children’s treatment.

The effect of age and comorbidity on the likelihood of hiring a healthcare advocate for a person with dementia
Breanna M Holloway, Psychology (U)
Terry Cronan, Psychology

The burgeoning older adult population is projected to increase the number of people with dementia during the next three decades. As people age, the risk of developing chronic conditions increases, and the risk of developing multiple chronic illnesses also increases. Chronic illnesses can adversely affect health and increase the probability of poor health status and disability. Moreover, chronic illnesses often require expert health care, and managing multiple chronic illnesses requires coordination between health care providers to avoid medical errors. A health care advocate (HCA) is a person who can help families and patients by representing the interests of the patient and working with them to reduce the complexities associated with obtaining treatment for, and managing the care for, chronic illnesses.

The purpose of the present study was to examine how age and comorbidity influence the perceived likelihood of hiring an HCA for a person with dementia. Participants (n = 328) were randomly selected and recruited from a large urban cultural park, located in San Diego, CA. Interested participants were asked to read vignettes that varied in regards to age (70-year-old vs. 80-year-old vs. 90-year-old) and comorbidity (hypertension and arthritis vs. healthy) and then to complete a brief questionnaire. A 3 (Age: 70, 80, 90 years old) by 2 (Comorbidity: hypertension and arthritis versus healthy) analysis of covariance (ANCOVA) was performed on the likelihood of hiring an HCA, controlling for participant education. There were no main effects for age and comorbidity, and no interaction. Thus, participants did not significantly differ in likelihood of hiring an HCA when age and comorbidity were manipulated for a person with dementia. These findings are preliminary, however, with results trending towards a main effect for comorbidity (p = .065). It is important to better understand factors that may affect the likelihood of hiring an HCA to deal with the complex health care needs of an aging population.

The Shifting Perception of Age and Need for Healthcare Assistance
Bianca Ayscue, Psychology (U)
Heather Kirchhoff
Terry Cronan, Psychology

Researchers have demonstrated the pervasive perception that old age is synonymous with frailty and the need for ongoing assistance. However, the definitions of what is considered ‘old’ and ‘frail’ differ among age groups, with young adults perceiving old age as starting earlier in life than those who are past middle age. In the present study participant perceptions of the need for patient-centered assistance, measured in the form of likelihood of hiring a health care advocate (HCA), were examined. Participants (N = 636) were randomly assigned to read one of eight vignettes in which they were asked to imagine that they were either 35 or 80 years old and were recently in a car accident and required medical care. The purpose of the present study was to explore the effects age of the participant and age of character in a vignette on the likelihood of hiring an HCA. A 2 (participant age: younger than 50, 50 or older) by 2 (vignette age: 35, 80) ANOVA was conducted on the overall likelihood of hiring an HCA. There was a significant main effect of participant age on the likelihood of hiring an HCA, F(1, 632) = 4.91, p = .008. Participants who were younger than 50 reported being...
more likely to hire an HCA (M = 6.26, SD = 2.26) than those who were 50 years of age or older (M = 5.87, SD = 2.48). There was also a significant main effect of vignette age on the likelihood of hiring, F(1, 632) = 28.21, p = .043. Participants reported being more likely to hire an HCA for an 80-year-old (M = 6.59, SD = 2.10) than for a 35-year-old (M = 5.61, SD = 2.51). There was no significant interaction effect, F(1, 632) = .71, p = .399. These findings highlight the effects of age in making decisions about the need for assistance. Future researchers should examine the specific perceptions that influence this decision-making process.

288 Poster #51
Effects of Educational Attainment on Self-Rated Health
Jennifer L Rener, Sociology (M)
Audrey Beck, Sociology

Sociological research suggests mixed evidence as to whether educational attainment can equalize race and ethnic inequalities. Although whites and minorities may have the same level of education, it is particularly important when evaluating the benefits of educational attainment to keep in mind of the discriminations faced which could lead to unequal work experiences and income. To further address this debate, this study examines how the educational gradient in health varies by race/ethnicity. This study uses the 2012 Integrated Health Interview Series (n=1,175) and OLS regression to examine how self-reported race/ethnicity and education predict one’s self-rated health. Utilizing self-rated health as the outcome, the models included measures of race, ethnicity, and educational attainment while controlling for income, marital status, age, and sex. Model 1 included race/ethnicity, educational attainment, age, sex, marital status, and income. Model 1 indicates that age, income, and education are all significant predictors of self-rated health; differences between Hispanics and non-Hispanic whites persist after accounting for education. To test whether the relationship between education and health varied by race/ethnicity, model 2 included the interactions between race/ethnicity and education. Although the relationship between education and self-rated health appears to diverge between whites and blacks, disadvantaging blacks, the slopes are not statistically different. It further appears that differences in self-rated health are reduced at higher levels of education between non-Hispanic whites and Hispanics as well as those from other race/ethnic categories. This suggests that education may serve to minimize inequality, at least with respect to self-reported health.

289 Poster #52
Exposure to Adverse Childhood Experiences Predicts the Development of a Substance Use Disorder Later in Life
McKenzie L Gregory, Social Work/Public Health (M)
Mark Reed, Social Work

A growing body of research suggests that exposure to adverse childhood experiences is linked to negative health outcomes in adolescence and adulthood. Substance abuse is one of the most common health outcomes associated with childhood adversity, and poses a significant public health threat to the US, affecting the lives of millions of Americans. To date, most studies examining the relationship between adverse childhood experiences and substance abuse have used data gathered from clinical populations. The present study assessed the relationship between exposure to adverse childhood experiences and lifetime diagnosis of a substance use disorder using data from a nationally representative sample of adolescents followed into adulthood. Data from Waves I and IV of the National Longitudinal Study of Adolescent Health (Add Health) were analyzed to determine if exposure to adverse childhood experiences predicted the development of an alcohol use, cannabis use, or other drug use disorder in adulthood, while controlling for prior substance use and other demographic variables that have shown associations with substance use. Three types of adverse childhood experiences were considered; physical, emotional and sexual abuse. An additive index was created to determine if lifetime risk for substance use disorders increased in a graded fashion with the amount of adversity experienced. Logistic regression revealed that as the amount of adverse experiences increased, so too did the likelihood of developing an alcohol use, cannabis use or other drug use disorder later in life. This study underscores the long-term consequences of exposure to childhood adversity, and provides information that can be used to improve prevention and treatment programming.
Session D: Oral Presentations

Session D-1

Oral Presentation:
Internal Security, Violence & Conflict
Friday, March 6, 2015, 3:00 pm
Location: Pride Suite

290 3:00 pm

Questioning the Genetics of Crime
Yi-Lin Chung, Sociology (U)
Sara Giordano, Women’s Studies

In today’s society, the belief that human behaviors can be traced back to, and explained through, genetics remains popular. The idea has been reproduced and relived in mass media, the entertainment industry, and literature. It reflects the deep rooted paradigm prompting people to imagine and create human behaviors under a lurking assumption that there is something innate and intrinsic about a person’s character. A recent study in Finland claims to have found the link between a couple of genetic variations and violent criminality, highlighting the essentialist ideal of genetic research. My research, in response to the study, will argue that those claims overlook the social and cultural construction of class, gender, and race, and their influences on people’s behaviors relative to society. This research project intends to examine the study’s assumptions about both “violence” and “criminals,” to discover and describe the fallacy in which one seeks to explain a socially constructed phenomenon (e.g. crime) with essentialist genetic biology. Through outlining these factors, I will criticize this line of thinking that attributes human behaviors to fundamental elements of a person’s being. It is a dangerous assumption, because it allows people to be complicit to the injustice imposed on the underprivileged in our society, justifying the systematic oppression as “natural.” I choose to focus on the Finnish study for its timeliness and how it is reported in the media. The main focus of this paper aims to check the study’s essentialist ideals against a constructionist paradigm, in order to produce a descriptive and critical account of the study, and the assumptions it implies.

291 3:15 pm

Socio-economic Conditions and Violent Resistance Among the Kurds
Alex Nelson, International Security & Conflict Resolution (U)
Latha Varadarajan, Political Science

My research investigates Kurdish populations in Eastern Turkey and Northern Iraq with a focus on determining how socio-economic conditions of these populations have interacted with nationalism to influence violent conflict. In Eastern Turkey, I focus on the PKK, a Kurdish political/military terrorist organization (according to the Turkish government) which fights for Kurdish self-determination within Turkey. For the semi-autonomous region of Kurdistan in Northern Iraq, I look at their period of relative peace within the state of Iraq and attempt to identify certain socio-economic conditions that have resulted in success in achieving relative autonomy and a lack of involvement in civil conflict.

Religion, ethnicity, race, and territory are often the automatically assumed reasons for any sort of civil conflict. However, I am looking to provide evidence that socio-economic causes, particularly inequality, are more often than not the significant underlying sources of such conflicts. Despite occasional nods towards this question, it has been largely overlooked in the general discussion and academic literature on the subject. Research on this topic will help understand the causes of civil conflicts, and therefore provide insight on preventive measures.

This research aims to identify certain socio-economic conditions that have pushed Kurdish communities, and the PKK in particular, towards violent conflict in Eastern Turkey and conditions of Kurds in Northern Iraq that have contributed towards peaceful semi-autonomy. I will investigate and compare these somewhat isolated communities and analyze their socio-economic structures, and how they have developed historically using quantitative data that will indicate increases or decreases in income, political activity in elections, etc. This method of comparative analysis will be used to identify differing socio-economic conditions that have resulted in the PKK using armed resistance while Kurds in Northern Iraq exist relatively peacefully and are semi-autonomous. Existing data sets, academic articles, studies and other secondary sources will be used to make conclusions about my research questions.

Preliminary research provides evidence that differing socio-economic conditions between Kurdish populations, specifically horizontal inequalities, and the rest of Turkish society has significantly contributed to violent conflict. In Northern Iraq, evidence indicates semi-autonomy and a strong economy as the primary reasons for peace.
The Mechanisms in Social Movements ‘Turned Violent’: The Case of Paraguay
Sierra Marcelius, International Security & Conflict Resolution (U)

Many conflicts in Latin America are often attributed to the highly unequal distribution of land and wealth. However, Conflict Resolution theory suggests that this inequality, and the social group disadvantage and human insecurity it causes, may not necessarily be enough to result in protracted violent conflict. From these theories three research questions arise: 1) Are there other conditions besides inequality that have a significant influence on whether or not a country will experience protracted violent conflict? 2) If so, what are these conditions? 3) How do these conditions contribute to the creation and escalation of protracted violent conflict in a given country? This paper investigates these questions using the case of Paraguay, a country that has experienced protracted, if sporadic, violent conflict since the 1990s. Using data from scholarly reports, news articles, NGO documents and government websites, this paper argues that while inequality did have a significant influence on the conflict in Paraguay, it was not the only significant influencing factor. Other specific state actions contributed significantly to the escalation and protracted nature of the conflict, specifically the criminalization of protest, the militarization of the police and the weak and corrupt nature of the state. The report concludes by arguing that without these factors, inequality may not necessarily lead to violent conflict in a country. These findings suggest that a number of changes are required to ameliorate the conflict in Paraguay: the elimination of corruption in all levels of government, the decriminalization of protest, the demilitarization of the police, the restructuring of the political economy and the redistribution of land and wealth.

Bogdan Matuszynski, International Security & Conflict Resolution (U)

The 21st Century has come with many technological advancements that further peoples’ ability to be virtually connected to share music, videos, and ideologies with others around the world. However, there are groups that are using social media and the internet to launch campaigns that use Hollywood-style effects and those that have a resemblance to the theater of cruelty genre, for the promotion of violence and their personal agendas. Two such elements that are leading growing movements with violence are Hispanic Narco-Cultura promoted by Narco-Corrido (drug trafficking song) music groups that glorify Mexican Transnational Criminal Organizations and the self-righteous portrayal of Islamist fighters in Iraq and Syria by ISIS films and media.

The increasing attention and popularity of such marketing of violence has become engrained in the general public who are exposed to the violent theatrics, even when they really have no stake in the group’s agendas. Many viewers do not realize their numbness to, and their unawareness to the impact of, the violence occurring to real people. My goal is to address and examine the impact of the acceptance and perpetuation of violence as a societal norm.

Further analysis explains how this exposure is becoming part of everyday life and the modern virtual culture. Some viewers are even becoming followers of these violent elements. Final inquiry will explain the impact of viewing the violence and propaganda, as well as how these elements impact human security.

I am using secondary analysis research data to determine the effects of witnessed violent acts on screen for viewers. Preliminary findings show that those who become supporters of this violent material are from different social classes and ethnic backgrounds, but the common denominator is that they are often seeking a social network with direction, identity, purpose, belonging, empowerment, and excitement, rather than genuinely understanding the message. Additionally, there is some theory that reasons that humans take pleasure in watching pain. The combination of the human instinct theory and the attractive marketing creates a challenge for social justice advocates who are opposed to the ISIS and the Narco-Cultura ‘way of life.’

The Politics of Water Security in Jordan: International and Domestic Dimensions
Ross Hanshaw, International Security & Conflict Resolution (U)

My thesis looks at the international and domestic political challenges that Jordan faces in securing water for its growing population. Internationally, given that around 60% of all of Jordan’s water supply is trans-boundary in nature, Jordan must interact with its three neighboring states: Israel, Saudi Arabia, and Syria. Jordan’s interactions with these states differ in the degree of cooperation.

Utilizing the theoretical framework of hydropolitics, I highlight in my analysis how in post-Cold War relations the environment is increasingly a matter of national security. A key concept for understanding regional water politics is that of hydro-hegemony whereby the most powerful state enforces its position by resource capture, containment, or integration, leaving the non-hegemonic powers at the will of the hegemon. Jordan is dependent upon the three neighboring states with which it shares water resources.
Jordan ultimately has nothing to offer Syria and Saudi Arabia, thus the two states pursue a resource capture strategy. With Israel, Jordan was able to link its political recognition of Israel to gain additional water resources, but Israel benefitted overall. Israel pursued a containment strategy starting in 1979, which cemented in the 1994 peace agreement. In effect, Jordan traded political recognition of Israel for water—a basis of peace that continues to erode as regional droughts worsen.

Given its geostrategic position with its neighbors, Jordan cannot gain additional water resources from its trans-boundary sources, and must look inward. Experts agree that domestic demand management is the only realistic option, including shifting water away from agriculture, reducing waste, and recycling water. Yet, there are serious domestic political impediments to implementing such a policy. These include patronage, corruption, inefficiencies, clan politics, and concerns about potential political instability.

As landscapes throughout the Middle East change and populations grow and urbanize, the issue of hydropolitics will grow more pronounced in state relations. Jordan, due to its poor economic and physical endowment of resources, is forced to deal with these tough political decisions out of necessity. Thus, my thesis provides both an important theoretical understanding and case study of the politics of international riparian development, and domestic demand management.

295 4:15 pm

The Politics of Street Mobile Food Vending in Immigrant Communities
Karen Calderon, Political Science (M)
Kristen Maher, Political Science

This presentation will focus on the politics of street mobile food vending, a growing and often overlooked sector of immigrant economies in urban areas. Although some Latino communities see street food vending as part of their community traditions, other groups—such as small business owners—see it as a hazard to economic stability and public health. This study examines the politics of street mobile food vending in City Heights, San Diego both as a public policy at the city level and from the workers’ perspective on the ground. As a public policy, it criminalizes an ongoing practice due to an antiquated law system that has not yet adapted itself to the nature of mobile vendors. Drawing on 48 interviews and two focus groups with the vendors, I also examine the health and safety hazards this vulnerable population endures and their perspective on the lack of government regulation. My study finds that a series of physical, psychological, and environmental hazards affect vendors’ occupational health, ranging from poor living conditions to workplace violence. I argue that legalizing mobile street food vending would decrease health and safety concerns for both food vendors and their consumers.
with independently identifying the background and structural characteristics of both REITs and MLPs. This will include common features such as the tax and dividend structures. I will then identify and study risk management values and characteristics. Next, I will perform an assessment of the performance histories of each, focusing on the past fifteen to twenty years as these two instruments had not become widely traded until the latter part of the 20th Century. Main focus will be on advantages and disadvantage of each type of security from the perspective of investors. The study will conclude with a current assessment on both of these asset classes and include a recommendation based upon the primary and secondary data collected.

298  3:15 pm
A Proposal to Increase Customer Awareness, Engagement and Retention Rates at City Pools
Jesse Robles, Financial Services (U)
John Francis, Management

Municipal parks and recreation departments across the nation are struggling to achieve cost recovery from their operations and are subsequently challenged with sustaining operations.

- This report sought to identify ways municipal governments could improve its products, processes and people using traditional business analysis techniques--all to provide a series of recommendations on how The City of San Diego's Park & Recreation Department could generate savings and increase revenues.

- By implementing the recommendations of the report, the Department could benefit from over $1,500,000 in additional direct revenues every year.

- It was found that the subjects of this report have been underperforming against its competitors in the space, the producer price index for the industry, the local economy and the general rate of inflation, year-after-year for the past 10 years.

- By reviewing other municipal parks and recreation departments across the United States as well as private sector participants, the report sought to provide the framework for a “best practices” guide for public pool operators.

- The report reviewed community pool programming, schedules, fees, financial ratios, demographic factors and variables such as population weather and scalability for over 50 different industry participants.

Researchers for the report combined experience and expertise from the College of Hospitality and Tourism Management, the College of Business Administration and the Aztec Consulting Centre to provide the City of San Diego the foundation for a plan to achieve financial stability in its Parks & Recreation operations.

299  3:30 pm
Aztec Recreation Center Membership Research Report
Derek DF Forde, Marketing (U)
Khang Nguyen, Jorge Soto-Ibarra, Colin Brown, Nirit Revzin Pradeep Tyagi, Marketing

Included is a research report and its analysis entitled “ARC Membership Research Report.” In this document you will find selected questions and their analysis, computed statistical findings, and suggested methods of improvement of increasing and retaining membership of the Aztec Recreation Center. Our team researched the core components of the membership trends and has analyzed the information to the fullest extent. Over the past month, we have administered over 150 surveys to members of your recreation center and gathered information from a diverse range of surveyed respondents.

Throughout the report you will find highlights regarding different aspects of consumer behavior such as awareness, attitudes, perceptions, likes, dislikes and purchase behavior for ARC members. Additionally, we will cover more detailed attributes of membership such as methods of registration, membership renewal, and the impact of member referral.

The ARC Membership Research Report offers a comprehensive analysis to the contributions and components behind the overall number of ARC memberships. After careful examination we have detailed our findings, recommendations and, what could use further be investigated from your team.

300  3:45 pm
Atéssa Benefits, Inc
Mariel Demesa, Financial Services and Economics (U)
Wolfgang Kohl, Douglas McRae, Jesse Robles
Don Sciglimpaglia, Marketing

The purpose of this report is to provide Atéssa Benefits, Inc. with an in-depth report of its company, the operations, assist in improving its retention of current customers, increase its acquisition of new clientele, and how to increase revenue. The Small Business Consulting Group performed research into the company’s operations, finances, technology, competitors, and marketing of Atéssa. The information identified its current issues and how the company can focus different resources to help it succeed. All the recommendations that are suggested in this report are to help Atéssa improve its growth and profitability as a company.
Aztec Consulting provides students with opportunities to engage with the business community through short term consulting projects in various fields of business. The Director for the Aztec Consulting Center presented the following opportunity to volunteers from the Aztec Consulting club. TriCal Incorporated is a privately held agrochemical business located in Hollister, CA with estimated yearly revenue of between $10–20 million. In 2014 TriCal Inc. considered a market penetration of the following two chemicals (pesticides) into Brazil: Chloropicrin and 1,3-Dichloropropene. The team was challenged to conduct international market research to provide TriCal with an assessment of the market potential for these products and make a recommendation.

Like many of our other consulting projects, this international market research project required Aztec Consulting to take advantage of the San Diego State University library resources, including research databases and the Wells Fargo Financial Markets Lab located in the Love Library.

This international market research project began with an overview of the trends in the agrochemical sector. We identified domestic and international competitors in the agrochemical industry to build a better understanding of the market. We reported on the hectare farmed aggregately, by crop location, and identified problematic pests by crop as well. As we identified these variables, we began to establish an understanding of the current methodology for dealing with soil problems and pests.

Another critical piece of this research was to develop a better understanding as to why other agrochemical companies have decided not to pursue similar product registration in Brazil.

Our group created a sustainable micro-entrepreneurial business for social change. To begin the project, our team researched the different numbers of refugees coming to America and to California. As a part of the research, we learned that San Diego takes in more refugees than any other country. With some of the largest barriers to integration being transportation, language, access, and lack of purpose. We needed to create a model engaging the refugee community, enhancing non-profit programs, and partnering with local businesses. We created a sustainable business modeled on the burgeoning and successful food truck industry to create social impact among the entire refugee community.

We started with sourcing products from wholesalers, artisans, a community farm and local markets and placing them on our mobile retail outlets. Our truck was then broken down into five different product categories with hygiene, beauty, cleaning, and household as some of the largest consumable categories.

Azab proposes 3 main roles: a driving team, the sales team and a purchasing team. As the business grows the teams will grow in size and trucks can be added to create a fleet. The distribution and market were at parks and churches to create community connections. To spread the word of Azab, we proposed community integration and communication. The start up costs as well as first 5 year financial projections were included in our presentation. The retail service will bridge the gap between the community and American products in all markets. We extended the reach of Chaldean storefronts and spread artisan products. The mobile retail outlet can be adapted to other populations in need ultimately having tremendous effects amongst the community.
India, the world’s largest emerging economy, has recognized the effect that its corporate governance system has on its ability to attract foreign direct capital, and as a result has made a move toward improving its system through passage of the Companies Act of 2013. The Companies Act of 2013 includes many novel provisions affecting (1) board size and composition, (2) director independence, (3) corporate social responsibility, and (4) female board directorship. Our research has focused on the provision mandating female board directorship; however, we maintain that the Act as a whole will strengthen India’s system of corporate governance.

Our primary research includes interviews with members of the academic and business communities in India, and secondary research includes peer-reviewed articles in international law reviews and management journals. Our research identifies current global female board participation, the business case argument for promoting their participation, likely India-specific challenges and benefits that will flow from the provision’s implementation in April 2015, and whether and how such a provision could be emulated in the United States.

We argue that, if India can overcome the barrier presented by its insider-based ownership structure, the gender diversity that female directorship provides may improve firm performance. As an example, because India is a very diverse country in terms of consumers, appointing females to the board can give a firm a competitive advantage in understanding and penetrating new markets, which in the long run may improve firm performance.

In this work, we investigate the impact of deformation on the gravitational redshift of neutron stars in the framework of general relativity. Using a parameterized metric to model non-spherical mass distributions, we derive an expression for the gravitational redshift in terms of the mass, radius, and deformity of a neutron star. Numerical solutions for the redshifts of sequences of deformed neutron stars are presented and observational implications are pointed out.

This research is funded by the NIH through the Maximizing Access to Research Careers (MARC), under grant number: 5T34GM008303-25 and through the National Science Foundation under grant PHY-1411708.

**305 3:15 pm**

**Fluorescent Nucleotides**

Dillon Burns, Chemistry (U)
Byron Purse, Chemistry

Fluorescent nucleotides have been shown to be useful molecular probes as well as fluorescent labels and play a critical role in the study of biophysical processes. The tricyclic cytosine family of compounds has been shown to closely mimic cytidine triphosphates when used as substrates for DNA and RNA polymerases and has been shown to maintain bright fluorescence in duplex DNA, whereas most nucleobase analogue fluorophores are quenched by neighboring bases. The $tC$ family of molecules can serve as fluorescent labels where a molecule can be tagged, making it possible to track biochemical processes. These molecules can also serve as molecular probes where the photophysical effects change due to surrounding stimuli. The synthesis of new tricyclic cytidine derivatives and the integration of these molecules into RNA via solid phase synthesis may provide new fluorescence-based methods to screen for drug candidates against RNA targets. In this work, we are synthesizing new fluorescent cytidine analogues and incorporating them into DNA and RNA using solid-phase synthesis. The 7-diethylamino-3H-pyrimido[5,4-b][1,4]benzothiazin-2(10H)-one nucleobase analogues is of interest because similar scaffolds have shown to be bright fluorophores. Dialkylamino groups are also known to red-shift fluorescence, which is especially valuable for *in vivo*.

The goal of this project is to design new fluorescent cytidine analogues that minimally perturb the natural structure of RNA or DNA so that the photo-physical properties (fluorescence) of the new analogues can be measured upon the binding of small molecules (possible drugs) to the nucleic acids.
306  3:30 pm

Numerical Design for Fabrication of Optical Couplers for Subwavelength Silicon Microcavities
Evan R Chicoine, Physics (U)
Lyuba Kuznetsova, Physics

Recently new techniques of using optical microcavities for single nanoparticle detection have been introduced [1]. As advancing laboratory techniques allow for the production of increasingly smaller microcavities, a new challenge has arisen in optical coupling. Currently straight tapered fibers have sufficiently reached critical coupling for the larger high Q microcavities [2]. When the cavity reaches sub-wavelength dimensions new techniques must be utilized. Here we present an approach that abandons tapered fibers in favor of bus waveguides for several reasons. Strong modal field overlap can be achieved by using a waveguide width that is small in comparison with the resonator. The thinness of the waveguide forces light to focus to a cross sectional area smaller than its wavelength, the evanescent field stretches far enough that it contains most of the optical power. More importantly the silicon bus waveguides can be designed to increase the evanescent coupling interaction length through bending the waveguide concentrically with the resonator. Using the same material for the waveguide and resonator inherently has minimal phase mismatch, due to having the same refractive index [3].

This paper presents the results of 2D numerical simulations of coupling light into near sub-wavelength (1μm radius) microdisk silicon resonators using the Finite Difference Time Domain technique. Optimization of variable parameters led us to a pulley coupler configuration, which has been shown to be advantageous in other optical coupling scenarios [4]. The architecture of the bus waveguide is restricted by fabrication limitations of etching and electron beam lithography. Our resulting structure was a pulley shaped 1 micrometer wide waveguide with an inner radius of curvature 30% larger than that of the microdisk, maintaining a 150nm or greater distance from the cavity. Results show improvements over a straight waveguide in coupling efficiency. The conclusion of our investigation has shown that this is feasibly the best coupling option for new near sub-wavelength microcavities.

References

307  3:45 pm

Ball Milling As an Approach to Molecular Encapsulation of Pyrogallol[4]arene
Sara N Journey, Biology (U)
Byron Purse, Chemistry

Molecular encapsulation is the enclosure of small molecules within the cavities of larger molecules that can form through self-assembly. It acts as a way to sequester guest molecules within supramolecular capsules so that they may be released under controlled conditions. The majority of supramolecular capsules today are created to quickly entrap guest molecules under thermodynamic equilibrium, meaning that, on average, most of the guest is encapsulated, but it may enter and exit swiftly, exchanging with other species in the surrounding environment. However, kinetically stabilized capsules have a slow exchange of guest molecules, allowing for more useful encapsulation with true guest isolation. In the past, our group has shown that kinetically stable, self-assembled molecular capsules called pyrogallol[4]arene hexamers can be formed by melting both capsule components and then cooling. The use of thermal energy has shown to be a limiting factor in the formation of encapsulation complexes, due to the decomposition of guest species while under elevated temperatures. Ball milling, a previously unexplored method in making kinetically stable encapsulation complexes by physically grinding both pyrogallol[4]arene hexamers and guests together, utilizes mechanical energy in lieu of thermal energy. Our hypothesis is that ball milling will produce enough mechanical energy to successfully create kinetically stable capsules in the absence of solvent. Stoichiometric amounts of pyrogallol[4]arene and the desired guest species are placed into stainless steel chambers with a small ball as a grinding tool and oscillated at 30 Hz for 10 minutes to obtain encapsulated complexes, as subsequently confirmed by $^1$H NMR. Throughout the ball milling process, less guest species is needed as compared to the melting method, and the use of solvent is eliminated allowing for a decrease in chemical waste. The data has proven successful encapsulation through mechanical force and created unique encapsulation complexes, as compared to the melting method, that contain guest species including pyrene, fluoranthene, and flourene. Future work will include direct investigation of these self-assembly processes in the solid state using NMR of solids.
308  4:00 pm
**Explicit vibrational analysis of the alkyne-vinylidene isomerization on a heterocyclic ruthenium catalyst**
Babgen Manookian, Chemistry (U)
Andrew Cooksy, Chemistry
Carbon activation of alkenes can occur on organotransition metal catalysts by isomerization to the corresponding vinylidene. Presence of an imidazole ring facilitates the isomerization by stabilizing the intermediate structure. We investigate the dynamics of this isomerization by solving the vibrational Schrödinger equation for the system on a calculated potential energy surface that spans the alkyne, the NH intermediate, and the vinylidene geometries. The potential energy surface is constructed from scans of the electronic energy predicted by density functional theory over three distinct vibrational coordinates. A finite element method analysis is used to predict the vibrational energies and wavefunctions on this potential energy surface, from which we extract spectroscopic signatures of the dynamics and predict isotope effects.

309  4:15 pm
**Vitamin K Electron Transfer Analysis Using Cyclic Voltammetry In Non-Aqueous Solvents With Glassy Carbon, Platinum, And Gold Working Electrodes**
Eric M Lopez, Chemistry (U)
Diane Smith, Chemistry
Like all quinones, Vitamin K is a compound that can undergo reversible two electron transfer in solution. Cyclic voltammetry experimentation with a glassy carbon working electrode has demonstrated a shift in the E1/2 value for the second electron transfer related to water concentration in organic solvents. It has been shown that hydrogen bond donation from water molecules stabilizes the Vitamin K dianion, which leads to its formation by a second electron transfer at a less negative potential at the working electrode. In acetonitrile, the two electron process appears to be chemically reversible. However, in methylene chloride, the first electron transfer is reversible while the second is not chemically reversible. The structure of the solvent allows possibility for a substitution reaction by nucleophilic attack. Upon formation of the Vitamin K dianion form, a nucleophilic substitution reaction may occur between the dianion and weakly electrophilic solvent to form a methylated Vitamin K product. Incremental addition of iodomethane to the cell under identical conditions reveals an increasing oxidation peak which is consistent with a Vitamin K methyl-ether product. Digisim electrochemical simulation software is used to replicate experimental voltammograms and support the conclusion that the Vitamin K methyl-ether product is formed. Ongoing cyclic voltammetry experiments using platinum and gold working electrodes have presented obstacles to obtaining reproducible results with Vitamin K. The inconsistency of the background current with metallic electrodes is evidence that Vitamin K could be adsorbing to the working electrode surface and inhibiting electron transfer into solution. More data is needed in order to acquire more information about the nature of the adsorption process.

310  4:30 pm
**A Theoretical Study on the Isomerization of the Cyclooctatetraenyl Radical**
Gerardo Soriano, Chemical Physics (U)
Andrew Cooksy, Chemistry and Biochemistry
The cyclooctatetraenyl radical (C8H7) has been found to be present as an intermediate in combustion reactions of unsaturated hydrocarbons. Because this molecule is a highly reactive chemical intermediate found in extreme conditions, its existence is very short-lived, making it difficult to study experimentally. With this in mind, a more straightforward approach to study this fleeting species is through first principles computations. Past theoretical studies have revealed the presence of two competing ground-state structures on the potential energy surface of the C8H7. However, the vibrational dynamics that connect these two structures have not been rigorously studied before. To investigate the dynamics of isomerization and improve estimates of the C8H7 partition function at combustion temperatures, a potential energy surface along three vibrational coordinates has been mapped. Next, with the implementation of our group’s vibrational analysis program FEMvib, we have integrated the vibrational Schrödinger equation on this anharmonic potential energy surface. This study aims to understand the nature of the isomerization of C8H7, and double-well potentials for other alkenyl radicals.
311  3:00 pm

**War Games: The Therapeutic Effects of Paintball on Active Duty Soldiers and Veterans**

Ian R Brazill, Communication (U)
Darron DeVillez
Kurt Lindemann, Communication

Active duty military personnel must adhere to a restricted form of communication provided by the Uniform Code of Military Justice, which limits freedom of speech. The period of reintegration following active duty thus requires communicative adjustments due to a lack of regulated structure. As a result, the authors have examined the sport of paintball, which provides an entertainment value, a militaristic environment, and a therapeutic outlet that encourages open, rather than restricted communication to all who participate. By studying paintball participation as it occurs, the authors were able to fully observe the phenomenon of veterans and active duty individuals participating in these war-like reenactments, which no other method of study has effectively accomplished. During the study, the authors recorded rich descriptions of various paintball settings, reflecting approximately 20 hours of recorded data and 25 pages of typed transcriptions. From these observations emerged a self-sufficient answer that has never been offered by the medical community. Paintball has been found to be an effective and welcoming therapeutic outlet for countless groups of veterans, and an alternative source of support for those who have not found it through traditional medical and psychological services.

312  3:15 pm

**Women Playing Fantasy Football: A Qualitative Study: Strategies of Inclusion and Experiences of Exclusion**

Dennis B Gulyas, Communication (U)
Christopher A. Rosario
Patricia Geist-Martin, Communication

Historical and contemporary observations situated within Western culture have noted that the gender equality gap between men and women has narrowed but still remains noticeably divided. Through a systematic series of barriers men tend to seek ways to exclude and subordinate women from functioning and being recognized as equals. The strategies of exclusion exhibited by men range in their explicit nature with some strategies being cultivated in far more insidious modes than others. This study uses qualitative methods to interview women who participate in fantasy football. Fantasy football was chosen due to its complicit nature as an activity that tends to epitomize male exclusionary tactics while coping with increased female participation. Over 100 minutes of interviews from ten separate women were gathered, recorded, and archived in digital format. The respondent interviewee pool was chosen via convenience/opportunistic sampling, where participants have a pre-existing relationship with the researchers. Unlike other ethnographic studies, there was no physical site of where the observations and interviews could be conducted. Fantasy football is conducted primarily through the internet and by result exhibits a virtual site. Using Maslow’s self-esteem needs as a theoretical lens, we assess the women’s sense of inclusion by examining their interactions with male fantasy football participants. Documenting examples of men initiating gender harassment through the use of misogynistic language and insults, provides insight on how women react to and navigate through those barriers that discourage equality. Analysis of the dialectical tension observed between the women’s sense of inclusion and exclusion provides unique insight to female fantasy football participants as well as shedding light on similar experiences of women outside of the realm of fantasy football that endure exclusion and subordination inflicted by men.

313  3:30 pm

**#BreakingNews: Assessing Flow, Incidental Learning, and Credibility during the Active News Search on Twitter**

Gichuhi Kamau, Journalism and Media Studies (M)
Holly Trusiak
Valerie Barker, Journalism and Media Studies

Among other functions, social media sites may serve as news channels to active users. The vast number of news and information sources available to users through social media have presented new challenges to the news seeker when consuming news and assessing the credibility of information. Using an online survey of active Twitter users (N = 306), this study investigated if users involved in an active news search entered a flow state and, if so, whether the experience of flow acted as a mediator to incidental learning, knowledge of current news events, and news experience credibility (perceived credibility of the entire news seeking experience). Study participants were recruited via Amazon Mechanical Turk in order to receive a somewhat random population sample. Qualified respondents were (1) 18 years or older; (2) living in the United States; (3) had an active Twitter account; and (4) had logged into their Twitter account...
within the 30 days prior. The four hypotheses were tested by computing one-tail Pearson correlation coefficients and partial correlations. Additionally, to further decompose the relationship between incidental learning and current affairs knowledge, the potential influence of gender was investigated using the zero order correlations. Lastly, linear regression using stepwise input was also conducted with gender, flow, and incidental learning as independent variables. The results indicated that the active news search was a strong predictor for flow \((r = .52, p < .01)\), while flow strongly predicted both incidental learning \((r = .52, p < .01)\) and news experience credibility \((r = .5, p < .01)\). Contrary to expectations, however, incidental learning was a weak predictor of current events knowledge in this sample \((r = .11, p = .11)\).

314 3:45 pm  
**A Double-Edged Sword: How Technology use Positively and Negatively Affects Familial and Personal Relationships**  
Scott D Plambek, Communication (M)  
James P. Hennessy  
Perry Pauley, Communication

The advent of technologies that enable computer mediated communication (CMC) has been meteoric and alluring—drawing Herculean levels of social intrigue. CMC technologies have become an inseparable part of life in the United States, yet the complexity and scope of the implications thereof have yet to be fully explored. The purpose of this study was to assess a variety of common CMC uses and perceptions, in order to identify the positive and negative forms of CMC adaptation. Using a secondary data set of 2,252 adults in the U.S., the results have revealed several statistically significant attributes and perceptions of CMC use. First, respondents’ use of CMC to conduct work at home was found to negatively predict their perception of the Internet’s influence on personal relationships. Second, when controlling for increased work done at home, there is a slight positive relationship between the use of the Internet and email at home and overall perception of the Internet’s influence on personal relationships. Third, respondents who reported having a social media profile also reported less favorable perceptions of the Internet’s influence on personal relationships than did respondents who did not report having a social media profile. Lastly, the use of the Internet and CMC to connect with family members and friends was found to be a positive predictor of one’s overall family engagement. These results shed light on the double-edged sword of modern CMC technology adaptation and offer insight into their sustainable use. Future research should consider the fluctuating nature of human relationships—e.g., marital, parental, professional, etc.—and relational maintenance strategies employed over one’s lifespan, particularly considering how CMC technologies may positively or negatively evolve concurrently.

315 4:00 pm  
**Navigating Around Entertainment’s Glass Ceiling: Asian Americans on YouTube**  
Alison Yeh, Communication (M)  
Perry Pauley, Communication

Although the term “glass ceiling” is typically used in political or organizational contexts, it also has its place in media. I argue that the increase in popularity of Asian Americans on YouTube is due to the lack of Asian American representation in mainstream entertainment and the way YouTube functions as a mediating platform for entertainment and civic engagement. Because of the lack of opportunity to enter mainstream media, Asian Americans are forced to find alternative media outlets. Many have turned to YouTube, which functions as a post-television alternative that hosts entertainment with less of an institutional imprint. Asian American YouTubers have risen in popularity by using mainstream discourse familiar to their audience that primarily consist of Asian Americans. YouTube, as a form of social media, also provides a forum for civic engagement in that they are able to use it as a platform for building an audience that identify with the social struggle of the “glass ceiling.” By using YouTube’s platform as an alternative to mainstream entertainment, Asian American YouTube celebrities have been able to find their niche in media and rise in popularity.

316 4:15 pm  
**A Feminist Analysis of Video Gaming in the Blogosphere**  
Monica Murtaugh, Women’s Studies (M)  
Sara Giordano, Women’s Studies

In light of recent media focus on sexism and harassment in video game communities, this research seeks to examine an intersection between feminism and gaming. By utilizing the method of textual analysis with a feminist approach, I identify and examine primary topics of concern on The Border House, a blog devoted to creating an inclusive online space for marginalized gamers and allies. In particular, this study seeks to determine in what manner and to what extent blog entries engage with issues surrounding gender, race, sexuality, class and disability. Understanding how these bloggers discuss categories of difference reveals the perceptions and representations of those identities in gaming culture. Furthermore, an analysis of relevant issues with respect to categories of identity can illuminate what types of feminism are expressed on this site. The presence of feminist viewpoints is significant in a culture that has traditionally promoted geek masculinity. However, while The Border House offers perspectives on oppression in video gaming communities and virtual spaces, it must be questioned to what extent social hierarchies are perpetuated. This feminist presence in gaming communities merits a re-examination of cyberfeminist theories.
The Internship Selfie Project: A Visual Analysis of Higher Order Thinking Skills in Immersive Out-of-School Time High School Internship Experiences
Lisa J Johnson Davis, Education (D)
Marva Cappello, Teacher Education

Part of a larger study focused on assessment of higher order thinking skills through an immersive internship experience, this presentation focuses on one such method for measurement of two higher order thinking skills (collaboration and problem solving) through photo analysis of the self portrait photographs or “selfies” of 11th grade students immersed in a four-week out-of-school time high school internship experience. The four-week “academic internship” is a capstone learning experience for a small group of charter high schools (grades 9–12) in San Diego, California focusing on developing 21st century skills through three main design principles: adult world connection, common intellectual mission, and personalization. Prior to starting their internship program toward the end of the second semester, students had received five semesters of instruction in a collaborative project based learning setting with opportunities for community-based projects and connective experiences. Internship provided students the opportunity to be placed in a non familiar setting with strangers requiring them to do significant work for an organization they knew little about—a liminal tension space. During their internship, students were asked to take a selfie in their work environment and to provide a one-word description. Selfies/descriptors were analyzed and classified using a “visual metaphor” technique based on whether they exhibited “shared intentions”—an anthropological construct that connotes collaboration—either with the workspace, the work focus, or with coworkers. Visual data indicates that students adapt (problem solve) to the unfamiliar through shared intentionality for the work space, thus applying strategies gained in school to deliberately promote collaboration in an unfamiliar environment.

Group Differences in Head Motion May Confound Anatomical Connectivity Findings from Diffusion Weighted MRI
Seraphina Kay Solders, Psychology (U)
Ralph-Axel Muller, Psychology

Background: Common findings in diffusion-weighted imaging (DWI) studies of children and adolescents with autism spectrum disorder (ASD) include reduced fractional anisotropy (FA), and increased mean diffusivity (MD) and radial diffusivity (RD) of white matter tracts. However, recent studies suggest that head motion may result in spurious findings of group differences (Ling et al. 2012, Koldewyn et al. 2014, Yendiki et al. 2013), calling these results into question. Objective: To determine whether careful matching for head motion in DWI would alter findings of group differences in children and adolescents with ASD. Methods: Diffusion weighted MRI was collected from 54 ASD and 44 typically developing (TD) participants ages 7–17 years. Groups were matched at increasing levels of stringency based on qualitative and/or quantitative assessment of head motion. Qualitative assessment included visual inspection for slice-wise signal dropout, image noise, and shifts of head placement between diffusion volumes. Quantitative assessment included four motion measures (average inter-volume translation, average rotation, proportion of slices affected by signal dropout, severity of signal dropout) as described by Yendiki et al. (2013). At each stage, groups were compared on FA, MD, RD, and AD (axial diffusivity) using Tract Based Spatial Statistics. Results: When quality screening was not applied (nASD=54, nTD=44), the ASD (compared to the TD) group showed higher RD diffusely throughout the right cerebral hemisphere, with modest effect sizes (Cohen’s d≈0.27). After excluding participants with any visible artifacts in the raw DWI images (nASD=30, nTD=30), no significant differences were found between groups. However, when these carefully screened groups were further matched on
the four quantitative measures of motion ($n_{ASD}=27, n_{TD}=22$), significantly higher RD was found in the right forceps major and splenium in the ASD group, with large effect sizes ($d=0.83$). Conclusions: Our results suggest that group differences in head motion can have substantial effects on DWI findings. However, we also found that optimal group matching re-instated some between-group findings not seen in less tightly matched, but stringently quality-controlled data. These differences may reflect a subtle interplay between data quality, matching, and reduced statistical power in more selective subsamples.

319  3:15 pm
The Effects of Exercise Induced Fatigue on a Static Balance Test
Ryan Byron-Fields, Kinesiology (U)
Dann Goble, Exercise and Nutritional Sciences

Background: Balance testing is a useful tool to assess concussions in athletes. Most sports medicine professionals rely on a subjective test called the Balance Error Scoring System (BESS). However, previous studies suggest that this protocol is subject to the effects of fatigue in the athlete tested, making it unreliable for up to 20 minutes following exercise. Recently, an affordable force plate system was developed called the Balance Tracking System (BTrackS). This gold standard balance tool uses a simpler protocol than the BESS, which may provide results that are more fatigue “resistant”. Objective: The purpose of this study was to investigate the effects of a fatiguing protocol on balance measured with BTrackS. Subjects: 20 healthy men and women between 18 and 30 years of age were tested, who had no existing cardiovascular or neurological conditions. Methods: Using BTrackS, individuals performed baseline balance tests consisting of three 20-second trials and one familiarization trial. Individuals were asked to stand as still as possible with their feet shoulder-width apart, hands on their hips, and eyes closed for all trials. After baseline testing, participants completed a 19-minute fatiguing protocol similar to previous published research that incorporated seven stations: 1) 5-minute jog on treadmill (RPE of 11–12), 2) 3-minute sprints of 65 feet down the hallway of the biomechanics lab, 3) 2 minutes of pushups, 4) 2 minutes of sit-ups, 5) 2 minutes of step-ups, 6) same sprints as in 2), and 7) 2-minute jog on the treadmill (RPE of 11–12). Immediately after completing the fatigue protocol, individuals completed balance testing with BTrackS similar to the baseline assessment. This protocol was then repeated every 5 minutes for a total of 30 minutes post exercise. Results: Data suggest that BTrackS is more fatigue resistant than the BESS, as the effects of exercise were dissipated after only 5 minutes. Conclusion: BTrackS represents a more reliable method of balance testing for athletes suspected of concussion than the current standard.

320  3:30 pm
Impact of dietary nitrate supplementation via spinach on cycling performance and blood pressure.
Andrew Gehr, Foods and Nutrition (U)
Mark Kern, Exercise and Nutritional Sciences

Research on nitrate supplementation, particularly through consumption of beet juice, suggests that it can reduce oxygen needs during exercise and can promote several potential performance benefits. Recent research suggests a beneficial role of nitrates on cycling performance (Lansley et al. 2011). Spinach is a plant that is also rich in nitrates and nitrites, therefore consuming spinach before exercise may have performance enhancing effects. The objectives of this study are to assess the dose response of spinach on human cycling performance using a randomized, crossover quasi-experimental design. Male and female ($n = 10$) participants between the ages of 18–45 years will make 4 visits (one for informational purposes only and 3 for testing) to the laboratory at approximately the same time each day following an overnight fast (10:00 pm). After arriving at the lab baseline blood pressure will be measured and oxygen consumption at rest will be measured. Subjects will then consume a 12 oz. fruit smoothie containing berries without spinach or with spinach at one of two doses (50 grams and 100 grams). Subjects will rest for 1.5 hours and their blood pressure will be tested. After the rest period, subjects will warm-up at 100 Watts for 5 minutes and then exercise for 5 additional minutes. Each exercise bout is performed at a heart rate calculated to elicit an intensity approximating 50 and 65% of their VO2 max for a total of 15 minutes of submaximal exercise on an electronically braked cycle ergometer (Lode, The Netherlands). Subjects will then be asked to complete a 15-minute cycling time trial to measure exercise performance under conditions of hypoxia (15% oxygen) representing an altitude of between 8000–9000 feet. ANOVAs with post-hoc paired t-tests will be used to determine if differences in cycling performance, exercise oxygen consumption and blood pressure between trials exist. These data may be useful since spinach may be found to reduce blood pressure acutely, reduce oxygen consumption at rest and/or during exercise and improve cycling performance. Lastly, the discussion will consider limitations of the study and suggest possible improvements for future research.
321  3:45 pm  
**The BTrackS balance test does not elicit a learning effect when utilized to measure changes in postural sway over time**

Jenna L Rubin, Rehabilitation Sciences (M)  
Dann Goble, Exercise and Nutritional Sciences  

The Balance Tracking System (BTrackS) is a new, low cost and portable force plate designed to measure body sway, a known correlate of balance ability. This device was designed to eliminate the issues of high cost and inaccessibility that are typical of scientific grade force plates - the gold standard for balance assessment. To date, no known study exists which has determined the extent to which postural sway can reliably be tracked over time using BTrackS. Indeed, individuals may exhibit a learning effect when completing the BTrackS Balance Test (BBT) multiple times. A learning effect could confound the results of tracking changes in postural sway over time, thus, biasing results. For example, the Balance Error Scoring System (BESS) test, popular in sports medicine for detecting changes in balance associated with concussion, has been shown to have a practice effect when completed on multiple occasions. The purpose of the current study was to insure that BTrackS accurately detects changes in postural sway with repeat administration and that scores do not simply reflect improved performance based on experience taking the test. A total of 20 participants (11 women, 11 men) were recruited to participate in the study. Participants completed the BBT on four separate occasions. An initial BBT was completed on day 1, which was followed by a test 3, 7, and 14 days after the initial test. Each BBT consisted of one 20-s familiarization trial, and three 20-s trials of quiet standing. Participants were asked to stand as still as possible on the force plate device with eyes closed and hands on his/her hips. Total sway from the 3 trials on each day was averaged and a final balance score given for each individual session. T-Tests were run to determine if any difference between time points existed. Overall, no significant differences were found, indicating that a learning effect was unlikely. Therefore, BTrackS can be used as a tool to reliably detect balance changes over time.

322  4:00 pm  
**Inclusive Fitness: Adapting the Physical and Mental Environment in Fitness to Welcome Persons of All Abilities**

Kathleen McCarty-Baker, Kinesiology, Rehabilitation Sciences (M)  
Jong Won Min, Social Work  

Approximately 54 million Americans have a chronic condition or disability. Persons with a disability (PWD) tend to live more sedentary lifestyles which increases their risk of developing secondary conditions, such as obesity and high blood pressure. These conditions can be harmful to a person’s health and can lead to severe complications. The more severe the condition, the greater need for assistance as function and independence decrease. Maintaining recommended exercise guidelines can greatly reduce health risks and improve overall function. However, there are barriers, such as cost, lack of trained professionals, and misconceptions about fitness and disabilities, that can make meeting these standards difficult for PWD to uphold.

This initiative will provide discounted personal training for PWD, create fitness classes and educational workshops that are inclusive, and work towards a trained staff capable of providing an enjoyable fitness experience for everyone, regardless of age, health status, or ability. It is hypothesized that offering these services will increase membership of PWD at fitness centers and lead to improvements of health and quality of life.

The Peninsula Family YMCA will facilitate the pilot program in this study. Staff surveys will be distributed at baseline and after six months to determine a change in preparedness in intercepting PWD at the facility. Surveys will include person-first language awareness, personal trainer education/certifications held allowing work with PWD in a fitness setting, and number of clients with a disability being personally trained. Other data collected at baseline and six months will include number of inclusive group exercise classes offered at facility, number of PWD who have gone through fitness center adaptive equipment orientation, and number of educational workshops offered on topics important to PWD, their caregivers, and their families.

The purpose of this study is to evaluate whether offering discounted personal training, adaptive programming, and educating staff will improve relations with and increase membership of persons with a disability at fitness centers and, therefore, create a more adaptive and healthy community.
Lower-limb fractures due to occupational stress and daily life between 1898 and 1925

Sydney Garcia, Anthropology (M)
Arion Mayes, Anthropology

Historical anatomical assemblages such as the Cobb Collection have been used to understand and document past lived experiences and test current methodology in skeletal biology. Furthermore, they have allowed for comparative studies between and within populations. Proposed here, is data collected during preliminary research that will further contribute to the documentation of two valuable assemblages. The Terry Collection consists of white and black U.S. citizens who died between 1898 and 1967 in the St. Louis, Missouri area. The Huntington Collection consists of U.S. white, black and immigrant individuals who died between 1890 and 1920 in New York City, New York. For the purpose of this research, I have focused on those who have died between 1898 and 1925. The time frame was selected based off a shifting period in the United States; that being, the depression in the late 1800s, “second wave” immigration, World War I, and immigration restrictions in the 1920s. Lower limb fractures related to occupational stress and activity patterns has been recorded and compared to known daily activities documented in records and literature. Existing information on the age, sex, place of origin, and race has been utilized, and will be used in future research for statistical analysis. A coding system was formulated for fracture severity, degree of healing, and infection. A modified Müller AO fracture classification system has been used when fractures were identified. Radiographs were used to further assist in degree of healing and fracture type identification.

It is crucial to understand how individuals physically moved through their lives and how their experiences are expressed in bone. By identifying work related and daily life trauma we can continue to build a more accurate picture of immigrant and American life in late 1800s and early 1900s. The research seeks to answer questions, such as: how has their daily life affected bone healing? Are there fracture differences between racial groups? Immigrant vs. US citizen? Preliminary findings show a higher number of fractures in the New York population in comparison to the St. Louis population. In addition, there are more fractures in St. Louis white verses black populations.

Sleep Disturbances and Older Adults: Assessing the validity of the PROMIS Sleep Disturbances scale in a retirement community population

Kelsie M Full, Public Health - Health Behavior (D)
Jacqueline Kerr, Public Health

Introduction: Over 70 million Americans report regular sleep disturbances. In older adults, sleep disturbances and insufficient sleep are associated with the development and poor management of chronic diseases, increased risk for diminished Quality of Life, and increased health care utilization. Identifying sleep disturbances in older adults may be instrumental to the prevention and control of chronic disease. The NIH-developed Patient-Reported Outcomes Information System (PROMIS) Sleep Disturbance Scale was developed to assess self-report perceptions of sleep quality, depth, and sleep difficulties in middle aged adults. The aim of this study is to assess the psychometric properties of the 6-item PROMIS Sleep Disturbances scale among an older adult sample. We hypothesize that the psychometric qualities of the PROMIS sleep scale will hold consistent with previous validation results. Methods: The data in this analysis are from an NIH-funded multilevel physical activity intervention (MIPARC) developed by researchers at the University of California—San Diego. Study participants were recruited from 11 retirement communities in San Diego, California. Participants included 307 residents over the age of 65 years. Study evaluation included self-report surveys of health outcomes including: sleep, depressive symptoms, quality of life, stress, and pain. To evaluate the self-reported PROMIS Sleep Disturbance scale’s internal consistency raw Cronbach’s α, individual item means, and inter-item correlations were calculated. Exploratory factor analyses examined construct validity. Pearson correlations were performed to examine the concurrent validity of the Sleep Disturbance scale with hypothesized health outcomes. Results: The mean age was 84 years and the standardized Sleep Disturbance score for the sample was 53.13, above the PROMIS standardized mean of 50. The scale had a Cronbach’s α = .856 and an inter-item correlation of .504. All scale items loaded onto one primary factor, explaining 58.8% of the total variance. The sleep scale was correlated with depressive symptoms, stress, pain and quality of life. Conclusion: As hypothesized, the PROMIS 6-item Sleep Disturbance scale had acceptable internal consistency and strong construct validity when used among a sample of older adults. These findings provide further evidence in the ability of the PROMIS scale to accurately assessing sleep disturbances and their relationship to health.
ABSTRACTS

STUDENT RESEARCH SYMPOSIUM 2013

Session D-6
Oral Presentation:
Ethics, Responsibility, Contentment & the Afterlife
Friday, March 6, 2015, 3:00 pm
Location: Templo Mayor

325  3:00 pm
The Fallacy of Failure
Andres Arturo Jaramillo, Business Management Administration: Entrepreneurship (U)
Brandon Edwards-Schuth, Philosophy

Living in a society where success is repeatedly glorified and sought after, we tend to overlook the potential lessons which failure is capable of teaching us. Often we see failure as something negative and discouraging when it is in fact a natural experience that is a pre-requisite, or temporary pit stop, to success. The aim of this work is to investigate the true purpose of failure and its relationship with success. I will examine literary and oral works credited to Nietzsche, Napoleon Hill, Allan Watts, and Rodney Mullen, just to name a few. I will also collaborate with the District Attorney of San Diego’s Youth Advisory Board program to acquire the perspective of students from a local high school, coming through an environment of expected outstanding achievement, on the topic of success and failure. This research can shed light on the symbiotic relationship between success and failure, and how the realization of this relationship has implications on seemingly all aspects of human progress (business, science, social causes, art, etc.).

326  3:15 pm
Lukács on Historical Materialism
Tyler Holsclaw, Philosophy (U)
Thomas Weston, Philosophy

I will be looking through how we can advance our understanding of social relations through the lens of technology, and investigating the question of what ethics might have to say technology in society. In the dialogue of Karl Marx’s Historical Materialism there have been many preachers and critics. Nicolai Bukharin and George Lukács were two such philosophers who seemed very interested in Marx. Bukharin places the value of technique on a pedestal, saying that it governs the course of social relations. Lukács does well in refusing many of Bukharin’s claims, but he also fails to grasp Marx’s views. Both Bukharin and Lukács’ (subject-object) dialectical methods are rooted in Hegelian methodologies, which are idealistic. It is apparent they failed to grasp the materialist notions deeply imbedded in Marx’s Historical Materialism. Marx did not believe technique to be a determining factor for the forces of production like Bukharin, but he did recognize its influence on social development. He also understood that technology can be used to control the proletariat, while in many other ways technology had the ability to extend human capacities. I argue that technique, given an understanding of social relations, ethics, and society, plays a significant and pressing role for us now. Technique has the ability to free us from menial labor and vastly improve our well-being. I will talk about how various ethical theories according to this framework can dictate how we ‘ought to live’, as well as techniques’ role in social development.

327  3:30 pm
The Economics of Ethics
William Riekstins, History (U)
Steve Barbone, Philosophy

My hypothesis is that Kant’s proposal ‘ought implies can’ is logically equivalent to ‘scarcity of resources is a primary determining factor in how we attain our ethical standards.’ The methods I used to come to this was through the use of logic and reasoning. The ‘essential results’ is that this is a popular way to look at ethics that has already been discovered, but now made more scientific thus more measurable and predictable. Economics is a social science, so adapting Kant’s language (ought implies can) to economic jargon (scarcity of resources is a primary determining factor in how we attain our ethical standards) is the process which makes ethics (particularly meta ethics) more measurable thus determinable. My ‘conclusion’ is that the economics of ethics can help develop our understanding of why we determine what the right thing to do is. However it is a primary determining factor, not the determining factor, other meta ethical claims may be correct alongside this one I have developed.

It is traditionally thought that economics is compatible for only so many social sciences, I am proposing that ethics is one of those social sciences that economics has not yet been applied to. Both the individual (micro) and the societal (macro) scale scarcity of resources I believe are what shapes our ethical standards.

This would explain why in recent times the ‘moral circle’ has recently in history been expanded to include more and more people alongside the growth of wealth and capitalism. It is only recently in human history that universal suffrage, abolition of slavery, an end to institutional discrimination, and the formation of global charitable works such as the UN’s millennium development goals have been formed. This is all alongside a large growth in capitalism which has caused growth in wealth and abundance of resources. These two I claim are not merely a coincidence, the reason humanity has progressed morally is directly (but not exclusively) based upon our recent abundance of resources.
328  3:45 pm  
**The Methodology of Contentment**
Julia Strobel, Philosophy (U)  
Steve Barbone, Philosophy

**THEOREM:**
1) The self exists only in relation to other perceived Centers of Narrative Gravity, which ultimately manifests through one’s own experiential knowledge.
2) Conclusively: Through recognition of this, we are able to let go of self-built conceptions of happiness and sadness, and can find the middle path of contentment.

**METHOD:**
1) Deduce (analyze) the formation of the self (various sources), then induce (synthesize) solutions/testable experiment steps from the deduced information.

**SOURCES:**
1) Eastern Buddhist philosophy  
2) Contemporary philosophy  
3) Ancient philosophy  
4) Theoretical Soviet Literature  
5) Other schools (to be found)

**DEFINITIONS OF KEY TERMS**
1) Self (Dennett’s definition): Not any old mathematical point, but an abstraction defined by the myriads of attributions and interpretations that have composed the biography of the ‘Center of Narrative Gravity’ it is.
   a. Center of Narrative Gravity: using gravity as an abstract concept, it is the object that claims the events as its own. Stores it in the self’s memory.
   b. Memory: a collective storage of past events, including, but not limited to, the associations made with those events (emotions, level of importance, etc.). Forms patterns in which the self relies upon to continue to function (at a defensive, fearful level).

**LEMNAS**
1) The self forms from the attachments to attributions to perceived objects.
2) They compose the self’s autobiography.
3) This autobiography is no more than a pattern-recognition of varying levels (be it avoidance, desire, level of comfort, etc.)
4) This pattern is what composes the self’s comfort level, relying on known pleasures to continue to remain comfortable.
5) This creates inconsistencies when we do not follow the pattern, and leads to discomfort.
6) If human are capable of processing, then we are capable of choosing our reaction.
7) Through realizing the source our reaction, we are able to see how the self we ‘have’ is no more than a collection of various ‘good’ and ‘bad’ situations we wish to [not] remain in.

329  4:00 pm  
**Belief, Acceptance, and Epistemic Responsibility**
Josh C Cangelosi, Philosophy (M)  
J. Angelo Corlett, Philosophy

In this article, I challenge the Lehrerean view that belief and doxastic acceptance are distinct kinds of mental states by contesting three assumptions that motivate this distinction: (1) the assumption that belief and doxastic acceptance are too dissimilar to be considered the same kind of mental state; (2) the assumption that because we are epistemically responsible only for those doxastic attitudes we control, we are not epistemically responsible for beliefs but only for acceptances; and (3) the assumption that acceptance, not belief, is the requisite doxastic attitude for internalist epistemic justification. In response to (1), I argue that belief and doxastic acceptance are much more alike than belief and non-doxastic acceptance, and that the functional differences between these doxastic attitudes can be accounted for in terms of variations within a single mental category of belief. In response to (2), I advance Conor McHugh’s position that we can exercise epistemic guidance control central to epistemic responsibility not only of doxastic attitudes we actively form via considered judgment (which Lehrer classifies as acceptances) but also of doxastic attitudes we passively acquire via perception (which Lehrer classifies as beliefs). However, I deny McHugh’s claim that epistemic guidance control of the latter requires the potential exercise of doxastic agency in the form of inquiry and judgment. In response to (3), I argue that the possibility of exercising epistemic guidance control of passively acquired beliefs weakens the motivation for singling out actively formed beliefs under the label ‘acceptance’ as necessary for internalist justification.

330  4:15 pm  
**Moral and Epistemic Luck: A Necessary Pair?**
Brandon Edwards-Schuth, Philosophy (M)  
Steve Barbone, Philosophy

There has been some philosophical discussion regarding the notions of moral and epistemic luck; however, the two have typically been separated and only at most, implied. The aim of this work is to investigate whether there is a correlation between moral and epistemic luck; specifically, the possibility of a necessary relationship of either type of luck. I will examine the works of Thomas Nagel, Bernard Williams, and others who have been major contributors to this area. This study could help us discern occurrences of blame or praise worthiness within the contexts of the ethical and epistemic realms. The outcome may also have further implications for other fields.
Minimal Hybrid Theism and the Afterlife
Todd E Clark, Philosophy (M)
Angelo Corlett, Philosophy

In *The Errors of Atheism*, J. Angelo Corlett sets out to pose a stronger challenge to atheism than the challenge posed by orthodox Christian theology by constructing a minimal hybrid theology, which consists of elements borrowed from both process and liberation theologies. Corlett adopts a minimalist approach in an effort to construct a theology that is maximally plausible. As part of his minimalist approach, Corlett does not include the concept an afterlife in his minimal hybrid theology on account of “the assumption that extraneous doctrines of the parapsychological and the afterlife are inessential to any plausible theism.” I will attempt to show that Corlett’s minimal hybrid theism might actually be strengthened, rather than weakened, by including an afterlife doctrine that affirms the existence of a soul, mind, or spirit that survives the death of the body.

I will develop my argument in four stages. Firstly, I will show how John Hick’s ‘risk version of the problem of evil’—the argument that the amount of evil in the world is so severe that God was either cruel or foolish to risk bringing about the conditions for life on earth—poses a serious challenge to minimal hybrid theism. I will then show how by adopting the concept of an afterlife, minimal hybrid theism might meet this objection. I will then argue that if the God of minimal hybrid theism exists, some key reasons for disbelieving in substance dualism (a version of which would most likely have to be true in order for there to be an afterlife) would be significantly diminished. I will then show how the increased plausibility of substance dualism provides grounds for being less skeptical towards empirical evidence for the afterlife, which I will suggest is much stronger than many academic professionals (including most academic philosophers) tend to believe it is.

Immune Mechanisms Underlying the Racial Disparities in Prostate Cancer
Tracy N Luu, Molecular Biology (M)
Kathleen McGuire, Biology

A racial disparity exists in prostate cancer (PCa), with African Americans (AA) often having more aggressive disease and poorer clinical outcomes compared to Caucasians (CA). The immune response in PCa, as well as other cancer types, is critical for inhibiting the growth and progression of tumors. The prevalence of cytotoxic T lymphocytes (CTLs), the major effectors of anti-tumor immunity, within tumor tissues is associated with improved disease-free survival. Strong adaptive anti-tumor responses involve effective antigen presentation for the efficient activation and priming of immune cells that contribute to high CTL activity. We hypothesize that deficiencies in anti-tumor immunity contribute to the racial disparities in PCa.

We have reanalyzed previously published microarray data on PCa for gene expression differences by race. HLA-DMB and HLA-DPA1, two genes important in antigen presentation, are higher expressed in the tumor tissues of CA compared to that of AA. We also found this differential expression of HLA-DMB and -DPA1 to be true at the protein level using tumor microarrays from 105 AA and 443 CA patients. Expression of HLA-DMB increases active CTL responses and improves prognosis in ovarian and breast cancer, suggesting high expression of HLA-DMB may also be linked to effective adaptive immunity in PCa. Our studies also revealed greater infiltration of CD8+ T cells into CA compared to AA tumors, which may be explained by higher gene expression of vascular adhesion protein-1 (VAP1) and a chemokine, CX3CL1, in CA tumors. Differential expression of VAP1 and CX3CL1, lymphocyte recruitment molecules, is currently being validated along with additional immune markers revealed by the microarray analyses using immunohistochemistry (IHC) on the archived PCa samples. Expression of all of these immune markers will be compared with follow-up data to determine if they correlate with better disease-free survival.
A significantly higher degree of CD8+ T cell infiltration into CA tumor tissues, along with stronger antigen presentation compared to AA tumors, suggests crucial differences in the magnitude of anti-tumor immunity between these two patient groups. These findings support our hypothesis that immune processes contribute to the racial disparities in PCa.

333  3:15 pm  
**Bacteriophage Translocation Across Epithelial Cells**  
Sophie Nguyen, Molecular and Cell Biology (M)  
Forest Rohwer, Biology  
Bacteriophage vary in structure and function and occupy diverse areas of the biosphere, such as the ocean, soil, and within animals. Our knowledge of the interactions between bacteriophage and humans is limited, and few studies examine the interactions between phage and eukaryotic cells. Phage do not have any known harmful effects on humans and are being evaluated as a phage therapy treatment for infected burn wounds in Europe. Oral administration of phage to human patients and mice revealed the presence of phage within the bloodstream and urinary tract. These studies demonstrate that the body is accessible to phage, yet the mechanism by which phage are able to access these areas of the body remains unknown. We propose phage transcytosis across epithelial cell layers as the mechanism that allow phage to permeate the body.

We used Transwells, tissue culture wells that are widely used in transcytosis assays for studying transportation and drug transport across cell layers. Transwells are composed of a porous membrane on which eukaryotic cells were seeded and grown to form a confluent cell monolayer. Phage were then applied to the cells to test phage passage across that cell layer. From these experiments, we have seen evidence of phage transcytosis across diverse cell layers (cells derived from the kidney as well as the human gut) in a unidirectional motion from the apical to basal direction. We have also visualized phage within cells via confocal microscopy by staining phage, applying them to the cells, and then imaging these cells, and we hypothesize that bacteriophage were transported across the epithelial cell layer via receptor-mediated clathrin-coated pit transcytosis. The results from these experiments will provide greater understanding of the ecological role that bacteriophage play in the human body.

334  3:30 pm  
**A novel Drosophila model of Traumatic Brain Injury**  
Ayeh Barekat, Microbiology (M)  
Kim D. Finley, Sciences  
The long-term effects of traumatic brain injury (TBI) have been an intense area of research in recent years. About 1.7 million cases of TBI occur in the U.S. annually and many of these individuals experience the onset of lifelong complications and disabilities associated with TBI. Unfortunately, the long-term effects of mild forms of TBI can only be diagnosed postmortem, such as the development of Chronic Traumatic Encephalopathy, thus limiting the ability of researchers to identify key processes involved in the pathogenesis and development of such devastating diseases. Hence the development of animal models that can recapitulate effects of traumatic injury is of great importance. By utilizing a controlled, programmable system/shaker, we have developed a novel Drosophila model of TBI to identify/explore molecular pathways that are activated following trauma. Flies subjected to our traumatic injury regime exhibit several key markers associated with TBI-related disorders in humans including decreased lifespan, sleep disturbances, phosphorylation of the Tau protein, and systemic induction of inflammatory markers. We hypothesized that clearance pathways, specifically the macroautophagy pathway, play an essential role in maintenance of the brain following traumatic injury. We analyzed the expression profiles of injured flies and found a significant increase in ref(2)P gene expression. Ref(2)P is the Drosophila homolog of mammalian p62/SQSTM1 and one of the key components of aggrephagy, the clearance of protein aggregates through autophagy. In contrast to its expression profile, protein levels of Ref(2)P are surprisingly decreased in injured flies compared to controls. Since Ref(2)P is selectively cleared through the autophagy pathway, these data suggest that the autophagy pathway is upregulated in the brains following traumatic injury. Interestingly, Ref(2)P mutant flies are exquisitely sensitive to traumatic injury and exhibit a significant reduction in lifespan as compared to wild-type flies subjected to injury. Collectively, these results highlight a novel role for Ref(2)P in the repair response following a traumatic injury.
Bacteriophages (phages) can display two different replication strategies: lytic or lysogenic. In the marine environment lytic infection is an important control of bacterial abundance and have implications on nutrient biogeochemical cycles. Lysogeny, in contrast, is known to modify bacterial metabolism by horizontal gene transfer. However, the controls of lytic and lysogenic lifestyles are poorly understood. Here we hypothesize that the prevalence of lytic and lysogenic lifestyles is controlled by host availability and metabolic status in marine environments. We analyzed bacterial and phage abundances in coral reefs in the Atlantic and Pacific Oceans and showed that virus-to-microbe ratio, i.e., phage predation pressure, is lower in high cell abundance environments. This pattern could not be explained by traditional coral reef ecology parameters like benthic cover, as assessed by incubation experiments. A meta-analysis of bacterial and viral abundances in different ecosystems such as freshwater, seawater, soil, sediments, human- and animal-associated microbial communities showed that the decrease in phage pressure in high cell abundance conditions is a global phenomenon. We then verified the relative abundance of integrase genes in the viromes from the studied coral reefs. Presence of integrase gene is used as proxy for lysogenic lifestyle. We found a positive correlation between cell abundance and integrase gene abundance, indicating that the viral community is more temperate at high host abundance conditions. Arms race between phage and hosts in highly lytic conditions is expected to generate high levels of diversification through antagonistic evolution. The analysis of functional diversity in the viromes showed a negative correlation between cell abundance and viral diversity, indicating that low cell abundance environments have more intense lytic dynamics. We conclude that lysogeny is a more successful strategy in high cell abundance conditions. These data suggest that lytic control can be seen as a resilience mechanism in coral reefs. High cell abundance, driven by human impacts, favors lysogenic lifestyle and, therefore, leads to a positive feedback of coral reef microbialization.

**336 4:00 pm**

**Phenotyping Diverse Bacteria for Metabolic Network Reconstruction**

Daniel A Cuevas, Computational Science (D)
Robert Edwards, Computer Science

Background: Genome-scale metabolic reconstructions of organisms require gene presence/absence information to assert metabolic capabilities. In order to improve model accuracy and parameterize the models, assertions should be compared against experimental results. This feedback reconciliation enables the model to obtain new information about its metabolic network in order to perform more accurately, thus providing insight into organism-specific metabolic processes. Methods: We are building models for a wide variety of bacteria and to provide high-throughput tools for bacterial metabolic reconstruction. We created a public database containing bacterial growth information populated with growth curves of a diverse set of bacteria grown in different minimal media compositions. The growth curves are used to parameterize mathematical models that allow us to identify growth, no growth, or intermediate types of growth in a high-throughput manner. The bacterial genomes were annotated using RAST platform and draft metabolic models automatically generated. We reconcile the metabolic models with the experimental growth predictions in order to improve accuracy of whole genome annotation and model construction.

KBase, a DOE programming environment for systems biology, is used for FBA and reconciliation. Results: To date, thirty-eight bacteria have been grown on up to 192 different minimal media compositions. Our recently published analysis pipeline PMAnalyzer was used to model these growth curves, and the raw and processed growth curves are available from http://edwards.sdsu.edu/dbbp. The genomes of each of these bacteria have been annotated and metabolic models constructed on the KBase platform. All reconciled FBA models have been shared on KBase. Overall, our modeling predictions are at least 85 percent accurate, but the accuracy is dependent on the coverage of the genome sequence and the accuracy of the annotations.

**337 4:15 pm**

**Development of Zebrafish Models of Streptococcal Infection to Examine Host Pathogen Interactions and Disease Progression**

Bryan M Hancock, Biology (D)
Kelly Doran, Biology

In humans *Streptococcus agalactiae* (Group B Streptococcus, GBS) causes a variety of disease states including bacteremia, pneumonia, sepsis, and meningitis. We have developed adult and larval zebrafish (*Danio rerio*) GBS infection models using the highly encapsulated hypervirulent serotype III, ST-17 strain.
In the adult model, GBS infection resulted in a mortality rate of >90% within 72 hours. We observed that GBS infection of adult zebrafish resulted in cerebral hemorrhage and edema. GBS were isolated from brain tissue suggesting that, as in humans and in murine infection models, GBS may penetrate the blood-brain barrier (BBB) to cause brain infection. Additionally, we have developed a zebrafish larvae infection model that allows for the live imaging and tracking of disease progression in real time. Larval zebrafish succumb to GBS infection in a dose-dependent fashion. In response to infection larval zebrafish upregulated the proinflammatory cytokines IL1β and CXCL8. We infected larval and adult zebrafish with previously described hypo-invasive GBS mutants. In both models the GBS mutant infections were attenuated. Transgenic zebrafish expressing endothelial specific mCherry were infected with GFP-GBS and subjected to live confocal imaging. After 24 hours GBS was present outside the brain endothelium suggesting that the BBB was compromised during the course of infection. By modeling GBS infections in adult and larval zebrafish we hope to identify additional host and bacterial factors that contribute to disease pathogenesis in both fish and humans. This study was funded by grant RO1 NS051247.

Session D-8
Oral Presentation:
Influences on Learning & Leadership
Friday, March 6, 2015, 3:00 pm
Location: Legacy Suite

338 3:00 pm
The effects of agreement and discrepancy between espoused and enacted safety norms on safety outcomes.
Jahnina Moss, Psychology (U)
Lisa Kath, Psychology

Statement of the problem: Safety norms are defined as informal, socially accepted workplace practices (Ehrhart & Naumann, 2004). Like children, employees know when authority figures are just saying something but have little intention of backing up their statements. In regards to safety, this concept may be described as a discrepancy between espoused (what they say) safety norms and enacted (what they do) safety norms (Fugas, Melia, & Silva, 2011). Our research is designed to examine the effects of agreement and discrepancy between espoused and enacted safety norms on a variety of safety-related outcomes. Procedures: Data were collected as part of a larger, online survey on workplace safety, gender ideology/identification, and general health. Participants were recruited through snowball sampling: undergraduate students at three US universities were given extra credit towards their grade for recruiting participants to complete the anonymous survey. The total number of respondents was 657. Of those who disclosed gender, 44.5% were male and 55.5% were female. The average age was 42 (SD = 12.19). Analyses: We used polynomial regression and response surface methodology (Shanock, Baran, Gentry, Pattison, & Heggestad, 2010) to evaluate the effects of agreement and disagreement between espoused and enacted safety norms on different safety-related constructs. Results: Results indicated that espoused norms were more closely related to evaluations of supervisors and management. Specifically, results showed a significant main effect of espoused norms on supervisor support for safety, perceived supervisor support, and management commitment to safety. The enacted norms essentially had no relation with these constructs. Results also indicated that enacted norms were more closely related to work safety tension. Furthermore, we found that when there was a discrepancy between espoused and enacted norms, job stress and work safety tension was at its highest. Conclusion: This study is the first to examine the effects of agreement and discrepancy of enacted and espoused safety norms using polynomial regression and response surface modeling methodology. Our results help researchers understand where these two safety norm types fit in the nomological net of safety constructs and underscores for practitioners that talking about safety without following through can make the workplace more stressful.

339 3:15 pm
Gendered Influences on Occupational Values Among Public Relations Students
Elpin Keshishzadeh, Journalism: Public Relations (U)
Courtney White
Bey-ling Sha, Journalism and Media Studies

Purpose of the Study: The purpose of this study is to explore why students choose to work in specific subfields in public relations, and our working hypothesis—grounded in the literature—is that gender identity influences career choice. We posit that both male and female students are more likely to seek entry into what have been labeled as masculine fields, such as sports public relations, if they identify with more characteristics associated with femininity. On the other hand, students are more likely to seek entry into what have been characterized as feminine fields, such as fashion public relations, if they identify with more characteristics associated with masculinity. Method: Students (n = 5,000) who are active members of the Public Relations Student Society of America were chosen at random to participate in an online survey measuring gender identity in relation to public relations. Gender identity will be measured using the Weisgram Occupational Scale, a commonly used instrument that has
been previously validated throughout the literature on gender identity (see Weisgram, 2006). By measuring sex differences in occupational values, perceptions of career fields as being either masculine or feminine have been measured using an instrument cited in Andsager and Hust (2005), although we greatly reduced the instrument by using only nine career fields, rather than several dozen; we also extrapolate these measures to examine perceptions of various public relations subfields as being either masculine or feminine. Results: We are still in the process of data collection, but intend to report our findings at the presentation.

340 3:30 pm
The Role of Transformational Leadership Consensus and Innovation Climate Strength in Predicting Employee Attitudes
Lisa A Wright, Industrial/Organizational Psychology (M)
Mark Ehrhart, Psychology
Although there has been extensive research on the relationship between transformational leadership (TL) and a variety of outcomes, these studies have typically focused on a team’s average rating of the leader, and have failed to address the possibility that team members may not agree about the transformational qualities of their leader. This study addresses this gap in the literature by integrating a dispersion approach to measuring TL. Dispersion models capture variability in responses within an organizational unit. Because leaders play an important role in creating this support for new innovation in organizations, this study will address how both the average rating and the dispersion of ratings of TL are related to innovation climate and innovation attitudes. Specifically, this study analyzes how average TL and TL consensus (the dispersion measure of TL) interact to predict attitudes toward a specific innovation, and the extent to which that relationship is mediated by innovation climate. The study will also address the relationship between TL consensus and innovation climate strength, or the variability in ratings of innovation climate. This study utilizes data from a large-scale research study of home-based child welfare service providers in the Midwestern U.S. Data were collected from service providers from agencies whose teams were utilizing a specific innovation beginning at some point during the course of the longitudinal 12-wave study. Each participant and team was assessed at multiple time points. Thus, this study uses multilevel analyses in Mplus utilizing maximum likelihood estimation to analyze the data and properly account for the nesting. The results of this study could have important implications for organizations by demonstrating the need for consistent perceptions of leadership and climate to achieve innovation climate and attitude outcomes. These findings could also help organizations use dispersion measures to identify leaders who have failed to create consensus among followers, and encourage these leaders to improve their relationships with select followers who may have viewed the leader as less transformational.

341 3:45 pm
Grouping Stigmas by Perceived Benefits of Interventions: A Cluster Analysis
Jacqueline E Schnapp, Psychology (M)
Allison Vaughn, Psychology
Causal attribution theory has been used to demonstrate how beliefs about the controllability and stability of a condition influence reactions toward people living with stigmatized conditions. Stability also affects the degree to which people think a particular intervention will benefit someone living with said condition. Previous research found that people believed job and professional-educational training would benefit in cases of blindness and paraplegia, but help little in others. Welfare was seen as beneficial for physically-based stigmas such as stroke and paraplegia, while medical treatment was thought to help those with cancer or heart disease. Psychotherapy was perceived to provide the most benefit to mental-behavioral stigmas like child abuse and PTSD. The goal of the current study was to examine how various stigmas cluster based on beliefs about treatment benefits in modern samples. In the present study, 70 undergraduates were recruited from the psychology participant pool. They were mostly female, freshmen, and averaged 18.44 years of age. Participants completed an online survey using Qualtrics software in exchange for partial course credit. They rated 16 mental and physical stigmas on the perceived extent to which a person with the stigma might benefit from five interventions (i.e., job training, professional training, welfare, medical treatment, and psychotherapy). Cluster analysis revealed a four-cluster solution. Cluster 1 was comprised only of child abuse and was defined by the lowest (no) benefits from welfare, but highest benefits from psychotherapy. Cluster 2 was comprised of drug addiction, obesity, PTSD, depression, anxiety, and schizophrenia and was defined by high benefits from both medical treatment and psychotherapy. Cluster 3 was comprised of Alzheimer’s disease, HIV/AIDS, blindness, paraplegia, diabetes, and COPD and was defined by mid-level benefits across all interventions except for medical treatment. Cluster 4 was comprised of cancer, heart disease, and stroke and was defined by the highest benefits from medical treatment. The results support a shift away from the traditional mental/physical dichotomy used to categorize stigmatizing conditions, instead suggesting reclassification in terms of perceived benefits from various intervention strategies as a way to decrease stigma and potentially increase the effectiveness of interventions.
Session D: Poster Presentations

Session D-9
Poster Presentation: Antennas & Material Sintering
Friday, March 6, 2015, 3:00 – 4:45 pm
Location: Montezuma Hall

### 342  Poster #1

**Simulated Design of Printed Ultra-Wide Bandwidth (UWB) Antenna on Flexible PET Substrate Material**

Alejandro T Castro, Electrical Engineering (U)
Satish Sharma, Electrical Engineering

An ultra-wideband (UWB) planar monopole antenna operating between 3.4 to 12 GHz was modeled and design on a flexible PET substrate material. Such antennas can find applications in flexible electronics and body wearable devices. The antenna was modeled and analyzed using Ansys High Frequency Structure Simulator (HFSS) software v.15 which is a full wave analysis tool. Both impedance matching and radiation patterns were computed. The simulated and measured reflection coefficient will be presented during the symposium.

### 344  Poster #3

**Spark Plasma Sintering Novel Tooling Design: Temperature Uniformization**

Diletta Giuntini, Mechanical Engineering (D)
Eugene Olevsky, Mechanical Engineering

A combined experimental and numerical study is conducted to investigate temperature non-homogeneities within a Spark Plasma Sintering tooling setup. Radial thermal gradients through a powder compact are encountered, a cause of microstructural non-uniformities in sintered specimens, which tend to become more significant when increasing the setup’s characteristic size. In the insulating silicon nitride powder compact employed for the experimental procedures, a double pyrometer arrangement detects a strong temperature disparity between the overheated die and the area adjacent to the tooling’s axis. A novel tooling design, consisting in the tailored drilling of circular or ring-shaped holes within the punch, is individuated and optimized through a campaign of fully-coupled thermal, electrical and mechanical finite-element simulations. The analysis of the numerical results, experimentally assessed, allows for a comprehensive understanding of the phenomena underlying radial temperature distributions in SPS. Further punch optimization strategies are drawn, involving a refinement of the three-rings geometry by linearly varying the drilled holes characteristic dimensions along the radial direction, or the selective coating and consequent insulation of the punch cross-section with a thin layer of hexagonal boron nitride. Ideal configurations are identified, consisting in a concentration of the graphite punch’s mass at its center by means of a tailored holes pattern, or in the coating of a portion of the conventionally-shaped punch with boron nitride.

In this research, a wideband non foster matched electrically small planar bowtie antenna for 600 MHz–1100 MHz is proposed. The non-foster circuit is used to implement negative inductors and negative capacitors which help in overcoming the limit on the minimum quality factor and maximum bandwidth for passive ESA. This circuit is referred to as negative impedance convertor (NIC) and has been designed and fabricated using transistors as active element with appropriate biasing network. The non-foster matched antenna is experimentally verified to have stable wideband matching bandwidth. Both measured radiation pattern and realized gain information is presented.

### 343  Poster #2

**Non Foster Matching of Electrically Small Bowtie Antenna covering 600 MHz to 1100 MHz**

Ghanshyam Mishra, Engineering (D)
Satish Kumar Sharma, Electrical Engineering

The continuous shrinking of size of the modern electronic devices has necessitated the need to focus research effort on electrically small antennas (ESAs) to reduce the footprint of the antenna in the host electronics system. An antenna is considered to be electrically small as a function of its overall size or occupied volume relative to the wavelength. ESAs are promising but design of this nature that has both large bandwidths and high radiation efficiencies is generally difficult to obtain. A large instantaneous bandwidth cannot be achieved with passive element based ESAs as it is found that the requisite component values decrease fast with increasing frequency that the element would violate Foster’s reactance theorem.
**Poster #4**

*Spark Plasma Sintering of Zirconium Carbide: Densification Behaviors and Mechanical Properties*

Xialu Wei, Mechanical Engineering (D)
Eugene Olevsky, Mechanical Engineering

Zirconium carbide (ZrC), due to its good thermo-mechanical properties, high electrical and thermal conductivity, high melting temperature and strong chemical resistance, has recently been considered as a promising candidate for furnace elements, arc plasma electrodes and future nuclear reactors. ZrC possesses a high melting point of 3532 °C, together with the inherent nature of the covalent Zr-C bonding, makes the densification of porous ZrC fairly unapproachable. The achievement of sintering fully dense ZrC product always required high processing temperature and large external pressure to be applied simultaneously. In this present work, commercial micro-sized ZrC powder is subjected to spark plasma sintering (SPS) at different temperatures. Both single-die and double-die SPS tooling setups are employed to investigate its densification behavior. The mechanism controlling the densification of such powder under SPS conditions is described utilizing an analytical power-law creep constitutive equation. Average grain size and relative density of sintered specimens are evaluated to correlate with specimen’s transverse rupture strength ($TRS$) and micro hardness ($HV$) in order to determine their co-effect on investigated mechanical properties.

**Poster #5**

*A Beam Steering Linear Antenna Array with Novel Simultaneous Frequency Agility and Polarization Reconfigurability*

Behrouz Babakhani, Computational Science (D)
Satish Sharma, Electrical and Computer Engineering

A beam steering linear (1×4) antenna array with novel simultaneous frequency agility and polarization reconfigurability is presented. This includes development of a (i) Wideband frequency agile antenna, (ii) Polarization reconfiguration control circuit and (iii) Beam forming network with digital phase shifters and low noise amplifiers (LNAs). The array radiating elements consist of a circular microstrip patch and a concentric annular ring patch around it. Four varactor diodes have been placed between the central patch and the ring patch. By varying the varactor capacitance values, the coupling between the patch and ring is varied and change the frequency coverage of the antenna. By varying the capacitance of the varactor, the resonant frequency can be varied between 1.5GHz and 2.4GHz (more than 46%).

Polarization reconfiguration happens by controlling the port excitations. The polarization response can be set as linear horizontal, linear vertical, RHCP or LHCP. An active feed network consisting of RF switches and a compact wideband branch line coupler has been designed and fabricated for realizing the polarization reconfiguration.

Finally, for beam steering capability, the variable progressive phase shifts between the radiating elements is applied through a beam forming network (BFN). The beam forming network (BFN) consists of LNAs, digital attenuators and digital phase shifters (one for each element). The state of the phase shifters and attenuators is set using a microcontroller. This microcontroller is driven using a Matlab code which calculates the excitation of each element as a complex number (phase and amplitude). The measured beam steering performance results for the fabricated antenna array consisting of frequency agile radiating elements, polarization reconfiguration control circuit and the beam forming network will be presented during the symposium.

**Poster #6**

*Densification Behavior and Constitutive Modeling of Zirconium Nitride Consolidated by Field Assisted Sintering Techniques*

Geuntak Lee, Mechanical Engineering (D)
Eugene Olevsky, Mechanical Engineering

The densification behavior of zirconium nitride (ZrN) powder is investigated for various temperature and pressure conditions imposed by spark plasma sintering (SPS) and high voltage electric discharge consolidation (HVEDC) techniques. The crystal structure, chemical composition, porosity, and grain size of the powders and processed specimens are analyzed by X-ray diffraction, scanning electron microscopy, and energy-dispersive X-ray spectroscopy. The densification map for ZrN powder is elaborated based on the obtained experimental data and on the constitutive equations of the continuum theory of sintering. The mechanical properties including Vickers micro-hardness and transverse rupture strength of the processed ZrN specimens are investigated. The outcomes of the two considered consolidation techniques are comparatively assessed.
Session D-10

Poster: Drug Discovery & Development

Friday, March 6, 2015, 3:00 pm – 4:45 pm
Location: Montezuma Hall

348 Poster #7
Progressive New Methods Towards the Total Synthesis of Azaspirene and its Analogs: Promising New Cancer Treatments
Sean A Najjar, Chemistry (U)
Mikael Bergdahl, Chemistry

Azaspirene, an angiogenesis inhibitor, generates the ability to starve tumor cells without the repercussions of damaging normalized cells, and therefore, less detrimental to people in dire need of chemotherapy treatment. Inhibition of the tumor cells is accomplished by disrupting the tumor cells’ ability to produce new blood vessels, which are vital for the tumor’s nourishment and survival. The breed of this anti-cancer compound is anticipated to be a less harmful form of chemotherapy. Azaspirene, is isolated from the soil fungus Neosartorya sp. and resides within the Pseurotin family, whose members also show promise to anti-fungal and anti-bacterial agents. Amounts of azaspirene harvested from natural sources are too minute to sustain the advancement in research; therefore, it is crucial to establish a more economical and efficient synthesis.

This research is innovative in the following ways: 1) it creates a novel, asymmetric synthesis to the core structure of azaspirene; 2) the approach lends itself toward a more economical and efficient route to azaspirene; 3) the route utilizes our lab’s proprietary copper chemistry; and 4) it allows for the potential to supply an ample amount of compound to the advancement in treating cancer by means of azaspirene and its related compounds.

Results: Our approach begins with an inexpensive and easily-accessible supply of L-phenyl alanine. L-phenyl alanine shares the same stereocenter as azaspirene allowing us to create its backbone. Currently, two-thirds of our synthetic approach is optimized with approximate yields of 75–99%. We expect to have azaspirene synthesized in the near future, and in turn will aid the advancement in biological testing of azaspirene as well as its derivatives.

Conclusions: The reported synthetic strategy will aid in the novel route to synthesize azaspirene and its Pseurotin analogs, characterize the biological activity of azaspirene through active site binding and crystal structure experiments, and evaluate the potential of azaspirene to serve as an anti-inflammatory, anti-angiogenic, and anti-breast tumor agent with our collaborators at UCSD and Moores Cancer Center.

349 Poster #8
Development of a Screening Platform to Identify Drugs that Reprogram Pancreatic Cancer Cells
Jaco Van Niekerk, Biology (U)
Pamela Itkin-Ansari, Biology

Patients with Pancreatic Ductal Adenocarcinoma (PDA) have a 73% chance of dying within their first year of diagnosis, thus making it one of the most deadly cancers known. PDA’s poor prognosis warrants a desperate need for further research, understanding, and therapies. Previous studies have shown that PDA arises from digestive enzyme producing acinar cells due to a Kras mutation. The cells undergo acinar-ductal metaplasia and become extremely proliferative. Furthermore, our lab has shown that in PDA, expression of basic helix-loop-helix (bHLH) transcription factors is lost, while their inhibitor Id3 is over-expressed. Together, the data suggest that bHLH signaling is highly dysregulated in PDA, leading us to investigate whether restoring bHLH activity would return the cancer cells back into their quiescent acinar state. Remarkably, we discovered this to be true in multiple pancreatic cancer cell lines. By inducing bHLH activity, we were able to reprogram the cells into a quiescent acinar fate. This was characterized by the expression of acinar digestive enzymes including trypsin and cell cycle inhibitors including P21. Having found a genetic basis for reprogramming pancreatic cancer cell fate, we endeavored to translate these findings for clinical utility. Therefore, we developed a novel high-throughput screening assay consisting of multimerized bHLH binding domains driving luciferase for testing the ability of small molecules to induce bHLH expression. An initial drug screen on a library of kinases showed that the drug Triciribine (TCN) is a weak inducer of bHLH activity. As a result, we are testing a number of TCN analogs to determine if changes in functional groups can induce more significant bHLH expression. To conclude, we have identified a pathway that controls pancreatic cancer cell growth and cell fate. Current efforts are aimed at developing a drug that would modulate this pathway and exhibit promise as a potential therapy.

350 Poster #9
Determining the efficacy of novel compounds aimed at ameliorating Parkinson’s disease
Kevin T Green, Biology (U)
Diana Price, Sciences

As many as one million individuals live with Parkinson’s disease in the United States and approximately 60,000 new cases of Parkinson’s disease being reported every year. Parkinson’s disease has been shown to increase rapidly with age, and with the life expectancy of humans to increase dramatically in the future, new methodology to not only treat but also detect
neurodegenerative diseases associated with old age is needed. Novel drug therapies have been developed to ameliorate Parkinson’s disease based on molecular models. These compounds were then tested on transgenic mice over-expressing Parkinsonian characteristics as well as non-transgenic mice in an attempt to determine the efficacy of the compounds. Cardiac and Gastrocnemius tissue samples were obtained after both time series and dosage dependent studies were conducted. Western blotting and chemiluminescence visualization techniques were utilized in an attempt to measure the alpha-synuclein and Heat Shock Protein 90/70 levels, as well as other biomarkers, in order to determine the efficacy of novel compounds as well as optimal dosage regimes. Data analysis and more testing is still underway to enhance our understanding of alpha-synuclein’s role in Parkinson’s disease with preliminary results looking promising.

351 Poster #10
Cutting-edge synthesis for drug design fragments
Alyssa Kim, Chemistry (U)
Thomas Cole, Chemistry
In 2010, the Nobel Prize-winning Suzuki Coupling Reaction revolutionized chemical research with its ease of use and air stability. Boron coupling reactions account for 40% of all C-C bond-forming reactions used in the pursuit of drug candidates. This technology has enabled the exploration of compounds that have 3-D and drug-like properties mostly found in nature, such as functionalized aliphatic and heteroaromatic compounds. With this, our laboratory has gained an idea of what drug discovery programs are looking for and want to identify biologically active compounds utilized in the Suzuki reaction. We have developed the first general route to create functionalized alkyl- and alkenylboronic derivatives that are readily used in Suzuki reactions. Our methodology is an advancement that facilitates the drug discovery process, creating a multitude of new compounds faster than before. Our boron fragments have the potential to make a significant impact on drug discovery programs by serving as building blocks. These building blocks can be added to each other through coupling reactions, facilitating drug discovery for medicinal chemists. The difference between our route versus others is that we have the ability to expand the pre-eminence of Suzuki reactions for making C-C bonds, complementing what you can do before, except we believe it has the ability to make an even bigger impact, with consistently high yields. Our effort is to look to make compounds that are not currently available. We’ve gained an understanding on what compounds are seen as desirable and successful in drug discovery, and that allows us to better focus on creating fragments of value. We have also gained a strong support through multiple recent literature sources that emphasize the value of critical features and are needed to create more drug-like molecules, decreasing the chances of off-target drug effects.

352 Poster #11
Characterization of the Membrane Effects of a Synthetic Antimicrobial Peptide
Indrajee Y. Wewaliyadda, Microbiology (M)
Anca Segall, Biology
Antibiotic resistance is an alarming issue in the pharmaceutical industry and for public health. Previous studies conducted in our lab have identified a novel peptide (wrwycr) that has antibiotic activity. Our goal is to characterize the effects of the peptide on the E. coli membrane. Previous in vitro studies have shown that the peptide binds to site specific recombination repair by binding to DNA repair intermediates ( Holliday junction intermediates of site specific recombination by tyrosine recombination and homologous recombination). In vivo studies have shown peptide treatment activates the SOS response, depolarizes the membrane, and activate envelop stress response factors. Further studies have shown that the peptide causes leakage of K+ and activate iron uptake-related genes and iron biogenesis genes.

Leakage of K+ will lead to acidification of the cytoplasm because of concomitant uptake of protons. Acidification of the cytoplasm could cause depurination and depyrimidation of DNA. Since K+ ions are a major cytoplasmic osmolyte, we expect disruption of osmoregulation by treatment with the peptide. We have observed changes in membrane permeability and a drop in ATP levels and NAD+/NADH levels. Cells’ efforts to re-establish the loss of membrane potential will lead into drop in ATP levels. We will measure the intracellular pH levels to test our proton uptake hypothesis. Our experiments will give us more detailed (in-depth) understanding of the mechanism of peptide action, which appears to be multigraped. The peptide appears to cause DNA damage indirectly by damaging the membrane in addition to preventing the repair of the damage. Future experiments will test whether mutants defective in repair of depurination and depyrimidation are hypersensitive to the peptide.

353 Poster #12
Small Molecules that are Cytotoxic to PC3 Prostate Cancer Cells
Parima Udompholkul, Molecular Biology (M)
Anca Segall, Biology
Prostate cancer (PCa) is the most common cancer among men and is the second leading cause of cancer-related deaths in males in the United States and Europe. PCa is more common in African-American than Caucasian-American men, potentially because African-American men have a higher expression of androgen receptors. Early treatments include deprivation of androgen and removal of prostate tissues. However, these treatments may be rendered ineffective as the disease progresses to become androgen-independent (the castrate refractory stage) and as...
the tumor metastasizes. Finding additional and more effective treatments for castrate refractory PCa is highly desirable. Our lab has previously identified peptides that stabilize Holliday junctions (HJs) formed during DNA recombination reactions by inhibiting their resolution. HJs are intermediates in homologous recombination repair (HRR) pathway and cancer cells depend more on HRR than normal cells as they have uncontrolled replication and proliferation. Our most potent peptide, wrwycr, is active as a homodimer. In order to improve its potency and permeability, we identified non-peptide small molecule surrogates from over 20 different chemical scaffolds; two types of scaffolds yielded small molecules (SM3, SM10, SMP3 and SMP10) that shared some properties with the peptides, including interactions with HJs. Results of cell viability and cytotoxicity assays have shown that SMs and SMPs caused cell death in PC3 cells, and that one of the molecules reduces total DNA synthesis, but not total protein synthesis. To determine if SMs and SMPs are potential candidates in the treatment of PCa, the mechanism of how these compounds cause cell death in PCa and whether or not they affect normal cell lines is being explored.

Session D-11
POSTER: Educational Modalities
Friday, March 6, 2015, 3:00 pm – 4:45 pm
Location: Montezuma Hall

354 Poster #13
*Hands on educational outreach program helps students apply subject matter to real life*
Raquel Aguilar, Mathematics (U)
Laura Rodriguez, Valerie Gamboa
Diana Verzi, Mathematics

The Imperial Valley, located in Southern California, is a rural community in which educational outreach programs are scarce. In this study, we want students to learn and experience the biodiversity of wildlife in the Imperial Valley ecosystems. Schools were provided incubators and feed in order to raise duck eggs from the middle of January to the beginning of April. The eggs were delivered according to the school’s requested date and the availability of the eggs. The duck eggs will be analyzed individually from each school and compared collectively. The schools will be visited to see the methods the students used to keep the eggs viable. While delivering the eggs to the schools, the student’s knowledge about the wetlands will be noted. The purpose for this study is to educate and expose students to our wetlands. The mature ducks will then be released into the wetlands by the students who helped raise them. While this is an in progress report of an ongoing project, the rearing of the mallard ducks has been a developing part of local sixth grade curriculum in a few local schools for a number of years. Results from previous years indicate an increase in student participation within the duck raising that corresponds to an increase in academic performance. The deliverable for this project is a contribution to an interdisciplinary unit centered on incubation and raising of mallard ducks, along with their role in the ecology of the wetlands, to be shared with many schools throughout the Imperial Valley.

355 Poster #14
*Introduce Hatching and Rearing Mallard Ducks to Increase Students’ Academic Interest and Performance in Math and Science*
Heather M Padilla, Single Subject Mathematics (U)
Belen Ledesma, Alexandra Varela
Diana Verzi, Mathematics

For several years Ducks Unlimited has offered a handful of elementary and middle schools in the Imperial Valley to contribute to hatching and releasing of Mallard ducks. This small project has been a successful process for the community because the students have the opportunity to learn by hands on experience and become more engaged in the process. There is increased community awareness of the wetlands because of student and school involvement.

We compare methods such as temperature, rotation of eggs, and environment from three different schools two times a week to identify best practices to an increase the number of successful hatching and rearing ducks from the given eggs. Variable such as temperature, rotation of eggs, number hatching and surviving, classroom environment, and student participation are collected and examined. Once the ducks are hatched and able to survive on their own they are released into the Wetlands.

With the results of this research Elementary, Middle, and High Schools will be able to follow certain procedures to get a better outcome of ducks. This will also allow the students to become more aware of real-world problems in Math and Science, and student academic interest and performance. Once standardized, the curriculum will be made available to many more schools in the Imperial Valley.
Poster #15

**Video Self-Modeling as a Reading Fluency Intervention for English Learners with Disabilities**

Nicole M Edwards, School Psychology (M)
Katina Lambros, Counseling and School Psychology

Many students, particularly ELLs and students with disabilities, struggle with reading fluency. Limited research on reading interventions with these populations exists, especially, for students in secondary school. Video self-modeling (VSM) is an evidence-based intervention for teaching new behaviors that is effective, engaging, and incorporates technology; however, there are few studies on its efficacy in addressing academic behaviors, like oral reading fluency for older students. The current study used a multiple-baseline design to examine the impact of VSM on oral reading fluency, reading errors, and reading self-concept with three 7th grade ELL students with special needs. Results showed increases in the average number of words correct per minute on familiar passages and a consistent reduction in errors across participants on familiar and unfamiliar passages. The average effect size (percent of overlapping data) across all participants was .78, suggesting that VSM may be an effective intervention for older learners, as well as for ELLs with disabilities.

Poster #17

**Utilizing Random Forests to Evaluate Pedagogy and Inform Personalized Learning**

Kelly Spoon, Computational Statistics (D)
Richard Levine, Mathematics and Statistics

A study of ways to utilize random forests in educational data mining, focusing on evaluating pedagogical approaches and interventions. Individualized treatment effects and interaction trees are presented as methods to provide personalized feedback to students in terms of the effectiveness of an intervention for a particular student based on institutional information. These methods are illustrated using data from Stat 119, an introductory business statistics course, offered in Fall 2013, focusing on the efficacy of an additional recitation course in helping students successfully pass Stat 119.

Session D-12

**Poster: Biology/Physiology**
Friday, March 6, 2015, 3:00 pm – 4:45 pm
Location: Montezuma Hall

Poster #16

**Assessing Instructional Modalities: Individualized Treatment Effects for Personalized Learning**

Joshua R Beemer, Statistics (M)
Richard Levine, Mathematics and Statistics

The individualized treatment effect (ITE) concept from personalized medicine applications is introduced as a means to quantify individual student performance under different instructional modalities or intervention strategies, though a given student experiences only one such “treatment”. The ITE is presented within an ensemble machine learning approach to evaluate student performance, identify factors indicative of student success, and study persistence. The methods developed are motivated and illustrated by a comparison of online and standard face-to-face offerings of an upper division applied statistics bottleneck course. The ITE allows us to characterize students that benefit from either the online or the traditional offerings. Overall, we find that students in the online class performed at least as well as the traditional lecture class on a common final exam and with respect to course grade. We discuss the general implications of our proposed analytics framework for assessing pedagogical innovations and interventions strategies, identifying and characterizing at-risk students, and designing an individualized student learning environment with an eye on optimizing student success.

Poster #18

**Passage conditions for expansion of human midbrain neuronal progenitors**

Carlos A Paz, Biochemistry (U)
Tom Huxford, Chemistry and Biochemistry

Midbrain dopaminergic (mDA) neurons have important potential as a replacement therapy in Parkinson’s disease, a neural degenerative disorder characterized by the selective loss of dopaminergic neurons located in the substantia nigra. Although effective strategies exist for the derivation of mDA neurons, protocols vary widely. In addition, lack of defined downstream expansion and cryopreservation points contribute to lengthy experiments, reduced efficiency, and variability between experiments than what could be achieved with more restricted progenitor cells. Standardization would not only reduce inter-study and lot-to-lot phenotypic variability, but could also provide a natural break point between fully pluripotent stem cells and mature post-mitotic mDA neurons. This study sought to optimize culture conditions for the expansion of a stable human mDA progenitor cell type, which would possess the following characteristics: multiple rounds of self-renewal, stable cryopreservation, and mDA neuronal cell fate. We used a modified dual-SMAD inhibition and monolayer differentiation of pluripotent stem cells (PSCs) to obtain floor plate precursors as previously
described. Expansion variables included day of isolation, isolation method, plating density, use of Rho kinase inhibitor, and variation of morphogens. Temporal protein and gene expression confirmed the presence of proliferative mDA progenitors. Ki67 immunostaining confirmed visual measurement of increasing population levels. Data suggests that FGF2 affects mDA progenitor proliferation, given a minimum cell density threshold; FGF8 is important to maintenance of mDA progenitor identity, and RHOk inhibitor is crucial to cell survival after isolation. This standardized protocol can help to reduce timeframes and increase efficiency of subsequent experiments utilizing mDA neurons by separating the expansion and cryopreservation process from the experimental workflow and effectively converting it into a preparatory protocol.

360 Poster #19

Characterizing the Peripheral Nervous System Gene Regulatory Network in the Ascidian Ciona intestinalis

Sherlyn Gallo, Biology (U)
Robert Zeller, Biology

The broad objective of this project is to characterize the gene regulatory network (GRN) underlying peripheral nervous system (PNS) development in the marine invertebrate chordate Ciona intestinalis. The simple organization and specification of the C. intestinalis PNS, composed of ciliated sensory neurons, serves as a model for the more complex PNS found in vertebrates. In particular, we hypothesize that the Ciona PNS is a simplified model for understanding how the vertebrate inner ear hair cells are specified. Our lab has determined the expression patterns and potential functions of several conserved proneural genes in the C. intestinalis PNS GRN. In particular, one of these genes, the transcription factor Pou4, was shown to be a primary determinant of sensory neuron specification in the PNS. However, because GRNs are typically composed of tens or hundreds of genes, there remain many unknown genes to be discovered in the PNS GRN. To identify additional PNS genes, we performed high-throughput RNA sequencing (RNA-seq) on wildtype and Pou4 overexpressing embryos, in which all epidermal cells are converted into PNS neurons, to enrich for PNS gene expression. Bioinformatic analyses produced an extensive list of putative Pou4 gene targets that were significantly upregulated. We focused on characterizing fifteen Pou4 gene targets. These were cloned and used to generate RNA riboprobes to determine the spatiotemporal expression profiles of these targets in wildtype embryos using whole mount in situ hybridization (WISH). Two genes, Myosin-VII and Neurexin, displayed an expression profile in the ESNs, which is similar to Pou4 and other proneural genes. We are validating our Pou4 gene target RNA-seq data by performing WISH with all target riboprobes on Pou4 overexpressing embryos. Our future directions are to measure gene expression when Pou4 gene function is silenced; we anticipate that Myosin-VII and Neurexin expression will be downregulated. Additionally, we aim to determine the function of Myosin-VII and Neurexin by overexpression in transgenic embryos and by knockdown using the CRISPR/Cas system. These results will provide insight into key structural genes that comprise the C. intestinalis PNS GRN.

361 Poster #20

Calcium Transient Regional Variance within the Neonatal Cardiomyocyte

Jacqueline Cuen, Biochemistry (U)
Dr. Paul Paolini, Biology

Cardiomyocyte contraction is preceded by a calcium transient, an influx of calcium into the cytosol causing a contraction to occur followed by relaxation which occurs as the intracellular calcium returns to resting level. The three primary genes responsible for the calcium transient are: (1) RYR2 which is responsible for the release of calcium from the Sarcoplasmic Reticulum (SR) into the cytosol; (2) SERCA which returns much cytosolic calcium into the SR; and (3) NCX which transfers some free cytosolic calcium out of the cell. I am investigating how calcium transient signals from the nucleus, perinuclear and more distant cytosolic regions of neonatal cardiomyocytes differ. Calcium transients exhibit significant differences in the rise and decay time courses between regions close to and relatively distant from the nucleus. Nuclear calcium transients are slower to occur and have broader peaks than cytosolic transients more distant from the nucleus. The distribution of SR around nuclear and perinuclear regions influences the behavior of calcium transient signals. We targeted four regions of interest (ROI) in the cell: (1) ROI 1 is the region with the least amount of nuclear calcium contribution; (2) ROI 2 refers to regions adjacent the nucleus where there is significant nuclear calcium contribution; (3) ROI 3 is within the nucleus; (4) ROI 4 refers to the signal averaged over the entire cell. In order to accurately define these four regions of interest the cells were stained with ER-TrackerTM, a dye that binds to the SR, and with Fluo-3. Calcium transients were recorded using Leica SP2 Fluorescent Laser Scanning Confocal Microscope. XT Scans were used to record all three regions of interest simultaneously for 30 sec and to compare these transients from an averaged signal recorded from the entire cell when cells were paced at 0.3 Hz. Neonatal ventricular myocyte measurements were obtained in an in-line scan mode at 200 lines per second. Data files were exported in text format and represented as bar charts and scatter plots. An averaged time to peak and averaged time to 50 percent signal decay were used to compare signal behavior between regions.
Poster #21

Are Brain Regions Important for Emotional Regulation Associated with Problem Behaviors in Children with Heavy Prenatal Alcohol Exposure?

Sophie E Haven, Psychology (U)
Edward Riley, Psychology

Introduction: The current study explored the relationship between brain structure and caregiver rated problem behavior in children and adolescents with heavy prenatal alcohol exposure. This is a population that is known to have difficulties with social skills and trouble with the law. We examined social problems, aggressive behavior, and rule-breaking behavior and their relationship with the amygdala and medial orbitofrontal cortex, brain regions important for emotional regulation. We hypothesized that the volumes of the amygdala and orbitofrontal cortex would predict problem behaviors. Methods: Neuropsychological data was assessed through the Child Behavior Checklist. T-scores from the social problems, aggressive behavior, and rule-breaking behavior subscales were used. Anatomical magnetic resonance images of the brain were acquired on a GE Signa Excite scanner using an 8-channel head coil. Data was processed using Freesurfer v5.3. Results: Alcohol-exposed subjects had significantly more social problems, aggressive behaviors, and rule-breaking behaviors than controls. The bilateral medial orbitofrontal cortex and amygdala volumes were reduced in alcohol-exposed subjects as compared to controls. After accounting for intracranial volume, only the right amygdala was significantly smaller in alcohol-exposed subjects. Pearson’s correlations revealed that right hemisphere amygdala volume was negatively correlated with rule-breaking behavior. A multiple linear regression was run to explore the relationship between rule-breaking and amygdala volume. Group, sex, and amygdala volume were used as independent variables with rule-breaking behavior as the dependent variable. Group significantly predicted rule-breaking behavior, but no significant effect of sex or amygdala volume was observed. Discussion: Brain regions important for emotional regulation are impacted by prenatal alcohol exposure. The right amygdala is disproportionately reduced. Furthermore, caregiver ratings of social problems, aggressive behavior, and rule-breaking behaviors indicate that alcohol-exposed children have problems in these domains. However, the current study did not support our hypothesis that the brain regions important for emotional control would predict social problems, aggressive behavior, and rule-breaking behavior in alcohol-exposed children. Future research should investigate the possibility of using diffusion tensor imaging in order to look at the relationship between the uncinate fasciculus, which is the white matter area that connects the amygdala to the orbital frontal cortex, and problem behaviors.

Poster #22

Mechanism of Group B Streptococcal Entry into Brain Endothelial Cells

Brandon A Givens, Cell & Molecular Biology (M)
Kelly Doran, Biology

Group B Streptococcus (GBS) is a Gram-positive bacterial pathogen that has been associated with the development of neonatal disease, namely meningitis. GBS has the ability to persist in the bloodstream and ultimately cross the blood-brain barrier (BBB). Previous research has proven that GBS can directly enter human brain microvascular endothelial cells (BMEC), but the exact mechanism of cellular entry is not known. It has been reported that various microbes utilize clathrin- or caveolin-mediated endocytosis or lipid rafts for entry into host cells. Therefore we assessed the level of GBS invasion in BMEC in the presence of specific inhibitors. Our results demonstrate that inhibition of clathrin-mediated endocytosis, through the disruption of the essential protein dynamin, resulted in decreased bacterial invasion. However we only observed a 20% decrease in bacterial uptake, suggesting that additional endocytic mechanisms may be involved. This prompted us to examine other endocytic mechanisms. Therefore, we assessed the level of GBS uptake into BMEC in the presence of inhibitors of caveolin-mediated endocytosis and lipid raft formation. Our results demonstrated that inhibition of the caveolae pathway through the use of the inhibitor genistein, resulted in a significant decrease in bacterial invasion. Additionally disruption of lipid raft formation through the removal of cholesterol by Methyl-β-cyclodextrin also produced similar results. Our data suggests that caveolin/lipid raft mediated endocytosis along with clathrin-mediated entry is important for GBS invasion into the brain endothelium. Future studies aim to characterize the relative contribution of these entry mechanisms to GBS invasion and whether a specific entry mechanism impacts GBS intracellular trafficking and the inflammatory signals that ensue following bacterial entry.
Poster #23

**Differences in P1 and N170 ERP components for deaf vs. hearing readers**

Casey B Kohen, Psychology (M)
Phillip Holcomb, Psychology

Visual word recognition generally exhibits a left-lateralized asymmetry for the N170 ERP component, which is interpreted as reflecting expertise in processing visual word forms in highly automatized adult readers and is suggested to reflect activity in the visual word form area (VWFA). We report a different pattern of early ERP components in deaf individuals reading in their less fluent L2 (English). EEG from 32 channels was collected in 15 congenitally deaf and 15 hearing adults presented with 60 words (e.g., TABLE) and 60 symbol strings (e.g., %$#@+) in a familiarity judgment task (is this item familiar?). We measured the amplitude of the P1 and following N170 over left and right hemisphere posterior electrode sites (O1 vs. O2 and T5 vs. T6). Hearing readers showed the classic left more negative than right ERP pattern for words starting as early as 100 ms (i.e., P1) and continuing through the N170 epoch (250 ms). Symbol strings produced a similar pattern but the asymmetry was less notable. In contrast, deaf readers showed a different pattern. For symbol strings the N170 was slightly more negative over the right hemisphere. For words the P1 and N170 were both larger over the left hemisphere (i.e., the P1 was more positive and the N170 more negative), although the N170 asymmetry was not nearly as large as for hearing readers. This pattern likely reflects the overall lower reading competence in the deaf readers (smaller N170 asymmetry) as well an earlier perhaps attentionally mediated enhancement (P1) due to deafness.

Poster #24

**Developing A Decision Tree For Clinical Identification Of Children Affected By Prenatal Alcohol Exposure II: Model Validation**

Lauren Doyle, Clinical Psychology (D)
Sarah Mattson, Psychology

The pursuit of a clinically relevant and feasible diagnostic screening tool that accurately identifies children with heavy prenatal alcohol exposure (AE) has been unsuccessful. Using data from phase 2 of the Collaborative Initiative on Fetal Alcohol Spectrum Disorders (CIFASD II), we established a decision tree model with high classification accuracy (>80%). The current study aimed to validate this model in 2 age groups from an independent sample (CIFASD III).

Measures included neurobehavioral and dysmorphology data from 454 children aged 5–7 y (C; M = 6.6) and adolescents 10–16 y (A; M = 13.4) collected as part of CIFASD III. Subjects comprised 3 groups at each age: alcohol-exposed (AE: C, n=55; A, n=98), non-exposed with behavioral problems (C, n = 44; A, n = 73), and typically developing controls (C, n = 66; A, n = 118). Accuracy of the previously developed model (Goh et al.), which included 2 entry points, was tested. Positive (PPV) and negative (NPV) predictive values and classification accuracies were calculated.

Using the 1st entry point, the model correctly classified 76.9% of the older sample (AE: 68.3%, non-AE: 81.6%; PPV: 87.5%, NPV: 72.9%). At the 2nd entry point, 83.0% of the sample was correctly classified (AE: 70.0%, non-AE: 91.7%; PPV: 84.9%, NPV: 82.1%). In the younger age group and the 1st entry point, the model correctly classified 76.7% of the sample (AE: 70.7%, non-AE: 80.6%; PPV: 87.9%, NPV: 71.4%). At the 2nd entry point, 82.1% of the sample was correctly classified (AE: 63.8%, non-AE: 93.4%; PPV: 85.7%, NPV: 80.7%). All classification accuracies were significantly higher than chance (ps < .001).

Results validate our model for use in discriminating alcohol-exposed from non-exposed subjects, including those with behavioral problems; classification accuracies in the older age group from CIFASD III were similar to the original CIFASD II sample. The model was also validated within younger children although sensitivity was lower than expected at the second entry point. It appears that the measure of general cognitive ability did not significantly discriminate groups in the younger age range. Future research should identify additional neuropsychological variables that reliably identify younger children with AE.

Research supported by NIAAA grants U01 AA014834, U01 AA014815, U01 AA014811, and T32 AA013525.

Session D-13

**Poster: Environment**

Friday, March 6, 2015, 3:00 pm – 4:45 pm
Location: Montezuma Hall

Poster #25

**Comparing Air Pollutant Concentrations of Particulate Matter 2.5 within San Diego Malls and San Diego State University’s Food Courts**

Kathryn D Paras, Public Health (U)
Ally Lu, Dustin White
Zohir Chowdhury, Graduate School of Public Health

Fine particulate matter with aerodynamic diameter of 2.5 micrometer (PM2.5) is an air pollutant that has been linked to produce adverse health effects, including an increase of respiratory and cardiovascular diseases. The purpose of this study was to compare the high concentrations of fine particles (PM2.5) found in San Diego State University’s East Commons
Grass shrimp were given a choice between uncontaminated algae and algae spiked at different concentrations: 0 (uncontaminated), 6, and 60 μg Cu/L. Epiphytic algae were spiked with copper in the laboratory at three different concentrations: 0 (uncontaminated), 6, and 60 μg Cu/L. Squares of window screen colonized by uncontaminated epiphytic algae were preferred by grass shrimp over copper-contaminated epiphytic algae. Our data suggest that high levels of copper contamination could increase rather than decrease the consumption of epiphytic algae by some mesograzers.

367 Poster #26
Copper contamination increases consumption of epiphytic algae by estuarine shrimp
Alterra Sanchez, Biology (U)
Kevin Hovel, Biology

Though contamination by copper and other heavy metals are common in urbanized estuaries and along coastlines, these pollutants are rarely observed at lethal concentrations. Rather, sublethal effects of contaminants such as changes in animal feeding behavior may be common. Seagrasses grow in shallow estuaries worldwide and form critical habitat for a diverse array of invertebrates and fishes. An important control on seagrass persistence occurs in the form of herbivory, in which mesograzers (small crustaceans and molluscs) promote seagrass health by consuming competing epiphytic algae that grow on seagrass blades. We tested whether copper contamination affects the feeding behavior of an abundant mesograzor (the grass shrimp Hippolyte californiensis) inhabiting eelgrass (Zostera marina) in San Diego Bay, California; an urbanized estuary with substantial amounts of eelgrass habitat but high levels of dissolved copper generated by boat bottom paint. Specifically, we conducted a choice feeding assay to test whether uncontaminated samples of epiphytic algae were preferred by grass shrimp over copper-contaminated epiphytes. Squares of window screen colonized by epiphytic algae were spiked with copper in the laboratory at three different concentrations: 0 (uncontaminated), 6, and 60 μg Cu/L. Grass shrimp were given a choice between uncontaminated algae vs. 6 μg Cu/L, or uncontaminated algae vs. 60 μg Cu/L. Shrimp ate equal amounts of uncontaminated algae and algae spiked at 6 μg Cu/L, but contrary to our prediction, ate significantly more of the algae spiked at 60 μg Cu/L than uncontaminated algae.

368 Poster #27
An Ecocentric Analysis of a Potentially Impacted Area Within the Santa Margarita Ecological Preserve
Amber A Elliott, Environmental Science (U)
Kelsey Hawkins, Rogelio Avila, David Sevilla
Matt Rahn, Environmental Science

The Santa Margarita Ecological Reserve (SMER) has become the location of a proposed SOLAR initiative project beginning the first quarter of 2015. In an effort to provide carbon free energy to local communities, remove invasive species, and restore native habitat, several agencies, companies, and corporations have teamed up for this project. The project partners are: Spectrum Energy Development, Go Green Consultants, Aaron Read and Associates, Photogenesis Energy, AECOM, Procopio Cory Hargreaves and Savitch, and Dr. Matt Rahn of the San Diego State University Environmental Science Department. Currently there are twenty-two acres of invasive Eucalyptus trees in the Northern region of the SMER. This is the future location of the solar panels and the involved infrastructure. The purpose of our research study is to analyze and create a baseline for wildlife occupancy and movement within and through these twenty-two acres, with an emphasis on carnivore, bird, and arthropod species. In order to understand the resident biodiversity in the project area, we conducted walking transects, visual encounter surveys, bird point counts, camera tracking stations, and surveying for tracks and scat. The data collected provided an initial baseline inventory for biodiversity which can be used to compare with future studies that evaluate how solar can be compatible with habitat and restoration of coastal sage scrub. The proposed SOLAR Initiative is the first attempt in our region to identify whether we can design and manage renewable energy in such a way as to benefit habitat and provide long-term net benefits to our sensitive ecosystems in southern California.
fine particles (PM2.5, PM1.0, black carbon) at various locations throughout National City. National City is approximately 12 miles from the Mexico-United States Border, has a population of 60,000 people, and has a median income of $36,935 compared to the California median of $58,328. Three major freeways run through National City: I-5, I-805, and SR 54. To date, there are no air pollution measurements available for National City. Instruments utilized in the field include the TSI Dustrak, the Condensation Particle Counter (CPC), Portable Aethalometer, and HOBO U10 Temperature Relative Humidity Data Logger. The Dustrak measures mass concentration of PM2.5, the CPC measures particulate count, and the Aethalometer measures the mass concentration of black carbon. Measurements were taken at 56 intersections for 5-minute intervals throughout National City. After sampling and analysis, the preliminary data shows high mass concentrations both East and West of the I-5 Freeway and I-805 Freeway. PM1.0 counts were high at Tidelands and National City Boulevard with an average of 15,341 pt/cc while PM2.5 concentrations were high at Highland Avenue and Palm Avenue with an average of 30.6 μg/m3. Statistical significance tests will be conducted for this data to further understand air pollution concentrations in National City. The data from this study will help city planners make educated decisions when planning pedestrian and biking paths.

370 Poster #29
San Diego Campus' Student Research: Salton Sea Environmental History Research Project
Rene C Gomez, History (U)
Eric Boim, History

The Salton Sea is a product of man-made decisions and natural forces. The sea was created in 1905 when massive flooding on the Colorado River broke through the canal gates. The river rushed downwards towards the developing Imperial Valley, and flowed freely into the Salton Basin for 18 months creating the Salton Sea. The Salton Sea is one of the world’s largest inland seas. It is located in the Sonoran Desert of southeastern California. It is bordered on the south by agricultural areas of the Imperial Valley.

Being a history major, my research will consist of past and present topics/events regarding the Salton Sea. My main focus will be on the environmental changes of the Salton Sea throughout the years. The research will compare the human population during the sea’s most thriving years to its present population. Also mentioned will be the resident and migratory species and subspecies of birds in the area, and how they’ve been affected by the Salton Sea’s changing ecosystem. Plants, fish and other type of wildlife will also be included.

The main purpose of this research is to bring awareness to the fact that the Salton Sea region will soon become a wasteland, unless a restoration plan is put into effect. This would negatively affect human habitation, agriculture, recreation and wildlife in Southern California. The Salton Sea’s existence is crucial to many endangered species. The tremendous loss of wetlands in California makes it more urgent to conserve this region.

My presentation will include a poster with pictures of what was once a very popular Salton Sea visited by Hollywood stars, to what it is today. I will have pictures of the way the Salton Sea water looked like before, and will actually take pictures of the Salton Sea from a plane myself to demonstrate what it looks like today. Pictures of wildlife, especially those endangered, will also be on the poster.

371 Poster #30
Quantifying the Effects of Santa Ana Winds on Wildfires
Logan B Kiff, Mechanical Engineering (M)
Fletcher Miller, Mechanical Engineering

Wildfires have caused devastating damage to wildlife, structures, and human lives. Here in southern California, catastrophic wildfires are greatly influenced by the Santa Ana winds. Research is being funded by the National Institute of Standards and Technology (NIST) to study the wind patterns in Rancho Bernardo. Wind speeds, directions, pressure, temperature, and humidity in the Rancho Bernardo Community are being monitored to research the effects of Santa Ana Winds on wildfires. Locations of the instruments are based on the path of the wildfire, influenced by the Santa Ana Winds, which devastated the community in 2007.

Experimental data in the community is being collected through the use of various cup anemometers, wind vanes, a pressure transducer, and a Relative Humidity/Temperature sensor. A Sonic Detecting and Ranging Unit (SoDAR) will be placed at the boundary of the community to measure incoming and exiting winds by emitting beep-like sounds so wind speeds can be measured at different altitudes. The experimental data collected by the SoDAR will be used as the boundary conditions for simulations ran using NIST’s Wildland-Urban interface Fire Dynamics Simulator (WFDS). The experimental and simulated data in the Rancho Bernardo Community can then be compared to determine the effectiveness of WFDS in addition to the effectiveness of the SoDAR measuring boundary conditions. With data collected from Santa Ana events, combustion will be added to the simulations to observe the fire’s behavior. Fourteen sites have been monitored for five months. Over the five months, we have seen daily winds of West to East, numerous Santa Ana events of wind blowing East to West, and some days with no wind. To be able to easily track Santa Ana events, a Matlab script is being implemented by removing low wind speed, and all winds blowing from West to East. The Matlab script then plots the filtered data as a wind rose to visualize both the wind speed and direction on the same plot.
Session D-14
Poster: Health, Motor Skills & Activity
Friday, March 6, 2015, 3:00 pm – 4:45 pm
Location: Montezuma Hall

372 Poster #31
Acoustic Changes Due to Impaired Speech Movements in Children with Cerebral Palsy
Tatiana S Zozulya, Speech, Language and Hearing Sciences (U)
Lindsay Kempf, Alyssa Yee
Ignatius Nip, Speech, Language and Hearing Sciences

Individuals with Cerebral Palsy (CP) have neurological impairments resulting in movements disorders. Many have speech movement, or kinematic, impairments and reduced intelligibility. Intelligibility, or the ability to be understood, is affected by acoustic variables including vowel formant frequencies and vowel space (a measure of vowel distinctiveness). Kinematic variables, including displacements, also impact intelligibility. However, the association between acoustic and kinematic speech characteristics of children with CP has yet to be explored. Models of speech production posit that oral movements shape the resultant acoustic signal. Therefore, the impaired movements observed in this population may negatively impact acoustic variables such as vowel space. Relating movement difficulties to their acoustic consequences may explain the reduced intelligibility in these speakers.

The current study compares the kinematic and acoustic characteristics of corner vowels (/i, a, u/) produced by children with CP to their typically-developing peers. Eight children with CP (3F, 5M) and 8 age- and sex-matched typically developing peers (TD; 3F, 5M), aged 4 to 15, were recorded producing 10 repetitions of the vowels “/i/ /a/ /u/”. Vowel formant frequencies (F1, F2) were obtained using TF32 and plotted on a 2-dimensional space (F2 by F1) to obtain vowel area. Kinematics were simultaneously recorded using an 8-camera optical motion capture system. Fifteen markers were placed on the face to track lip and jaw movement. The distance between the upper and lower lip markers (height) and the distance between the left and right corners of the mouth (width) was measured at the midright of the vowel. Each vowel was plotted on a 2-D space (height by width) to calculate the area of the resultant triangle, a measure of kinematic working space. Two 2x3 Analyses of Covariance (ANCOVAs) will examine the effect of Group (CP, TD) on both the acoustic vowel area and the kinematic working space while controlling for age. Partial correlation will quantify the association between vowel area and kinematic working space while controlling for age. Discussion will focus on how kinematic characteristics interacts with acoustic outcomes in children with and without CP.

373 Poster #32
The Effect of Prompts Designed to Increase Stair Use Among Escalator Users
Chase E Reuter, Statistics (M)
Isaac Quintanilla
Melbourne Hovell, Graduate School of Public Health

Background: Individuals who live a sedentary lifestyle have increased risk of hypertension and coronary artery disease. Increasing physical activity reduces such risk. Strong empirical evidence indicates that prompts at points of choice between escalators and stairs increase physical activity by promoting stair use. However, there is a paucity of research regarding the effects of point-of-choice prompts on individuals being physically active by walking up escalators. We hypothesize that the use of point-of-choice prompts designed to promote stair use had a secondary effect by also increasing the proportion of individuals walking up escalators. Methods: Point-of-choice prompts were strategically placed at locations between stairs and escalators in Terminal 1 of the San Diego International Airport. For three hours per day over twenty-two days, a hidden camera recorded the method of ascent for all individuals. Method of ascent and demographic and health-related data were subsequently extracted from video footage. A multivariable logistic regression model was used to test whether walking up the escalator (compared to standing on the escalator) was influenced by the presence of point-of-choice prompts originally designed to increase stair use. Results: There were 15,737 individuals recorded using the escalator in which 3,291 (20.9%) were recorded as walking up the escalator. The odds of walking on the escalator was 15% lower in the presence of signs (OR = 0.89; 95% CI = 0.81, 0.98). After adjustment for factors known to impact stair use, the odds of walking up the escalator was 11% lower in the presence of signs (OR = 0.85; 95% CI = 0.79, 0.93). Discussion: This study shows, counter to our hypothesis, that the use of signs to increase physical activity by stair use reduced walking up the escalators. This could be due to the possibility that individuals who were inclined to walk after viewing the point-of-choice prompts took the stairs rather than walk up the escalator. Further studies are needed to investigate if the use of signs specifically designed to increase walking up the escalator have an effect.

374 Poster #33
Phosphatidylcholine as rapid biomarker of Delayed Onset Muscle Soreness
Jake Bernards, Exercise Physiology (M)
Fred Kolkhorst, Exercise and Nutritional Science

Creatine Kinase (CK) has traditionally been the most trusted biomarker of delayed onset muscle soreness (DOMS). However, CK does not peak in the bloodstream until 96–120 hours after
DOMS-inducing exercise. It was the purpose of this study to determine if Phosphatidylcholine (PC), a phospholipid found on the outer leaflet of the plasma membrane, could be a more rapid indicator of DOMS compared to CK. Subjects participated in 30 minutes of downhill treadmill running at 7 miles per hour on a 10% decline. Blood draws were taken prior to exercise and again 6, 12, 24, and 48 hours post-exercise. Blood plasma was analyzed for CK and PC response and subjects gave a perceived muscle soreness ratings at each blood draw. There were no significant differences found between subjects for CK or PC responses (p > 0.1) though there was significance in subjects’ self-reported muscle soreness (p < 0.1). This suggests that PC may not be a good biomarker for detecting DOMS compared to CK.

**375  Poster #34**  
**Effects of Adaptive Practice on Motor Learning of Narrow Beam Walking**  
Sarah-Rosabelle R Barreyro, Physical Therapy (D)  
Jillian Gerbracht, Heather Lyons, Supamas Tseng, Jeffrey Wood  
Antoinette Domingo, Physical Therapy

In rehabilitation settings, the practice environment is often manipulated when teaching a difficult motor skill by reducing movement error in order to improve performance. However, theoretical models of the nervous system suggest that learning is driven by movement errors, implying that errors should be experienced throughout task-specific practice until the goal movement is achieved. In very difficult motor tasks, it is unknown whether it is best to maintain an optimal amount of error throughout task practice (adaptive practice) or to maintain specificity of practice by practicing only the desired task.

The purpose of the study is to examine the effects of adaptive practice on learning a difficult walking balance task. We will test the hypothesis that practice environments should be adapted such that errors are experienced at an optimal level throughout practice until the goal movement is achieved. This can be accomplished by altering task difficulty based on the learner’s performance in order to maintain beneficial levels of movement error throughout task practice.

The task to be learned is walking on a treadmill mounted balance beam (beam-mill) that is 0.5 inch wide. Subjects will be randomized into an adaptive or fixed practice group. All subjects will perform a 3-minute pre-training, post-training, and retention test by tandem walking on a 0.5 inch beam. For the 30 minute training period, subjects in the adaptive practice group will begin walking on a 1.5 inch beam, then progress to a 1.0 inch beam, and lastly a 0.5 inch beam. Progression to the narrower beam occurs after walking 20 consecutive steps on the beam-mill. Subjects in the fixed practice group will only walk on the 0.5 inch beam during training. Outcome measures will include the number of times the subject steps off the beam-mill to measure large catastrophic errors; and center of mass variability (standard deviation of lateral movement) to examine smaller errors in motor control. The proposed study will help determine how using adaptive practice affects motor learning of a dynamic walking task and help to determine the ideal way to modify the practice environment in therapy settings.

**376  Poster #35**  
**Faith-based interventions for increasing physical activity: a systematic review protocol**  
Maira T Parra, Evidence Based Health (D)  
Elva Arredondo, Graduate School of Public Health

Background: Insufficient levels of physical activity are a major health problem due to its strong relationship with the development of chronic diseases. It is important for researchers to be innovative when implementing physical activity interventions to reach those in need of care. Faith-based organizations have an important role in communities and health programs and can reach targeted populations. The aim of this study is to assess the effectiveness of faith-based interventions for increasing physical activity. The presentation will focus on the process of conducting a systematic review of interventions but will not present findings. Methods: A systematic review of randomized controlled trials (RCTs), cluster RCTs, non-randomized controlled, controlled before-and-after trials and interrupted-time series studies, independent of language or publication status will be conducted. The primary outcomes are physical activity, quality of life, and adherence to intervention. Secondary outcomes are mental health, adverse events, physical fitness, and anthropometric outcomes. We will search the following databases: Cochrane Central Register of Controlled Trials (CENTRAL), Database of Promoting Health Effectiveness Reviews (DoPHER), EMBASE, LILACS, MEDLINE, PsychINFO, International Clinical Trials Registry Platform from the World Health Organization (http://apps.who.int/trialsearch/) and Clinicaltrials.gov. Two authors will independently perform the screening of eligible studies, data extraction, and assessment of risk of bias. Data will be analyzed regarding its methodological, clinical and statistical heterogeneity. When possible, data will be presented in pooled estimates and in a narrative report format. We will assess the quality of the evidence using the GRADE recommendations. We plan to investigate the mediating effects of heterogeneous factors on outcomes using subgroup analysis. Sensitivity analysis will be undertaken to establish how robust the review results are regarding study characteristics and decisions made during the review. Expected Results: We expect to summarize key characteristics of physical activity faith-based interventions related to its possible effectiveness.
Session D-15

**Poster:** Water: Across Disciplines  
**Location:** Montezuma Hall

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**377 Poster #36**  
**Investigating Phage-encoded blaCTX-M1 in Influent and Effluent Samples from Wastewater Treatment Plants**  
Marley A Hilleger, Microbiology (U)  
Stanley Maloy, Sciences  

**Background:** Superfluous antibiotic use worldwide has been coupled with detrimental increases of antibiotic resistant bacteria in clinical, community and environmental settings. Many bacteria gain resistance by acquiring \( \beta \)-lactamase (\( bla \)) genes through horizontal gene transfer using bacteriophage. Phage can withstand environmental stressors more efficiently than bacteria and can be resistant to wastewater treatments. Objective: The objective was to investigate the role phage have on the spread a cluster of \( bla \) genes called CTXM-1 in wastewater environments.  

**Methods:** Influent and effluent wastewater samples were provided by the South Bay International Wastewater Treatment Plant. Samples were plated on selective media and antibiotic resistant colonies were screened by standard PCR for the presence of \( bla \)CTXM-1. The phage DNA fractions were then isolated from the samples and also screened for \( bla \)CTXM-1 by PCR. Sequencing and bioinformatics were utilized to determine if samples displaying growth on selective plating of wastewater isolates, in addition to the presence of \( bla \)CTXM-1 in the phage DNA fraction suggests that phage may be providing expression of antibiotic resistance.  

**Conclusion:** Taken together, this data suggests that phage-encoded \( bla \)CTXM-1 genes are highly mobile within this environment. Phage may be creating an environmental reservoir for antibiotic resistant genes and contributing to an increased presence of antibiotic resistant bacteria. The data also suggests that phage may facilitate the transfer of antibiotic resistant genes between bacteria and provide the circumstances for the evolution of new antibiotic resistant organisms.

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**378 Poster #37**  
**Benefits of understanding factors of water conservation among separate interest groups in a small island tourism community**  
Larina Cassidy, Recreation and Tourism Management (U)  
Vinod Sasidharan, Recreation and Tourism Management  

There is no debate that water scarcity is one of the leading environmental concerns of the 21st century. With many regions across the globe drawing upon existing, but limited, water reserves, while searching for alternative sources of water, there is little doubt that water security is a significant determining factor for the future sustainability and stability of affected communities. Tensions have risen among interest groups in severe drought stricken communities that have economies dependent on industries with high water usage, such as agriculture and tourism. Conservation is a key part of mitigating the effects of water shortages, but is often not implemented unless a community is already in a state of extreme water emergency. This is an action research project, which will investigate the factors that contribute to a community’s likelihood to conserve water by specifically examining the water crisis in Avalon, California located on Santa Catalina Island.  

The goal of this study is to provide a best practices whitepaper for potential water saving solutions for Avalon through survey data obtained from different interest groups both within and visiting the community. Avalon was chosen as the study site because of the town’s high involvement in the tourism industry, small community, severe lack of water, and location away from mainland water sources. A paper survey was administered among local homeowners, visitors, and business owners involved in the tourism industry of Avalon. Through a series of questions and statements, the survey assessed different variables relating to the Catalina Island water crisis, specifically relating to dependency on the tourism industry, awareness of water issues, and place attachment. The data reveals factors that influence community members’ attitudes towards the water crisis and their likelihood to take adaptive measures in response to the issue. Determining the factors of water conservation for each interest group will allow more impactful water saving practices to be implemented within the community.
379  Poster #38

**Water Infrastructure Mapping of Bird Park**

Julie Ann Alvarado, Environmental Science (U)
Eddie Alvarez, Tucker Lopez, Joe Graf
Matt Rahn, Sciences

The City of San Diego, Friends of Balboa Park, and the SDSU Environmental Sciences Program are working together to create an irrigation program with digital maps to promote water efficiency. Over irrigation is unnecessary and can be prevented with proper mapping and maintenance. A digital mapping of the park will serve as a template to create a system of marked sprinkler heads, valves, and water lines. The template will help for easy maintenance and allow for a system to keep track of water conservation. It will also determine how much water is being allocated throughout the whole area. The new system and updated maps allows Balboa to be a modern sustainable park.

380  Poster #39

**Wastewater Treatment and Reuse Options at SDSU**

Alessandro N Maganuco, Environmental Engineering (M)
Natalie Mladenov, Engineering

Climate induced drought and increasing population demands have made sustainability a top priority at institutions around the country. It is essential that businesses continue to develop and expand in order to nourish our economy but do so without compromising our planet’s most valuable resource, water. Water reclamation for reuse can satisfy the ambitions of the industry while assisting in the replenishment of the nation’s important water budget. The primary objective of this report is to explore various small-scale wastewater treatment systems that could potentially be implemented in new, water-wise buildings on campus at San Diego State University. Specifically, the existing wastewater flow rates of other campus buildings will be analyzed in relation to the proposed engineering building to accurately estimate the cost of implementing such a system. The wastewater treatment technology utilized in the proposed building will be modular and it can also serve as an experimental laboratory for future engineering students to experiment with and study diverse types of filter media and biological processors. Additional and potential uses of the wastewater treatment technology and reuse can include toilet flushing, landscape irrigation, as well as a resource should there be an emergency like a fire. If implemented correctly, a wastewater treatment system can also greatly benefit the university financially as well as reduce its impact on available water. This proposal will outline the different options, as well as their costs, in order to determine the most feasible solution for SDSU.

381  Poster #40

**Distribution of Polycyclic Aromatic Hydrocarbons in San Diego Bay Recreational Marinas Using a Non-Targeted Analytical Method**

Jennifer M. Cossaboon, Environmental Health (M)
Eunha Hoh, Environmental Health

San Diego Bay recreational marinas have a history of petroleum hydrocarbon contamination from a variety of sources; notably there are frequent small spills of highly-refined petroleum-derived products resulting from boats. The marinas are low energy environments that can act as a sink for petroleum constituents such as polycyclic aromatic hydrocarbons (PAHs), which bind onto fine particles and become bioavailable to filter-feeding, benthic dwelling organisms. To determine the availability of PAHs, sediment cores were collected from three San Diego Bay marinas (Shelter Island Yacht Basin, Harbor Island West, and Harbor Island East) during the summer of 2014. Sediment extractions were prepared using the QuEChERS method and are being analyzed using comprehensive two-dimensional gas chromatography coupled to time-of-flight mass spectrometry (GC×GC TOF-MS) to characterize known and unknown anthropogenic compounds that are often missed by traditional targeted screening methods. This non-targeted analytical method employs two GC columns that use different separation mechanisms for enhanced chromatographic resolution and improved sensitivity up to 100 times higher than a traditional single GC column. Compounds will be identified by matching analytes to reference standards and searching against the NIST 2011 Electron Impact Mass Spectral library to generate an inventory of PAHs for each sampling location. This project will produce a fine-resolution spatial assessment of PAH contamination that includes previously unknown or unrecognized organic compounds. We expect to identify potential sources of contamination and hot spots containing the most abundant concentrations of PAHs. This research serves as precursor to analysis of PAH effects on San Diego Bay marina ecosystems.

382  Poster #41

**Storm Model Comparison in Rainbow Creek, San Diego with SWMM 5.1 and HEC-HMS 4.0**

Alex J Smith, Civil Engineering: Water Resources Engineering (M)
Alicia Kinoshita, Civil, Construction, & Environmental Engineering

The Rainbow Creek Watershed covers a 10.3 square mile area located centrally along the interface between North San Diego and South Riverside Counties. It is primarily undeveloped, characterized by steep, rocky hillsides with scrub oak and chaparral vegetative cover. The climatology is considered Mediterranean and the watershed receives an average of
approximately 19 inches of rainfall per year. The prevailing slope aspect is south and the dominant hydrologic soil group is type D. Spatial datasets were used to estimate physical parameters such as vegetative cover, land use, and curve number.

We applied two rainfall-runoff models for the Rainbow Creek Watershed: the Hydrologic Engineering Center Hydrologic Modeling System (HEC-HMS) and the United States Environmental Protection Agency Storm Water Management Model (EPA SWMM). A simple rainfall-runoff model using the Soil Conservation Service (SCS) Curve Number (CN) method was developed for Rainbow Creek with no hydraulic routing. The required inputs and generated outputs from the HEC-HMS and SWMM models were used to calibrate the model, formulate a comparison between the results, and provide recommendations for each software’s applicability to this watershed.

**383 Poster #42**

*Bringing public good with the collaboration of government and non-government organizations*

Javier Gonzalez, Public Administration (M)
Rosa Del Angel
Diana Verzi, Mathematics

The New River flows north from the Colorado River in Baja California Norte, Mexico, across the international border into the United States, through the Imperial Valley, and drains into the Salton Sea. Known as “the most polluted river in North America,” its water carries agriculture runoffs with pesticides, sewage, slaughterhouse residues, industrial contaminants, and other toxins and viruses.

Over the past 18 years, multiple local governmental and non-governmental organizations (NGOs) have joined forces to look for a solution to these high contamination levels. Together they developed a potential solution in the creation of wetlands that filter the river water in a series of ponds along its course that trap sediments and other pollutants. Efforts to-date have required the direct participation of citizens within NGOs, working with local to national government organizations (GOs) to implement pilot wetlands to demonstrate their effectiveness.

Our study analyzes the methodologies and effectiveness of these NGO-GO coalitions, their successes and their challenges, and makes recommendations for expanding the pilot wetlands to a full-scale clean-up of the New River. Analysis was accomplished through a series of interviews, literature, legal and grant searches, and site-organizational visits.

Our findings suggests that although NGO-GO didn’t have previous experience working together at great scale in particular to address a complex issue like pollution, they were willing to invest in these efforts. It has taken years since NGO-GO first answered the call made by regular citizens to work side by side, but NGO-GO has learned to work together and to become long-term partners.

This proved to be effective to use their expertise within each NGO-GO to do feasibility studies and to work in steps for implementation. Furthermore, these collaborations were active in obtaining additional funding, build three wetlands, create an educational program, create a model able to be replicated, continuation of research, creating green spaces, and creating an environment friendly solution to pollution.

**Session D-16**

**Poster: Aging, Mental Function & Memory**

Friday, March 6, 2015, 3:00 pm – 4:45 pm
Location: Montezuma Hall

**384 Poster #43**

*Preliminary evidence for validity of an episodic-like memory test*

Gabrielle M Wagner, Psychology (U)
Paul Gilbert, Psychology

Episodic memory is often measured using verbal list learning tests such as the well-validated California Verbal Learning Test-II (CVLT-II). Our laboratory recently developed a novel episodic-like memory test that assesses memory for “who, when, and where” in addition to associations among these elements. This test may complement existing standardized tests of episodic memory. The objective of the present study was to provide evidence of convergent validity for our novel episodic-like memory test using the CVLT-II as a basis for comparison. Young adults (n = 41) and cognitively healthy older adults (n = 30) were administered our episodic-like memory task and the CVLT-II. In our task, participants were presented with 6 faces paired with 6 places in a sequence. The participants were asked to pair each face with the correct place and put the face-place pairs in the correct sequence. Participants were given two trials of the test with each trial consisting of different face-place pairs in a different sequence. Bivariate correlations were used to examine relationships between our episodic-like memory test and two measures from the CVLT-II, List A trials 1-5 total and long delay
free recall (LDFR). Trial 1 from our task was significantly positively correlated with List A trial 1–5 total (r = .304, p = .01) and at a trend level with LDFR (r = .224, p = .06). Trial 2 was significantly positively correlated with List A trial 1–5 total (r = .584, p < .001) and LDFR (r = .502, p < .001). Although additional studies with larger samples are needed, these analyses provide preliminary evidence of convergent validity for our novel episodic-like memory test.

385 Poster #44
Spatial Pattern Separation Performance in Older Adult Carriers and Non-Carriers for the Apolipoprotein Epsilon 4 Allele
Carina N Hartley, Psychology (U)
Paul Gilbert, Psychology
We examined the performance of healthy young adults (n = 57) and older adults (n = 43) genotyped as apolipoprotein ε-4 (APOE-ε4) carriers or APOE-ε4 non-carriers on a delayed match-to-sample task involving varying degrees of spatial interference to assess spatial pattern separation. Older adult ε4 carriers were further divided into “impaired” and “unimpaired” groups based on their performance on a standardized test of verbal memory. We found that performance on the spatial pattern separation test increased as a function of decreased spatial interference across all groups. The older ε4 carriers in the impaired group performed significantly worse (p < .05) than unimpaired ε4 carriers, ε4 non-carriers, and young adults. The data suggest that spatial pattern separation may be less efficient in a subset of healthy older adults with subtle memory decline who are carriers of the ε4 allele. However, pattern separation performance may be comparable to that of young adults in a subset of older adult ε4 carriers and more broadly among non-carriers. Our findings offer additional evidence that pattern separation may vary in older adults, and they provide novel insight into pattern separation efficiency in ε4-positive older adults.

386 Poster #45
Are Spatial Memory Changes in Older Adults Due to Less Efficient Pattern Separation?
Shannon N Yandall, Psychology (U)
Paul Gilbert, Psychology
Spatial memory impairment has been well documented in healthy older adults. This study was designed to evaluate the effect of interference on spatial memory in healthy young (n = 23) and older adults (n = 22). Participants were administered a delayed match-to-sample task involving varying levels of spatial interference. During the sample phase, participants were instructed to remember the location of a circle, which appeared briefly on a computer screen. During the choice phase, a circle appeared in either the same location as the sample phase circle, or in a different location, that was separated from the sample phase circle location by a distance of 0.5, 1.0, 1.5 or 2.0 cm. The participant was asked to indicate whether the choice phase circle was in the same position as the sample phase circle (same trial) or a different position (different trial). Smaller separations were hypothesized to involve a higher degree of spatial interference and greater demand for separation. As a result, young adults were hypothesized to outperform older adults on the task, particularly on trials involving increased interference. A 2 x 4 repeated measures analysis of variance (ANOVA), with age group (young adults, older adults) as the between-group factor and spatial separation (0.5, 1.0, 1.5, & 2.0 cm) as the within-group factor revealed a significant main effect of age group (p < .05) with young adults outperforming older adults on the different trials. In addition, a main effect of separation revealed that both groups improved as a function of increased spatial separation and lessened interference (p < .001). A one-way ANOVA revealed no differences between the groups on same trials. These findings provide additional evidence that age-related declines in spatial memory may be due in part to less efficient pattern separation.

387 Poster #46
Who, When, and Where: Age-Related Differences on a Novel Episodic-Like Memory Task.
Emily J Van Etten, Psychology (U)
Paul Gilbert, Psychology
Age-related deficits in episodic memory have been documented using well-validated list learning tests such as the California Verbal Learning Test-II (CVLT-II). The present study examined age-related differences on a novel episodic-like memory test assessing memory for “who, when, and where” in addition to associations among these elements. Young (ages 18–25) and older adults (ages 65+) were administered the CVLT-II and a novel episodic-like memory test. Our test consisted of two trials during which the participant was asked to remember a sequence of pictures of different faces paired with different places. The participant then was asked to pair each face with the correct place and put the face-place pairs in the correct sequence. Older adults remembered significantly fewer face-place pairs and correct pairs in sequence compared to young adults on both trials (ps < .05). Although older adults committed more face and place intrusion errors on the first trial (ps < .05), there were no significant group differences on the second trial. Using a single test, we demonstrated that older adults are impaired in remembering associations between faces and places, as well as the temporal sequence in which face-place pairs were presented; both are critical for everyday episodic memory. Given that intrusion errors for the individual faces/places did not differ on the second trial, these age-related associative memory differences are not due solely to impaired memory for the individual items in the associations.
ABSTRACTS

388 Poster #47
Signal Detection Theory and Cross-Modal Priming: Sensory Memory in Alzheimer’s Disease
Chelsea French, Psychology (M)
Claire Murphy, Psychology

The cognitive mechanisms of memory are incompletely understood. Some studies suggest a semantic basis to the underpinnings of memory while other studies suggest memory is primarily rooted in a sensory or perceptual framework. The present experiment investigated sensory-based memory by examining the process of memory encoding and recall using crossmodal priming effects (olfaction to visual) within a sample of typically aging adults (n = 46) and a sample diagnosed with Alzheimer’s disease (AD) (n = 40). By testing individuals with AD we are allowed a unique view of the role of senses in memory in patients with impaired semantic memory. Signal detection analysis was conducted on olfaction primed and olfaction non-primed recognition memory data collected from AD and typically aging adults in two phases. In phase one participants smelled an odor before viewing an image. In phase two participants were presented with odors either present (primed) or not present (non-primed) in the previous phase followed by visual stimuli (5 noise trials, 5 signal trials). Participants then indicated if they recognized the visual stimuli presented in phase two from exposure in phase one in a typical recognition memory study paradigm. Correct answers were recorded as hits and correct rejections while incorrect answers were recorded as misses and false alarms. Sensitivity scores (a measure of recall accuracy referred to as d’) were calculated. A repeated-measures (primed vs. non-primed) ANOVA was conducted on participant’s sensitivity scores with age and the memory subscale of the Dementia Rating Scale (DRS) as covariates. There were no significant differences in sensitivity measures for primed compared to non-primed stimuli for the typically aging sample. Results indicated that controlling for age and DRS memory subscale, individuals with AD had significantly higher recognition sensitivity for the odor primed stimuli (M = 1.33) compared to the odor non-primed stimuli (M = 1.07) p = .034, R-squared = .12. This priming effect grew significantly stronger as age increased, p = .009, R-squared = .17, controlling for DRS memory score. Additionally, the priming effect grew significantly weaker as DRS memory scores increased, p = .033, R-squared = .12, controlling for age. These results indicate there may be a sensory component to memory recall that facilitates memory performance.

389 Poster #48
Cognitive Decline Effects on Odor Threshold and Identification in Alzheimer’s Disease
Ekarin E Pongpipat, Psychology (M)
Claire Murphy, Psychology

Studies have found impairment in olfactory threshold sensitivity and odor identification in patients with Alzheimer’s disease (AD). The present study examined the effects of cognitive decline on odor identification and odor memory in those with probable AD and normal controls. The Dementia Rating Scale was used to screen for cognitive decline in both participants diagnosed with probable AD (n = 94, M-DRS = 116.298) and normal controls (n = 116, M-DRS = 136.948). Both groups then performed odor threshold and odor identification tasks. The between subjects design was analyzed using multiple regression analyses. For both normal controls and for probable AD participants, the overall DRS did not significantly predict odor threshold when controlling for age, sex, race, and years of education. However, the DRS attention subscale significantly predicted odor threshold when controlling for age, sex, race, and years of education for probable AD participants, F(1, 88) = 5.142, p = .026, R-squared = .055, but not for normal controls. Additionally for participants diagnosed with probable AD, odor identification was significantly predicted by the overall DRS, F(1, 88) = 12.218, p = .001, R-squared = .122, memory subscale, F(1, 88) = 8.459, p = .005, R-squared = .088, initiation/preservation subscale, and conceptualization subscale when controlling for age, sex, race, and years of education. For normal control participants, the DRS and all subscales significantly predicted odor identification when controlling for age, sex, race, and years of education, p < .05. The results show that as probable AD DRS attention scores decrease, odor threshold sensitivity decreases. The results also show that probable AD patients who have lower DRS scores have a decreased ability to identify odors and similar results are shown with DRS subscales of memory, initiation/preservation, and conceptualization. The findings suggest that probable AD patients who cannot detect odors are also likely to suffer problems with attention. The findings suggest that patients with AD who have difficulty identifying odors are also less likely to retain memories, begin or alternate between cognitive tasks, and think abstractly. In addition to predicting AD, odor threshold and identification may help determine the levels of cognitive decline for attention, memory, initiation/preservation, and conceptualization.
The Correlates of Odor Recognition Memory and Neuropathology in the Hippocampus for Controls

Jordan Zuber, Psychology (M)
Claire Murphy, Psychology

In 2014, approximately 5 million Americans were living with Alzheimer’s disease (AD) and that number is only expected to triple by the year 2050 as Americans continue to live longer. The development of plaques and tangles in the brain is the classic neuropathology identified in brains of individuals with AD. It is not completely clear what role plaques and tangles play in AD, but they may be linked to cell death and tissue loss in the brain. The hippocampus, which plays a key role in memory and is involved in olfactory processing and encoding, is especially sensitive to damage. Past research suggests that neurodegenerative diseases such as AD are associated with olfactory impairment and that olfactory testing has potential as an early marker for the disease. However, very little research has examined the relationship between neuropathology and olfactory processing. Recent research in our laboratory revealed significant correlations between entorhinal neurofibrillary tangles and false recognition of odors and hippocampal neurofibrillary tangles and odor memory hits in pathologically confirmed AD patients. The purpose of the current study was to assess the relationship between neuropathology in the hippocampus and performance on an odor recognition task for non-demented older controls. Participants were recruited from the UCSD Shiley-Marcos Alzheimer’s Disease Research Center. Results yielded a significant correlation between hippocampal neurofibrillary tangles and odor memory false alarms and correct rejections (p = .017) and a significant correlation between hippocampal neuritic plaques and odor memory hits and misses (p = .009). Although the results of this study are preliminary, they lend support for the hypothesis that impaired olfactory processing may mirror neurodegeneration in the brain. The presence of Apolipoprotein E4 and its effect on clinical diagnosis is also discussed. Limitations of the study are addressed.
392 Poster #51
A Comparison of Asian American and Pacific Islander Cultural Characteristics and Experiences
Billy CL Chan, Psychology (U)
Vanessa Malcarne, Psychology

Asian American (AA) and Pacific Islander (PI) communities in the United States have historically been perceived and treated as a singular, homogeneous, “model minority” group. As a result, key cultural differences and distinct minority experiences between AAs and PIs are overlooked. Since such differences contribute to health disparities, this study explored related similarities and differences between AAs and PIs. Adult AA (n = 25) and PI (n = 10) women were individually interviewed. They were prompted to discuss (1) best traits, common values, and ideal success of their culture; and (2) their minority group status in the U.S. Results reveal a similar collectivist emphasis when describing the best traits of each culture. The women focused on the strong sense of filial duty, the respect for elders and tradition, and the supportive nature of family and community relationships. Accounts of common values were also similar. Women of both groups indicated that the well-being of family and community members is most important to them. Depictions of ideal success differed between AA and PI women. AA women expressed success as the attainment of prestige, respect, materials, and stability through academic, professional, and financial achievement. PI women portrayed success in terms of fulfilling both individual responsibilities for personal betterment through educational achievement and for the well-being of family and community. AA and PI perceptions of minority group status in the U.S. also differed. AA women spoke of upward mobility as commonplace and attributed it to diligence and determination. Language and financial obstacles to acquiring an education were cited as possible barriers to upward mobility. In contrast, PI success stories were considered uncommon and remarkable, with complacency cited as a barrier to the upward mobility of PI community members from generation to generation. These results reveal key cultural differences that warrant further study to understand better the cultural roots of the groups’ divergent experiences and pathways in the U.S. Future studies should include men to determine whether the same patterns of similarities and differences would be uncovered. This may enable appropriate attention to the distinct needs of the AA and PI communities.

393 Poster #52
The Relationships of Machismo and Caballerismo to Alcohol and Tobacco Use among Hispanic American Men
Michelle P Arrollado, Psychology (U)
Vanessa Malcarne, Psychology

The terms machismo and caballerismo are used in Hispanic American (HA) culture to describe characteristics of men. Machismo is associated with hypermasculinity, sometimes to the point of sexism, while caballerismo refers to the chivalrous and socially responsible characteristics of a man. Previous research has found that men who report higher levels of machismo are more likely to consume large quantities of alcohol, specifically among blacks and Mexican-Americans. The present study examined levels of machismo and caballerismo in English- and Spanish-speaking HA men and the associations of these variables to alcohol and tobacco use. Self-identified HA men (N = 213) completed the M-Machismo measure, a self-report survey with two subscales: Machismo and Caballerismo. Participants also provided information on their alcohol consumption and tobacco use, including cigarettes, snuff, and snus, within the past 30 days. Independent samples t-tests were used to compare levels of machismo and caballerismo across language-preference groups and Pearson-product moment correlations were used to examine the relationships among machismo, caballerismo and alcohol and tobacco use. Levels of caballerismo were significantly higher in English-speaking HAs in comparison to Spanish-speaking HAs (p < .001), but levels of machismo did not significantly differ across language-preference groups. For English-speaking HAs, caballerismo was significantly, positively associated with alcohol use in the past 30 days (r = .21; p = .04), but not associated with recent tobacco use. Greater reports of caballerismo were associated with higher number of alcoholic drinks consumed on one occasion in the past 30 days. For Spanish-speaking HAs, caballerismo was not significantly associated with alcohol or tobacco use. Machismo was not significantly associated with alcohol or tobacco use for English- and Spanish-speaking HAs. These findings suggest that among English-speaking HA men, higher levels of caballerismo are associated with greater consumption of alcohol. In general, machismo has been more widely studied in comparison to caballerismo. These results suggest that caballerismo may be an important characteristic to consider when conducting research about alcohol use among HA men. Future studies should investigate why English-speaking HAs reported higher levels of caballerismo in comparison to Spanish-speaking HAs, and why it was associated with higher alcohol use.
ABSTRACTS

Poster #53

Assessing an acculturation scale among Native Hawaiian and Pacific Islanders in San Diego

Brigette Sosa, Psychology (U)
Christina Holub, Center for Behavioral and Community Health

BACKGROUND: Native Hawaiian and Pacific Islanders (NHPI) are disproportionately affected by cancer and obesity and are one of the fastest growing ethnic groups in the U.S. While acculturation has been linked to health outcomes and risk behaviors associated with health disparities, little is known about acculturation of NHPI populations living in the U.S.

METHODS: From 2013–2014, self-administered surveys (n = 163) were given to the NHPI participants in San Diego, CA. Survey questions included nutrition, physical activity, health status, and acculturation. The present study examined the validity of the Acculturation, Habits, and Interests Multicultural Scale for adolescents (AHIMSA) to the NHPI community. The AHIMSA scale measured bicultural behaviors and included 8 items related to four general acculturation patterns: 1) Integration, retain both host and native culture, 2) Assimilation, replacing native culture with aspects of host culture, 3) Separation, rejecting host culture for native culture, and 4) Marginalization, rejecting host or native culture. Integration is viewed as the most adaptive process for an individual. We used descriptive statistics to describe acculturation scores, patterns, and participant demographics; and factor analysis to describe psychometric properties.

RESULTS: Cronbach’s alpha was 0.76, showing good internal consistency of the AHIMSA scale items. About 64% of participants classified as “integrated” and 24% “assimilated.” A higher proportion of males classified as “assimilated” (26% vs 22% of females). Over 80% of Chamorros, Native Hawaiians and Samoans, reported being comfortable with people from both cultures. Chamorros (78%) and Native Hawaiians (76%) reported eating food from both cultures. However, all groups reported favoring U.S. television shows.

DISCUSSION: With a high proportion of NHPI tending towards integration, it demonstrates NHPI participants have adapted into the U.S. culture and retaining their native culture. AHIMSA provides a general view of acculturation among NHPIs and was considered a good scale psychometrically, it is not specific to NHPIs or the different ethnic groups. The ethnic groups within the NHPI population are diverse, possessing both similar and different cultural values. AHIMSA also assumes that each item possesses equal value. Future research should develop a NHPI-specific scale to better understand acculturation patterns.

Poster #54

Does religiosity buffer the impact of depression among acculturated Latinas?

Stephanie Sanz, Psychology (U)
Elva Arredondo, Graduate School of Public Health

Depression is a serious mental disorder with a prevalence rate of 27% among Latinos in the United States. The rates for Latina women are higher; they experience depression at roughly twice the rate of Latino men. Previous research indicates that depression is associated with decreased overall quality of life and causes cardiovascular health problems and stroke. Given that Latinas appear to be at an increased risk for these adverse effects, it is important to examine culturally specific moderators that may alleviate or worsen depression among acculturated Latinos who may be at risk for depression. An understudied, but likely moderator of depression and acculturation is religiosity.

Latinos have high rates of religiosity; 55% of Latinos identify as Catholic while 22% identify as Protestant. Studies examining the associations between religiosity and depression are limited and present mixed results, but some studies report that having higher rates of religiosity can be protective and may buffer the effects of depression. Baseline survey data that assessed acculturation, depression, and religiosity from a sample of churchgoing adult Latinas (N = 437) who participated in a community trial was collected. A linear multivariate regression was conducted to test the moderating role of religiosity on the association between depressive symptoms and acculturation among Latinas. Results suggest that that religiosity did not moderate the association between acculturation and depression (p<.74). These findings indicate that further research is needed to investigate the potentially moderating effects of other dimensions of religiosity (e.g. church attendance, church cohesion, and spiritual commitment) on acculturation and depression.
396  Poster #55
Reverse Cultural shock, why it matters?
Zachary Beck, Psychology (U)
Sara R. Roldan
Katherine Turner, Psychology

This study examined the effect of reverse cultural shock after studying abroad and the effects on the time outside of country of origin. Data will be collected through a web-based survey instrument that will be administered to a sample population of University of San Diego State study abroad participants. The following study abroad programs will be represented are: Fall 2015, Summer 2015, Winter 2015, Spring 2016, Academic Year 2015–2016, Fall 2016, and Winter 2016. Sub division of the semesters will be added depending on the length of the program: one, two, three, four, six, eight, twelve, sixteen weeks to one semester or a year. Analysis of covariance (ANCOVA) will be employed in the research design with gender and academic class standing as covariates. We hope that the results found in each of the research hypotheses to be statistically significant. The amount of growth in mindfulness, complexity and interpersonal self-confidence observed in students studying abroad for short periods contrasts to the adjusting and severity of the effects of depression and anxiety in students studying abroad for long periods of time. We hope to find them significantly higher in self-reported scores of those students who studied abroad on long-term programs in comparison to the ones of short-term.

Session E: Creative Arts Presentations

Session E-1
Creative Arts:
Visual, Performing, Creative Arts & Design I
Friday, March 6, 2015, 1:30 pm
Location: Montezuma Theatre

397  1:30 pm
Through the Looking Glass: A Neuroscientific Explanation of the Relationship between Creator and Spectator
Julia Cuppy, Musical Theatre (M)
Rob Meffe, Theatre, Television, and Film

Ever since the first Neanderthals painted crude drawings on walls, humans have felt an impulse to create. But, where does this impulse come from? Some researchers believe that this impulse was essential to our evolution: 30,000 years ago, our hominid ancestors shifted their patterns away from a reactionary existence to an enlightened awareness: making sense of their surroundings through painting, etching, carvings and aural expression (i.e. music). This awareness gave them a sense of “self” and of the “other” and forged a symbiotic relationship between peers that exponentially catapulted human evolution forward. This relationship invited each participant to empathize with one another which made our ancestors the most social and cooperative; ultimately, giving them a survival advantage, over other mammals. Neuroscientists identified that it was during this period, which took approximately 15,000 years, for the neo-cortex of the brain to evolve, which helped create a better memory, conceptual thinking and language skills. Through continuing natural selection, the evolutionary process has evolved our mental flexibility, making us the most creative and innovative species on the planet.

My SRS presentation will examine the research that focuses on the symbiotic relationship between creator and spectator, specifically identifying how the evolution of the neo-cortex, which advanced our conceptual thinking skills, led to our ability to empathize and find deep cultural value in the live theatrical experience. This presentation will provide an understanding of the “symbiotic relationship” and give critical insight on the importance of developing new works and student-centered theatre curriculum, which could dramatically affect the next stages of human evolution.

398  1:45 pm
Mutable Typography: Development of the typeface Model Q and its relationship to Umberto Eco’s eponymous philosophical concept
Kathryn A Stapko, Graphic Design (M)
Arzu Ozkal, Art, Design, and Art History

Model Q is a typeface I designed during the course of the past year that is also mutable. This means that every letter of the alphabet—both capitals and lowercase, has five alternate stylistic variants, also called discretionary glyphs. What this means is that the designer working with the typeface can choose which stylistic glyph they want to use in their design. Matthew Carter’s 1995 Walker typeface was a precursor to the mutable typeface fad, which was a font that had serifs that could “snap” on or off of the letters to change their appearance. OpenType font software in the 1990s allowed for the easier use of glyph variations, and mutable typefaces have become more prominent in the last ten years. I designed Model Q with FontLab Studio 5, a software commonly used by contemporary type foundries. After starting with sketches of the letters, I then digitized them by tracing over my sketches in Adobe Illustrator. After finishing the rough digital versions, I transferred them into FontLab, where I refined each letter and created the alternate versions, where each version became more and more abstract. If
the designer decides to use stylistic variant number five for any given letter, that fifth version appears almost illegible unless viewed with other letters, making context incredibly important for discerning the overall meaning of the word.

This abstraction of letters and their reliance upon each other is a metaphor for what semiotic philosopher Umberto Eco calls the Model Q; the notion that the meaning of each word we use is dependent upon the meaning of the words around it, and that texts themselves are inconstant; there is no ultimate truth or meaning. This concept is a key concept in semiotic theory, and what better way to illustrate it than to use the very letterforms that convey meaning to visually demonstrate the complexity of communication. In order to further demonstrate this concept, I have also included code in FontLab that creates an OpenType font that pseudo-randomly shuffles through each stylistic glyph as the user types, reinforcing the haphazard nature of communication.

399 2:00 pm
The Design Process of Producing August Strindberg's "Miss Julie" for Theatre
Nick Pecher, Scenic and Props Design (M)
Anna Marie S. Phillips, Kathryn Rich
Ralph Funicello, Theatre, Television, and Film

Our presentation is about the process of developing the design work for a theatrical production of August Strindberg's "Miss Julie". This play focuses on the relationship between the daughter of a wealthy count and a house servant and discusses the expected societal roles of men and women in the late 1800s in Europe. Because historical accuracy is so vital in Strindberg's work, it was important to make sure that our design choices aligned with factual information. We used the research we collected to inform our design choices in the areas of Costumes, Scenery, Lighting, and Directing.

Our hypothesis is that the driving force behind the events in "Miss Julie" arises from a struggle between social classes, and that every character's motivations can be traced to either accepting or refuting their given social roles.

We tested our theory by examining the underlying consequences of each character's actions and delving into what they stood to gain with each interaction. Through this method, we were able to put together the larger picture of how these character's world works.

What we gained by cross-examining each of the main characters were highly-informed design choices in the areas of Costumes, Scenery, Lighting, and Directing. This in-depth analysis allowed the decisions we made as designers to be both cohesive as well as truthful to the story. Additionally, it helped to eliminate other options we could have chosen, leaving only the ones that fit well within our narrative.

In summation, we concluded that class struggle is indeed what drives the characters in "Miss Julie". The desire to either alter or maintain one's standing within this class structure is ultimately the deciding factor in understanding the actions taken by each character.

400 2:15 pm
How Do New Works Work?: An Examination of Successful New Play Development Practices with Application to Education
Randall R Eames, Musical Theatre (M)
Robert Meffe, Theatre, Television and Film

I have examined current new play development practices at select regional theatres and universities around the country with the intent of merging the most effective practices into a single new play development strategy. I have formulated an outline and guide on how to implement new play development programs and the practices required.

Throughout history, theatre has been used as a form of entertainment where members of society look at current events through a critical lens. For theatre to remain a leader in society, the theatre community must continue to foster and create new works allowing for new voices to be heard. There are many theatres and universities in the United States that have existing new play development programs. Many of these programs produce readings, workshops, and occasionally fully staged productions. However, many of these new plays have no longevity after this initial treatment. In my research, I have examined two successful new play development programs (programs that either produce scripts with many regional productions, or aid a show in achieving a Broadway or Off-Broadway run), and have established what steps have been involved in their success. Because universities are noted for research, challenging ideas, and articulate thought, it is logical that new play development be a part of the collegiate environment. By dissecting the best styles of play development with academia in mind, I have created a model for incorporating new play development into a curriculum or a theatre's season. The model lists major components necessary for a play's maturation and life, and is crafted for easy input and sustainability in a university or regional theatre. This will benefit any company by helping sustain a long life for new work.

401 2:30 pm
Exploring Functional Emotions
Joshua M Torbick, Furniture Design (M)
Mathew Hebert, Art, Design, and Art History

My current body of work explores the presumptions we have about body position, and how our orientation relates to function and comfort. Most people expect to be comfortable in their own homes and thus expect to be able to cultivate...
their own domestic environment in an artful and utilitarian way. The tasks we perform as part of simple domestic living overwhelmingly require a standing body position. After the loss of a leg resulting from a motorcycle accident my awareness of this reality was sharpened considerably.

I am interested in how physical differences preclude some individuals from fully engaging in functional domestic activity. In pursuit of this objective I am exploring to restore an individual’s sense of independence and inclusion. This is achieved by creating furniture objects that provide proper support while still feeling like furniture, not medical devices. I believe it is important for the user of the furniture I create to feel their piece of furniture is purpose built, and not feel like an adaptation of an existing “normal” piece of furniture. Furniture should be designed and built, from the very beginning, to be functional to its user.

In order for me to fully understand what this investigation might satisfy for me intellectually it was first critical that I explore the emotional basis for my interest. This sculpture is intended to put into physical form an emotional condition I experienced in the early months, and years, after my accident. Bodily pain and immobility proved to be very effective in isolating me from the life I previously knew. I was a very active person and to be trapped in a hospital bed and in a wheelchair was as much of an ongoing emotional injury as the physical ones I had sustained. I felt left behind and forgotten, hours passed like years and the feeling of my life just slowly draining away was quite real.

The resulting object is a solid cast aluminum sculpture created initially by pouring wax over a plaster cast made from my residual limb and set at my standing height.

402 2:45:00 PM

‘Cause If You Liked It Then You Should Have Put A Copyright On It: A Cultural Perspective on Choreography and Copyright

Courtney Kattengell, Musical Theatre (M)
Robert Meffe, Theatre, Television, and Film

Copyright in Choreographic Works has existed since the latter part of the 20th century with the Copyright Act of 1976. Although many choreographers have filed for copyright protection, there is a growing concern that due to the vague language of the law, the impact of advanced technology, and the extreme demand for recognition in today’s society choreographers are not only lacking sufficient protection but also the desire to preserve artistic integrity in a business-driven entertainment industry. My research aims to bridge the gap between the legal side of Copyright in Choreographic Works and the artistic, non-legal speaking world many dancers and choreographers inhabit, with hopes of a reform on both ends. To bridge the gap, I will present examples from popular culture, more specifically from pop icon Beyoncé, who is heavily inspired by the artistic works of films, Bob Fosse, and contemporary dance choreographers such as Anne Teresa De Keersmaeker. Case studies are used to examine whether or not certain popular inspirations could be considered plagiarism, posing a legal and cultural concern for dance in the 21st century. Also, a case study involving the original production team of Broadway’s Urinetown highlights the importance of claiming one’s intellectual property in efforts to keep his or hers artistry from being duplicated and passed off as another’s own when the show is licensed to be performed in community theatres across the country. My research will attempt to point out that the inadequacies of Copyright in Choreographic Works combined with today’s advanced video streaming and technology decrease the demand for the protection within the dance community. I find that this decreased demand to file copyright protection with the US Copyright Office increases the amount of choreography that is similar in sequence and/or in appearance. Such effects demonstrate a call to action within the dance community to preserve choreographers’ creativity for future generations to study, protect such creations from being copied or manipulated, and create more works inspired by new things in an ever-changing society.

Session F: Creative Arts Presentations

Session F-1

Creative Arts:
Visual, Performing, Creative Arts & Design II
Friday, March 6, 2015, 3:30 pm
Location: Montezuma Theatre

403 3:30 pm

But He Doesn’t Know the Territory: An Exploration of the Musical Theatre Patter Song as Hip Hop Music

Jessica M Humphrey, Musical Theatre (M)
Robert Meffe, Theatre, Television and Film

Through research I will highlight how musical theater patter songs could be considered early hip hop numbers. While the origins of the respective genres are very different, I believe the similarities in certain elements make them more alike than not. These two seemingly opposing styles of music could be considered a part of the same genre. I will trace this through examples from music in both categories starting before hip hop as a genre is introduced, at the beginning of the hip hop movement and finally, in the present day. I will be exploring the similarities between hip hop music and patter songs with the investigation of their musical structure, lyric creation, and theatrical purpose. Examples of hip hop music will include: “Rapper’s Delight” by the Sugar Hill Gang, “Sucker MC” by Run DMC, and “Hard Knock Life” by Jay-Z. While the idea for the research started
with listening to the song “Rock Island” from Meredith Wilson’s The Music Man, some other patter songs I will include are: “I Am the Very Model of a Modern Major General” from Pirates of Penzance, “Not Getting Married Today” from Company, and “In the Heights” from In the Heights. Comparing the elements of music, lyrics and theatricality side by side will illustrate how these different styles of music are actually correlated. By looking specifically at the time period since hip hop music, as a genre, was created, the reader will be able to see that the musical theatre patter song can be considered early hip hop music.

404 3:45 pm
Unplugged
Michelle J Montrose, Studio Arts (U)
Eva Struble, Art, Design, and Art History

One fateful night I dropped my smartphone in a toilet. Embarrassing, I know. But after refusing to spend a few hundred dollars and opting to get a flip phone from 2009, I realized something. I realized how much time I had been spending attached to my technology. Once I became aware of the habit, I began to see it in classmates and friends.

Unplugged is a series of still lifes that explores the use of cell phones, and what those uses were fulfilled by 25 years ago. Unplugged creates a barrier between your life and your virtual life, and asks you to evaluate the connections between the two.

In addition to a collective theme of Modern Relationships to Technology, each piece has an internal theme. Each internal theme examines a single use of the modern cell phone. Alongside the jarred technology, the work presents items that have become obsolete or nostalgic due to technology itself. In my painting titled, “Navigation” there is a cell phone in a jar, which is placed next to a compass.

I created the work by borrowing my peers’ cell phones for 3 hour sessions, placing them in jars. I painted them in the Alla Prima style, in oil paint, on 12”x12” canvases. Alla Prima is a painting technique in which the artist paints the entire painting in one session. This technique has an expressive, yet intentional quality which lends itself well to my personal style.

Unplugged is the first of many projects that I will create that examine social issues. Since its completion, I have been motivated to create work that is connected to the modern world. Projects about social anxiety, farming methods, and environmental issues are on the horizon, all because one fateful night I dropped my smart phone in a toilet.

When my contract expires, I will probably get another smartphone. But, I believe it is important that we unplug and deliberately focus on the real world every day.

405 4:00 pm
Pre-visualization For Entertainment Lighting Design
Conor M Mulligan, Theatre, Television, and Film (M)
Chad Shelton
Craig Wolf, Theatre, Television, and Film

A group of songs spanning multiple genres were used as the source material for a concert lighting design package. A lighting rig was designed and drafted for the venue assigned, The Don Powell Theatre at SDSU. To emulate the schedule of a touring show the lighting package was to be loaded into the venue the day of the event. Once loaded in Conor and Chad adjusted in real space the lighting effects/cues created in the virtual space of the pre-visualization software. Once adjusted the light show was presented to peers, faculty, and advisors.

As a secondary requirement of the project Crowdfunding was employed to accomplish necessary equipment rentals as well as practice and study in producing independent work.

406 4:15 pm
Reclaiming the 'Top Forty': Broadway's Relationship with Popular Music
Bradley J. Behrmann, Musical Theatre (M)
Robert Meffe, Theatre, Television, and Film

The music of Broadway has always been a genre in relationship to popular music of the time. In the early part of the twentieth century, theatre-goers could expect to hear the music they found in theatres broadcast on that new device—radio—and conversely, they thrilled to hear their favorite radio and parlor hits sung live onstage. In a not-so-distant era, the music of Broadway was nearly indistinguishable from popular music. At some point, however, the kinship that existed between popular music and Broadway music began to fissure. At various junctures in musical theatre history, Broadway looked to popular music, but popular music seemed to give little regard to Broadway. One data-driven indicator of the relationship between Broadway and popular music lies in a Broadway song’s inclusion in the ‘Top Forty’ charts. The idea of the ‘Top Forty’ serves as the standard measure for song popularity in the United States, and it stands to reason that any Broadway song that made the charts successfully “crossed over” the genre divide.

This research will first define the parameters for how a song charts and defines terminology in the context of the industry. After that, the research will investigate several factors of the 1940s and 1950s that changed how music was published, recorded, and distributed and how that affected the chartable popularity of musical theatre songs. Finally, this research will examine the seven singles that can be classified as musical theatre songs that reached #1 on Billboard’s ’Top 100’ or ’Hot 100’ between 1955 and the present and use them to map a musical course...
ABSTRACTS

STUDENT RESEARCH SYMPOSIUM 2013

208

Investigating Shaker Design

Peter Scheidt, Furniture Design and Woodworking (M)
Wendy Maruyama, Furniture Design and Woodworking

The Shakers were an early 19th century religious group committed to communal living. Their utopian lifestyle is characterized by its austere simplicity and Shaker furniture and architecture was driven by their religious beliefs and a desire to create a Heavenly home on Earth. Shaker designs and craft are still treasured today and are often painstakingly recreated by woodworkers.

My process began by researching Shaker designs, materials, methods, and the spirituality which heavily influenced all aspects of their life. I became most interested in the tension I saw between the Shaker spiritual beliefs and the methods by which they produced furniture. Shaker chairs were sold to the “outside world” and were an integral part of the economics of the Shaker communities. The secular considerations of labor and profit had to be balanced with the Shaker ideals of perfection and simplicity. As furniture and manufacturing technology evolved, so did Shaker designs; but there was always a careful eye to preserve the design essence of their products as their methods became more and more mechanized.

I created a respectful yet also questioning response to this craft history. My chairs remain fairly true to the overall form of a Shaker chair yet have seats woven with garish neon webbing instead of the traditional dyed cotton tape. This is a color the Shakers would have balked at. The juxtaposition raises questions about what it is we treasure about Shaker design, and what it means to reproduce a traditional piece of furniture.

By combining traditional forms with modern materials, I am operating in a familiar yet uncanny realm for the viewer. It reflects my own position in craft and artistic goals, as I strive to create work which is both respectful of the past yet also irreverent.

407 4:30 pm

Tracking Projections: Experimenting in Enhancing Fluid Theatrical Design

Gabrielle Heerschap, Theatre Design and Technology (M)
Loren Schreiber, Theatre, Television, and Film

The ever increasing technology boom of the 21st century has created an interesting dilemma for artists of theatrical design. How can we “wow” an audience? The idea of stage magic relies on an audience’s inability to figure out how an effect is achieved. These effects enhance the audience’s experience and immerse them in the world of the performance. As theatrical designers, we need to be acutely aware of the impact generated by the visual world created. Advances in stage automation and projection design in recent years have provided new design tools to bridge the visual conversation of contemporary theatre into the technology driven 21st century. A variety of solutions exist to achieve fluid design. For my project, I will explore the concept of moving projection images around a stage by using an existing automation and projection software partnership with Creative Conners’ Spikemark automation software and Dataton’s Watchout projection playback software. Using the automation system, I will move a projection screen around a certain path on the stage. The automation software will send this position information to the projection playback software so the projected content with follow the moving screen. Proof of this technology’s ability to enhance the visual movement of stage design will be showcased in the projection design for the SDSU School of Theatre’s production of Alice: Curiouser and Curiouser!, an adaptation of Lewis Carroll’s Alice in Wonderland. Amidst a multiscreen projection environment, I will use tracking projections to achieve an immersive experience for the famous scene of Alice falling down the rabbit hole. Incorporating both the automation system and the projection system in this scenic effect will allow me to create a more dynamic image than if I were just using the projection system. My overall goal in using this software partnership is to contribute to the research in improving the system’s tuning process to achieve greater tracking image quality. Separately, these two technology systems are readily available in both regional and university theatre. Thus, improving the process of this system partnership will have a far reaching effect on improving fluid design in theatrical environments.
Saturday, March 7, 2015
Session G: Oral Presentations

Session G-1
Oral Presentation:
Alcohol Abuse Across the Lifespan
Saturday, March 7, 2015, 9:00 am
Location: Pride Suite

409 9:00 am
Choline supplementation during early, but not late, postnatal development attenuates hyperactivity associated with prenatal alcohol exposure.
Brandonn Zamudio, Psychology (U)
Jennifer Thomas, Psychology

Alcohol consumption during pregnancy has detrimental effects on the fetus, altering physical, neurophysiological and behavioral development. Such alcohol-related alterations are referred to as fetal alcohol spectrum disorders (FASD). To mitigate these effects, nutritional interventions are being investigated. Preclinical research suggests that choline, an essential nutrient, may alleviate some of the behavioral deficits that result from developmental alcohol exposure. In a rodent model of FASD, choline supplementation from postnatal days (PD) 10–30 (equivalent to childhood in humans) reduces impulsive and hyperactive behavior, in addition to deficits in learning and memory. It is not clear, however, whether choline is effective when administered later in life. Thus, the present study examined whether choline administered during late adolescence/early adulthood (PD 40–60) mitigates alcohol-induced overactivity. Ninety-one Sprague-Dawley rats were randomly assigned to one of four treatment conditions in a 2 (ethanol, sham) x 2 (choline, saline) design. Ethanol-exposed rats received daily ethanol intubations (5.25 g/kg/day) from PD 4 through 9 (the human 3rd trimester equivalent), whereas controls received sham intubations. Choline-treated subjects received daily subcutaneous choline injections (100 mg/kg/day) from PD 40–60, and controls received saline injections. On PD 66–69, subjects were tested in automated open field activity chambers. Measures of locomotor activity, exploration, and thigmotaxis were examined. Ethanol significantly elevated locomotor activity levels and reduced thigmotaxis. Choline administration did not significantly alter ethanol’s effects, suggesting that choline only attenuates ethanol-related hyperactivity when administered prior to PD 30. Interestingly, choline itself increased exploratory behavior among males, indicating that choline can alter certain aspects of activity independent of alcohol exposure. Overall, this study demonstrates that choline’s beneficial effects depend on developmental timing of administration. Choline administered during adolescence may selectively attenuate ethanol’s effects on learning tasks that depend on the functional integrity of the prefrontal cortex, an area of the brain that continues to develop during this period. In contrast, choline may only target the hippocampus, a brain area that contributes to activity levels, when administered during the early postnatal period. Elucidation of factors that influence choline’s effects on brain and behavioral development is crucial for translating this treatment to individuals with FASD. Supported by AA012446.

410 9:15 am
Traumatic Events, Enculturation/Acculturation, Alcohol and Marijuana Use: Investigating Relationships
Rob A Grijalva, Psychology (U)
Elizabeth Cordero, Psychology

Traumatic experiences are linked to increased use of alcohol and marijuana among male Latino undergraduates (Cabriales et al., 2013, Read et al., 2012). Acculturation is also associated with drug use in Latinos (Cabriales et al., 2013). Acculturation is the level to which individuals from minority groups accept the majority group’s cultural values. Enculturation, however, is the level to which people from minority groups retain their culture of origin; much less empirical attention has been given to how enculturation is related to substance use in Latino undergraduates, or if it can buffer effects of trauma exposure. The current study examines the relationship between the number of traumatic events experienced by Latino undergraduates and their alcohol and marijuana use. It was hypothesized that exposure to traumatic events would be positively correlated with alcohol and marijuana use in this population and that this relationship would be moderated by levels of enculturation. It is also predicted that Latino undergraduates would use more alcohol and marijuana if their levels of enculturation are higher than their levels of acculturation. Participants were 96 male Latino undergraduates who completed questionnaires about the study’s variables. Alcohol and marijuana use were categorized based on self-report: never used, periodic use (used “only a few times in past year” to “1–3 times per month”), and constant use (used “1–5 times per week” to “about every day”). Discriminant analysis determined if number of traumatic events experienced, number of traumatic events experienced that caused participants to feel helplessness or horror, acculturation, enculturation, and the acculturation-enculturation interaction could predict alcohol and...
marijuana use. Regarding alcohol use, the overall Wilks’ lambda was significant for one function. Acculturation, enculturation, and number of traumatic events that caused helplessness or horror had the strongest relationships with the function. The constant-use group had a higher mean on the function ($M = .37$) than the periodic-use ($M = .19$) and never-used groups ($M = -.68$). The function categorized 51.1% of the cases; a significant Kappa coefficient of .24 indicated better than chance-level prediction. No significant discriminant function was obtained for marijuana use. Implications, limitations, and future directions will be discussed.

411 9:30 am

**Hormonal Birth Control Use Associated with Increased Alcohol Consumption and Intoxication**

Tenille C Taggart, Psychology (U)

Emilio Ulloa, Psychology

Worldwide, alcohol consumption among women is increasing, which is alarming considering women also fall victim to alcohol dependence more quickly than men. Previous research indicates that women’s alcohol consumption and absorption rates as well as their subjective experience of feeling intoxicated may differ across specific phases of the menstrual cycle, suggesting that hormonal fluctuations may lead to increased drinking. Relatively few studies have evaluated the effects of alcohol use among women, nor the factors that may alter their response to alcohol, such as hormonal fluctuations. Thus, the present study aimed to examine the effect of one such factor, namely the use of hormonal birth control (HBC), on women’s overall alcohol consumption rates and their perceptions of feeling intoxicated due to alcohol. Because research indicates that HBC may decrease hormonal fluctuations, it was hypothesized that women using HBC would be less likely to consume alcohol and to feel less intoxicated than women not using HBC. The present study used archival data from Wave 3 of the National Longitudinal Study of Adolescent Health (Add Health) data set. A sub-sample of 5,504 women provided information on HBC and alcohol use. Participants’ use of either birth control pills and/or the implant (e.g., Norplant) and/or the shot (e.g., Depo-Provera) as well as their binge drinking behaviors and subjective perceptions of intoxication in the past 12 months were assessed. The results of multiple linear regression analyses were contrary to our hypotheses: Women who took HBC were significantly more likely to engage in binge drinking and to feel more drunk or very high on alcohol than women who did not take HBC. These findings held even after controlling for age, education, and religiosity in all analyses. Our data suggest that hormone levels may in fact have an impact on both the amount of alcohol women consume as well as women’s subjective experience of feeling intoxicated. However, due to the present study’s correlational design and methodological limitations (e.g., individual item measures, self-report data), more research, particularly experimental research, is warranted in order to more fully assess this interesting conundrum.

412 9:45 am

**Comparing Parent/Caregiver Administration Forms of the Vineland Adaptive Behavior Scales-II in FASD, ADHD, and Control Children**

Lauren A Gross, Psychology (M)

Sarah Mattsson, Psychology

Background: Children exposed to alcohol prenatally and children with idiopathic attention deficit/hyperactivity disorder both have adaptive behavior deficits. Two measures of adaptive behavior are commonly used in research and clinical settings, however, the equivalency of these measures is unclear. As such, we examined equivalency of different versions [an interview (SUR) and a questionnaire (PCR)] of the Vineland Adaptive Behavior Scales-II (VABS-II) for children with histories of prenatal alcohol exposure, ADHD, and controls. We hypothesized that parents of children with adaptive difficulties would demonstrate more variability than controls, resulting in higher correlations between versions in CON compared to the clinical groups. Methods: Caregivers of children ($m = 11.55$ y) from three matched groups [prenatal alcohol exposure, AE ($n = 42$), attention-deficit/hyperactivity disorder, ADHD ($n = 21$), and typically developing controls, CON ($n = 35$)] completed both versions of the VABS-II within six months. Within each group, adaptive behavior composite scores from each administration type were compared using zero-order correlations (Pearson’s $r$) with an acceptable cutoff of $r = .6$ for practical significance. Data were also analyzed using a within-between subjects mixed ANOVA to test Group x Administration type interactions. Results: Clinical group correlations were above the cutoff. Relations between administration types were highest in AE ($r = .85$), followed by ADHD ($r = .67$). The adaptive behavior composites in CON did not meet the acceptable cutoff ($r = .52$). The ANOVA revealed significant main effects of Group (CON>ADHD>AE, $p < .001$) and Administration type (PCR>SUR, $p = .012$), but the interaction was not statistically significant ($p = .124$). Conclusions: Contrary to our hypotheses, the correlations between the PCR and SUR administrations were higher in the clinical groups. This suggests that caregivers of children with adaptive behavior problems were not affected by administration type. Potentially, these caregivers may be more attuned to their child’s deficits and therefore may be more consistent. Correlations in the CON group failed to meet practical significance cutoff, contrary to previous reports. Overall, caregivers reported lower scores during the interview, perhaps due to social facilitation or social influence. In addition, the significant effect of Administration type across groups indicates caution must be used when assuming equivalence between SUR and PCR scores.

Research funded by NIAAA grant R01 AA019605.
Developing A Decision Tree For Clinical Identification Of Children Affected By Prenatal Alcohol Exposure I: Model Development

Patrick K Goh, Psychology (M)
Sarah Mattson, Psychology

Objective: Heavy prenatal alcohol exposure (AE) results in a wide array of physical and neurobehavioral deficits. However, identification of alcohol-affected children remains challenging, particularly in the absence of a diagnosis of fetal alcohol syndrome. Research described herein aimed to develop a clinically useful diagnostic screening tool that combined neuropsychological, neurobehavioral and dysmorphology measures and had a high degree of accuracy (>80%). Method: Measures included neurobehavioral and dysmorphology data from 411 subjects (8–16 y, M = 12.2) collected as part of the Collaborative Initiative on Fetal Alcohol Spectrum Disorders phase 2 (CIFASD II). Subjects comprised 3 groups: alcohol-exposed (AE, n = 149), non-exposed with attention-deficit/hyperactivity disorder (ADHD, n = 93), and typically developing controls (CON, n = 169). To achieve clinical relevance, a decision tree with 2 entry points was created to obtain the highest AE vs non-AE classification accuracies. The 2 entry points reflected 2 possible routes of clinical identification: the psychologist and the dysmorphologist. The first entry point included neuropsychological (direct child measures), behavioral (parent-report), and dysmorphology criteria. The second entry point included dysmorphology and behavioral criteria only. Variables were added until sample sizes prohibited further discrimination. Data were analyzed using logistic regression to obtain the discriminatory ability of each step of the tree. Positive (PPV) and negative (NPV) predictive values as well as classification accuracies were calculated. Results: Overall classification accuracy in the decision tree exceeded our goal of 80%. The first entry point of the decision tree obtained an 81.1% overall accuracy (AE = 69.3%, non-AE = 87.9%; PPV = 83.0%, NPV = 80.3%). The second entry point of the decision tree obtained an 80.6% overall classification accuracy (AE = 75.8%, non-AE = 84.0%; PPV = 76.4%, NPV = 83.5%). Classification accuracies at both entry points of the model were significantly higher than chance (p < .001). Conclusion: Results of this study indicate that the proposed model distinguishes children with AE from non-exposed children, including those with ADHD, with high PPV and NPV and adequate sensitivity and specificity. High accuracy using both entry points adds flexibility and clinical utility to this classification tool.

Research supported by NIAAA grants U01 AA014834, U01 AA014815, U01 AA014811, and T32 AA013525.
CSAs bridge the gap of potential members who are deterred by lack of information and successfully foster community by understanding what appeals to members in order to positively promote local economy, compete with supermarkets, and develop understanding of food issues to San Diego county residents.

**416 9:30 am**

**Weight Problem Perception and Emotional Eating in Latina College Students**  
Dyane I Acosta, Psychology (U)  
Denicka Lopez, Psychology  
Elizabeth Cordero, Psychology

Weight problem perception (WPP) pertains to people’s thoughts that they are overweight (Saules et al, 2009). Regardless of a person’s actual weight, WPP is strongly associated with disordered eating, including emotional eating when depression has been accounted for (Wiedemann & Saules, 2013). However, WPP and emotional eating have not been studied within Latina female college students despite how this population has been found to struggle with disordered-eating patterns (Blow et al., 2010). Acculturation, or internalization of mainstream sociocultural ideals, may play a role in the relationship between WPP and emotional eating in Latina college students, as might enculturation, or a person’s orientation to culture of origin. The purpose of this study is to examine WPP, acculturation, enculturation, depression, and emotional eating in Latina college students. It was hypothesized that 1) there is a positive correlation between WPP and emotional eating, even with depression accounted for; 2) acculturation will mediate the relationship between WPP and emotional eating; and 3) enculturation will moderate the relationship between WPP and emotional eating.

Participants were 268 Latina college students. Participants completed self-report measures for the variables of interest, and questions about height and weight to calculate Body Mass Index (BMI). Emotional eating was positively correlated with WPP, BMI, and depression but not with acculturation, enculturation, or the acculturation-enculturation interaction. A 2 x 2 Analysis of Covariance was conducted with WPP (WPP, no WPP) and BMI classification (overweight, not overweight) as independent variables, depression as the covariate, and emotional eating as the dependent variable. A statistical trend ($p = .06$) for a main effect was observed for BMI classification, indicating that higher levels of emotional eating were not observed in participants with WPP than participants without WPP even though previous research with a predominately Anglo sample found the opposite pattern (Wiedemann & Saules, 2013). A significant interaction was observed, either.

Implications, limitations, and future directions will be discussed.
The relationship between obesity, acculturation, and food security among Latino adults in South San Diego County.

Jessica R Hawks, Public Health (D)
Hala Madanat, Graduate School of Public Health

Background. In the United States, Latinos have a higher prevalence of obesity than the general population. Among Latinos, acculturation (measured by length of time in the U.S., language acquisition and use, and adoption of cultural attitudes and practices) is positively correlated with obesity. In addition, food insecurity (defined as having insufficient access to or availability of food) is positively associated with obesity. However, few studies have examined the contributions of both acculturation and food security to the problem of obesity. Purpose. This study explores the relationship between food insecurity and obesity among Latino adults in South San Diego County. Hypothesis 1. Individuals with high acculturation will have a higher prevalence of obesity than individuals with low acculturation. Hypothesis 2. Food insecurity will moderate the relationship between acculturation and obesity among the adults in this sample. Methods. Participants included 397 South San Diego County residents. Data from the San Diego Prevention Research Center Well-Being Household Community Survey was used for these analyses. The survey included questions on demographics, acculturation, food security, social networks and social mobility, and participants’ overall health and well-being. Results. Participants ranged from ages 18–89 with a median age of 41, and the majority of respondents were females (f = 290, m = 107). The majority of the sample were either overweight (32.2%) or obese (44.6%). Assimilated individuals had a significantly higher mean BMI than bicultural individuals ($p = 0.042$). Age ($p < 0.001$) was significantly positively associated with obesity. Although total food security did not interact significantly with acculturation, there was a moderate interaction between one component of food security (being able to afford to eat balanced meals) and acculturation ($p = 0.055$). Conclusions. Further research should assess the relationship between food insecurity, acculturation, and obesity.

Predicting Parent Engagement in Family-Based Childhood Obesity Programs

Emily A Schmied, Public Health (D)
Hala Madanat, Graduate School of Public Health

Background: Childhood obesity is one of the largest public health threats in the U.S. To curtail the rates of childhood obesity, it is critical to implement effective prevention and treatment programs. Research suggests family-based interventions targeting parents and children may be the most effective in combating this issue; however, low parent engagement has limited the success of these programs. Engagement includes attendance at and active participation in planned intervention activities. Increasing parent engagement may greatly increase the effectiveness of family-based interventions, yet few studies have investigated predictors of engagement. The objective of this study was to prospectively examine predictors of parent engagement in a family-based childhood obesity intervention. Methods: Participants included 128 caregivers of children aged 2–11 participating in a family-based childhood obesity program in Imperial County, California. A mixed-methods longitudinal approach was used. Prior to intervention exposure, participants completed a quantitative survey assessing hypothesized predictors of engagement, including perceived relevance of the intervention, readiness to change, family functioning, parent depression, and parent and child demographics. Study outcomes included attendance at and active participation in program activities, assessed via attendance records and post-intervention interviews, respectively. Baseline data collection is complete, and outcome data is available for 68 (53.1%) participants. Results: Participants were largely female (98.4%), Latino (96.9%), and married (73.4%), and on average were 35 years old ($\bar{x} = 35.36$, standard deviation [SD] = 8.42). Mean attendance across nine planned intervention activities was 4.53 (SD = 3.71). Pearson correlations were computed to identify predictors of attendance for participants with available outcome data. While statistical power is limited by the small sample size, several trends were observed. Higher levels of family functioning ($r = 0.20, p = 0.10$), enrollment in public food assistance programs ($r = 0.22, p = 0.06$), and being married ($r = 0.17, p = 0.15$) were associated with greater attendance at intervention activities. Multivariate models will be developed once data collection is complete. Conclusion: Though preliminary, the results of this study indicate factors related to socio-economic status and family dynamics may influence degree of participation in family-based childhood obesity programs. Final study results will elucidate underlying causes of low parent engagement, and this information can be used to develop strategies to improve engagement in future interventions.
Session G-3
Oral Presentation:
Wildfire & Microgravity Combustion
Saturday, March 7, 2015, 9:00 am
Location: Tehuanco

419  9:00 am
Geographic Tools for Identifying Post-fire Ecological Changes in Chamise Chaparral
Emanuel A Storey, Geography (M)
Douglas Stow, Geography

Postfire changes to the chamise chaparral vegetation community of San Diego County can have severe impacts on ecosystem health and stability. Developing efficient and accurate tools for the tracking of postfire recovery patterns in this ecosystem will support land management and scientific inquiry. This research evaluates the sensitivity of postfire regrowth trajectories, based on multi-spectral remotely sensed imagery from the Landsat (Thematic Mapper and Enhanced Thematic Mapper Plus) archive, to detect degrees of shrub canopy change in chamise chaparral of San Diego County. Degraded and recovering sites were identified based on visual inspection of Google Earth imagery, and the degrees of postfire shrub canopy change were estimated by comparison of prefire- postfire aerial photographs. The characteristics of decadal scale time-series regrowth trajectories, based on several Landsat spectral vegetation indices and statistical metrics, were compared to results from aerial photography and field observations. Temporal and spatial patterns of recovery were also assessed for 15–23 years postfire at several sites in order to determine the operational time-frame of recovery processes. Minimal increases in vegetation abundance were observed beyond the period of 10 years postfire. Results indicate that regrowth trajectories for some low-biomass sites may not be sensitive to actual shrub canopy decreases, but that degradation signals for most sites are clearly related to actual changes. Discussion addresses the practical and theoretical aspects of data sampling and analysis pertaining to this biogeographic phenomenon.

420  9:15 am
Quantifying the Effect of Santa Ana Winds on Wildland Urban-Interface Fires in San Diego County
Robert J Davies, Mechanical Engineering (M)
Fletcher Miller, Mechanical Engineering

Data obtained from wind stations equipped with anemometers, and wind vanes is used to verify and validate the hydrodynamic portion of Wildland-Urban Fire Dynamic Simulator (WFDS) in a baseline case. WFDS is an extension of the National Institute of Standards and Technology’s (NIST) Fire Dynamic Simulator (FDS), which is a computation fluid dynamic solver that handles the governing equations for fluid flow, combustion, and heat transfer. Vegetative fuels are introduced in WFDS to handle the wildland-urban interface. The solver makes use of large eddy simulation techniques for gas-phase equations that are computationally over demanding to resolve all physical phenomena. Operation of WFDS is handled by parallel computation via Blackbox.sdsu.edu, a server run under the computational science computing center. The Linux 64 based cluster cuts down computational time for terrain simulations located in the Rancho Bernardo Trails community. Terrain maps up to four square kilometers in area have been developed for simulation. These immense spatial domains can amount up to 8 million grid cells. Results from the simulations are presented in comparison to real recorded data that takes place throughout the Rancho Bernardo community. Permission of wind instrumentation is granted to San Diego State University by the City of San Diego. Wind stations currently outfit City owned light poles throughout the community. These stations are instrumented to record wind velocity, both gust and mean, as well as wind direction at a sample rate of one minute. Once “cold flow” simulations are valid in comparison to the live recorded data, the combustion portion of the code will be introduced. From there results will be compared to studies done in great detail by the NIST on the post wildfire research of the October 2007 fires in the Rancho Bernardo Trails area.

421  9:30 am
Polymethylmethacrylate Combustion in a Narrow Channel Apparatus Simulating a Microgravity Environment
Garrett R Bornand, Mechanical Engineering (M)
Fletcher Miller, Mechanical Engineering

Fire safety is an important part of engineering when human lives are at stake. This research attempts to provide scientific evidence that the apparatus in question successfully simulates microgravity and can possibly replace NASA’s current test method for spacecraft fire safety.

Flame spread tests were conducted with thermally thick and thermally thin polymethylmethacrylate (PMMA) samples to
study flame spread behavior in response to environmental changes. The tests were conducted using the San Diego State University Narrow Channel Apparatus (SDSU NCA) as well as within the ISS. The NCA can suppress buoyant flow in horizontally spreading flames, and is currently being investigated as a possible replacement to NASA’s current material flammability test standard for non-metallic solids. The buoyant suppression attained in the NCA allows tests to be conducted in a simulated microgravity environment—a characteristic that NASA’s Test 1 lacks since flames present in Test 1 are driven by buoyant flows. The NCA allows for tests to be conducted at various opposed flow oxidizer velocities, oxygen percent by volume, and total pressure to mimic various spacecraft and habitat atmospheres.

Tests were conducted at 1 atm pressure, thin fuel thickness of 50 and 75 microns, thick fuel thickness ranging from 3 to 5.6 mm, opposed oxidizer velocity ranging from 10 to 25 cm/s, and oxygen concentration at 21, 30, and 50 percent. The simulated microgravity flame spread results were then compared to true microgravity experiments including; testing conducted on the ISS, NASA’s 5.2 second Drop-Tower, and Micro-Gravity Laboratory’s 4.5 second Drop-Tower. Data was also compared to results found by Michigan State University’s Micro-Gravity Laboratory’s 4.5 second Drop-Tower. Data was compared to results found by Michigan State University’s NCA. Flame spread results from the SDSU NCA compare closely to that of the other experimental techniques.

Fire Dynamics Simulator was used to model the combustion of PMMA within the SDSU NCA. Both thin and thick fuel beds were simulated and the numerical results were compared to experimental data. The simulation was then used to determine various results that cannot easily be found with experimentation, including how effectively the NCA simulates microgravity under certain environmental conditions, gas and fuel bed temperatures, heat fluxes, species concentrations, pyrolysis rate, and other various data.

422 9:45 am

Model and Experiments of Burning Intermediate Thickness PMMA Sheets in Microgravity Opposed Flow

Tirthesh Shah, Mechanical Engineering (M)
Fletcher Miller, Mechanical Engineering

The NASA Burning and Suppression of Solids-II (BASS II) experiment examines the combustion of different solid materials and material geometries in microgravity. While flames in microgravity are driven by diffusion and weak advection due to crew movements and ventilation, the current NASA spacecraft material selection test method (NASA-STD-6001 Test 1) is driven by buoyant forces as gravity is present. The overall goal of this project is to understand the burning of intermediate and thick fuels in microgravity, and devise a normal gravity test to apply to future materials. Clear cast polymethylmethacrylate (PMMA) samples 10 cm long by 1 or 2 cm wide with thicknesses ranging from 1–5 mm were investigated. PMMA is the ideal choice since it is widely used and we know its stoichiometric chemistry. Tests included both one sided and two sided burns. Samples are ignited by heating a wire behind the sample. The samples are burned in a flow duct within the Microgravity Science Glovebox (MSG) on the International Space Station (ISS) to ensure true microgravity conditions. The experiment takes place in opposed flow with varying Oxygen concentrations and flow velocities. Flames are recorded on two cameras and later tracked to determine spread rate.

Currently we are modeling combustion of PMMA using Fire Dynamics Simulator (FDS 5.5.3) and Smokeview. The entire modelling for BASS-II is done in DNS mode because of the laminar conditions and small domain. In DNS mode the Naver Stokes equations are solved without the Turbulence model. The model employs the same test sample and MSG geometry as the experiment; but in 2D. The experimental data gave upstream velocity at several points using an anemometer. A flow profile for the inlet velocity is obtained using Matlab and input into the model. The flame spread rates obtained after tracking are then compared with the experimental data and the results follow the trends but the spread rates are higher.

423 10:00 am

A Comparison of Radiation Signature from Spreading Flames in Normal and Zero Gravity Environment

Matthew N Laue, Mechanical Engineering (M)
Subrata Bhattacharjee, Mechanical Engineering

Radiation plays a critical role in flame spread over solid fuels. When the residence time, the time spent by the oxidizer near the flame front, is large and comparable to the characteristic radiation time. The residence time being the ratio of the length scale to the oxidizer velocity scale, radiation becomes a significant mechanism of heat transfer when a flame is large, as in terrestrial fires, or even in small flames in a microgravity environment, where the absence of buoyancy induced flow can make the residence time arbitrarily large. In the recently conducted BASS (Burning and Suppression of Solids) experiments aboard the International Space Station, the radiation signature from flame spreading over thin sheets of PMMA were recorded using a radiometer. In this work an equivalent experiment is conducted in the Flame Stabilizer apparatus at SDSU. For this purpose, an innovative radiometer has been designed and constructed by mounting a small web camera next to the thermopile that detects infrared radiation. By attaching a 3-d printed housing with an aluminum viewing window in front of the detectors, the visible and infrared fields of view are made identical, allowing the radiometer signal to be correlated to the visible image. Radiation signature from downward spreading flame is compared with that of the corresponding signature from microgravity experiments.
Session G-4

Oral Presentation:
Novel Molecular Tools for Biology & Medicine
Saturday, March 7, 2015, 9:00 am
Location: Aztlan

424 9:00 am

**Bacterial Infection and Activation of Human Astrocytes**

Thomas A Weston, Cell & Molecular Biology (M)
Kelly Doran, Chemistry

The blood-brain barrier (BBB) is primarily composed of a layer of specialized brain microvascular endothelial cells (BMEC), and together with astrocytes, pericytes, neurons and the extracellular matrix, constitute the neurovascular unit (NVU). The BBB functions to protect the brain from toxins and microbes that may be present in the blood by maintaining specialized intracellular tight junctions and strict regulation of endocytosis. Astrocytes surround BMECs and the entire vasculature of the brain with their pseudopodia. Astrocytes have previously been shown to help maintain BBB function and are thought to help prevent microbial infection of the CNS (meningitis). However, little is known about the interaction and response of astrocytes to bacterial infection. Here we examine the interaction and response of astrocytes to a leading neonatal meningeal pathogen, Group B *Streptococcus* (GBS). We used an astrocyte cell line, SVG-A, to characterize GBS infection in vitro. We found that all clinically dominant serotypes of GBS that we tested (Ia, Ib, III, and V) were able to adhere to and invade astrocytes. Furthermore, we observed that wild-type GBS was able to persist within an intracellular compartment for at least 12hr following invasion. We then examined the response of astrocytes to GBS infection by RT-qPCR and found that infection resulted in the induction of several proinflammatory factors such as interleukin (IL)-1β, IL-6, IL-8, and IL-36 as well as factors that promote cell motility and BBB breakdown such as VEGF, MMP-2, and MMP-9. Gaining a better understanding of astrocyte response during bacterial infection will provide new insight into BBB function and disruption during the development of neonatal meningitis. Future work will focus on determining the impact of astrocyte derived factors on BBB function and whether this interaction occurs in vivo using a murine model of bacterial meningitis.

425 9:15 am

**A Novel Green Synthesis of Gold Nanoparticles Using Near-UV Irradiation**

Michael C Keogh, Chemistry (M)
David Pullman, Chemistry

Gold nanoparticles (AuNP’s) are seeing extensive attention primarily due to their unique optical, electronic, and molecular-recognition properties and therefore are seeing increased use in the field of cancer detection and cell therapy. With growing use for colloidal precious metals in consumer products, chemists are tasked with developing reliable and cost-effective methods for their synthesis. In addition to producing stable and size-specific nanoparticles, a fundamental goal of the researcher is to develop safe and environmentally friendly synthetic methods that do not use harmful reagents or generate large quantities of hazardous waste. If gold colloids are ultimately to be used in the treatment of disease, then they must not contain substances that are highly toxic to humans. The following study outlines a novel green synthetic route for producing photo-stable, size-specific AuNP’s, in which iron is added as a catalyst.

The AuNP’s are synthesized in aqueous solutions containing gold, citrate, and iron ions. The reaction is carried out in a well-cleaned quartz cuvette inside a modified UV-Vis spectrometer outfitted with a 404nm LED light for sample exposure. The peak absorbance from 500–560nm, indicative of the presence of AuNP’s, is monitored over time to determine the growth rate. Various gold compounds are currently being tested to determine their effect on the final properties of the AuNP’s. Dynamic Light Scattering (DLS) and Atomic Force Microscopy (AFM) are used to determine the size, dispersity, and shape of the AuNP’s. Future Transmission Electron Microscopy studies will be conducted to confirm these findings and to more accurately attain information regarding the morphology of the AuNP’s. The mechanism of growth will also be presented.
Identification of new protein interactions of UNC-45, a myosin molecular chaperone, in Drosophila melanogaster

Carmen R Carland, Cell & Molecular Biology (M)
Sanford Bernstein, Biology

Molecular chaperones bind and stabilize proteins during folding and assembly, thereby insuring their proper function. UNC-45 is a molecular chaperone that plays an important role in folding the myosin protein during stressful conditions. Improper folding and subsequent malfunction of myosin has been associated with cardiomyopathies and skeletal muscle disease. Besides binding myosin, UNC-45 also partners with HSP-90, Apobec2 and with the GATA transcription factor. This study seeks to uncover new interactions in Drosophila melanogaster UNC-45 through a genetic deficiency screening in an unc-45 sensitized background. We combined UNC-45 mutant heterozygotes with deficiency heterozygotes for individual segments of chromosomes 1, 2 and 3. The resulting offspring were identified and selected against dominant balancer markers. Organisms that carry a single copy of the unc-45 mutation as well as the deficiency in question served as our experimental group, whereas organisms that contain a single copy of the unc-45 mutation but lack the deficiency were used as controls. Thus far we have identified a deficiency region (7783) where the cross yielded lethality for double heterozygotes. This region deleted twenty-four genetic elements on chromosome 2. To narrow down candidate genes encoding possible UNC-45 interacting proteins, we selected RNAi lines directed against six of these genes. We then crossed these lines with an all-muscle driver and an indirect flight muscle driver in the presence of normal and reduced levels of UNC-45 in order to replicate the lethal phenotype obtained with line 7783. The lethality has been putatively mapped to the SLY1-homologous gene. Body wall muscles of larvae with all-muscle SLY-1 homologous knock-down and reduced UNC-45 levels displayed minor defects in myofiber organization. Thus far, our studies point to SLY-1 homologous as an important gene involved in muscle function and development. Although a possible interaction was found between UNC-45 and SLY-1 homologous, further proof is needed for confirmation. Findings from this study will further our understanding of the mechanism of action of UNC-45 and its possible role in skeletal and cardiac muscle diseases.

Electrochemical Characterization of an Electroactive Ureidopyrimidinone Derivative, Meijer’s Four Hydrogen Bond Array Containing a Dimethylaminophenylurea Redox Center

Laurie Ann Clare, Chemistry (M)
Diane Smith, Chemistry

A recent trend in the design of polymers is the incorporation of reversible chemistry, where damaged material can independently repair itself. This type of “self healing” material includes supramolecular polymers that contain systems of multiple hydrogen bonds such as ureidopyrimidinone (Upy), a well-known 4 H-Bond array, Figure 1. This system originally developed by R.J. Sijbersma and E.W. Meijer, has a dimerization constant of $6 \times 10^7 \text{m}^{-1}$ and is commercially developed under the trade name SupraB1.

Binding strength from dimerization comes not only from the 4 H-Bonds, but also from additional binding forces related to the arrangement of the bonds. Sequential hydrogen bond donors (D) and hydrogen bond acceptors (A) allow angular binding force that increases overall binding strength.

With the addition of dimethylaminophenyl to the urea moiety on Meijer’s array, we have added redox functionality in addition to its DDAA bonding motif. Our hypothesis is that upon oxidation, binding strength of the urea redox N-H will decrease. This leads to proton transfer and thereby changes the DDAA motif to an ADDA motif, weakening the binding strength of the 4H-bond array to the extent it breaks apart.

Our initial Cyclic Voltammetry (CV) scans show two oxidation waves. The first wave is reversible and the second wave irreversible. Indications that not only proton transfer and dimer breakup occurs but that upon reversal of potential, the dimer returns to original form.

This presentation will cover CV scans based on concentration and scan rate dependence as the H-bond array is oxidized. In addition, Spectroelectrochemistry, NMR results as well as Digital CV simulations will also be presented.

FIGURE 1. Structure of dimerized 4-H bond array, showing arrangement of proton donor (D) and proton acceptor (A). R2 is the dimethylaminophenyl moiety that adds redox functionality to structure2.
References

428 10:00 am
Synthesis of Nucleoside Triphosphate Analogues: Overcoming the inability of Nucleotide Therapeutics to Permeate Across the Cellular Membrane.
Jason A Lundy, Chemistry (M)
Byron Purse, Chemistry and Biochemistry

Nucleoside analogues are an extremely important class of both antiviral and anticancer agents. In most cases however, the nucleoside analogue must be converted to a nucleoside triphosphate to exert its antiviral or anticancer effects: the nucleoside analogue must be in its triphosphate form in order for it to be inserted into the DNA or RNA strands of the target cells, thereby disrupting the replication of virally infected or cancerous cells. Furthering the complications, cells do not efficiently convert many nucleoside analogues into nucleoside triphosphates, thereby limiting their potential effectiveness. Currently, we are working on the development of novel nucleoside triphosphate analogues (prodrugs) to overcome the inability of cells to inefficiently phosphorylate nucleoside analogues used in cancer and viral treatments. The prodrugs we are developing consist of chemical modifications to enhance stability and include masking groups attached to the oxygen atoms of the phosphate groups. The purpose for the masking groups is to allow for the prodrugs to permeate across the cellular membranes of the target cells. Once inside the cytosol of a cell, enzymes will remove the masking groups from the prodrug—which can then go on to exert its therapeutic effects. Our current approach to the development of such prodrugs includes the use of phosphorous (V) and phosphorous (III) intermediates to synthesize the triphosphate groups. From there, the triphosphate groups are coupled to a nucleoside with the chemical modifications necessary to exert a therapeutic effect against viral infections or cancerous cells.

Session G-5
Oral Presentation: Water, Environment & Culture
Saturday, March 7, 2015, 9:00 am
Location: Metztli

429 9:00 am
Water Over The Bridge: Education, Capabilities theory, and Chilean Social Development
Trevor R Auldridge, Sociology (U)
Dr. Jung Choi, Sociology

For much of the past several decades, conceptions of social development have largely focused around the absolute and relative growth of economies. U.S. and Chilean conventional wisdom has largely posited that economic growth lays the foundation for societal progress. However, several crises within Capitalism over the past thirty years, coupled with increasing inequality and poverty, have opened avenues for criticism of neoliberal conceptions of social development. In this paper, I employ an unobtrusive case study of the Chilean education system to illustrate how Chilean social development does not satisfy the Senses-Thoughts-Imagination and Affiliation capacities in Martha Nussbaum’s interpretation of Capabilities theory. Furthermore, I argue that since the Chilean education does not entirely satisfy these capabilities, Chile is not a fully developed country. This research seeks to contextualize contemporary development discourse by illuminating how alternatives notions of social progress complicate popular claims of nation-state nascency.

430 9:15 am
Investigation of Treated Wastewater Intended for Drinking
Valerie Root, Public Health: Environmental Health (M)
Eunha Hoh, Graduate School of Public Health

Southern California has historically depended on water resources from the Sacramento delta and Colorado River. The demand for clean drinking water will increase as the decreasing supply costs rise and as the effects of climate change reduce precipitation. Orange County Water district buys tertiary treated wastewater from the Orange county sanitation department and further treats it to drinking water quality via microfiltration, reverse osmosis, and advanced oxidation. The resulting water is the stored in a river basin where it percolates through the ground and is eventually pumped for drinking. If water is to be cycled through the same system repeatedly, the potential for accumulation of chemicals in sediment, water, and wildlife, with the potential for deleterious effects is increased. Currently there is no knowledge of the organics present in the recycled water other than those listed on state and federal drinking water standards.
Awareness of recalcitrant compounds present in recycled water will help improve water treatment and has the potential to increase confidence in water recycling. Using the 4 dimensional analysis offered by the GCxGC-TOFMS previously unknown compounds will be identified and a small cohort chemicals will be studied in depth for potential ecological and human impacts.

431 9:30 am

Race, Socio-economic status, and Environmental Inclusiveness: Mapping the distribution of users of the San Gabriel River

Jonathan A Navarrete, Statistics (M)
Kristin Duncan, Statistics

During the summers of 2013 and 2014, a research team from the Watershed Conservation Authority and CSU San Marcos sought to identify users of the San Gabriel River, specifically a mile and a half stretch along the river deep in the Angeles National Forest. This project seeks to understand the non-traditional forest recreation by minorities, and affinity they may have with nature. This area in particular is a high impact zone during summer resulting in over crowding, trash complications and traffic. Thus the underlying implication is to identify minorities’ recreation needs and how to promote better sustainability practices.

432 9:45 am

Bringing public good with the collaboration of government and non-government organizations

Rosa A Del Angel, Master of Public Administration (M)
Javier Gonzalez
Diana Verzi, Mathematics

The New River flows north from the Colorado River in Baja California Norte, Mexico, across the international border into the United States, through the Imperial Valley, and drains into the Salton Sea. Known as “the most polluted river in North America,” its water carries agriculture runoffs with pesticides, sewage, slaughterhouse residues, industrial contaminants, and other toxins and viruses.

Over the past 18 years, multiple local governmental and non-governmental organizations (NGOs) have joined forces to look for a solution to these high contamination levels. Together they developed a potential solution in the creation of wetlands that filter the river water in a series of ponds along its course that trap sediments and other pollutants. Efforts to-date have required the direct participation of citizens within NGOs, working with local to national government organizations (GOs) to implement pilot wetlands to demonstrate their effectiveness.

Our study analyzes the methodologies and effectiveness of these NGO-GO coalitions, their successes and their challenges, and makes recommendations for expanding the pilot wetlands to a full-scale clean-up of the New River. Analysis was accomplished through a series of interviews, literature, legal and grant searches, and site-organizational visits.

Our findings suggests that although NGO-GO didn’t have previous experience working together at great scale in particular to address a complex issue like pollution, they were willing to invest in these efforts. It has taken years since NGO-GO first answered the call made by regular citizens to work side by side, but NGO-GO has learned to work together and to become long-term partners.

This proved to be effective to use their expertise within each NGO-GO to do feasibility studies and to work in steps for implementation. Furthermore, these collaborations were active in obtaining additional funding, build three wetlands, create an educational program, create a model able to be replicated, continuation of research, creating green spaces, and creating an environment friendly solution to pollution.

433 10:00 am

Regional impacts of urbanization on stream channel geometry: Importance of watershed size and channel particle size

Kristine Taniguchi, Geography (D)
Trent Biggs, Geography

Urbanization often increases storm runoff, peak discharge, and rates of stream channel erosion. Southern California has experienced rapid urbanization over the past several decades and has the potential for stream channel degradation. San Diego County has implemented a Hydromodification Management Plan (HMP) to protect channels from erosion through monitoring new development projects, but no studies have quantified the regional impact of urbanization on channel geometry. A synoptic survey of 80 field sites by the California Environmental Data Exchange Network (CEDEN) and additional 24 field surveys were used to develop regional curves relating bankfull cross sectional area ($A_{\text{bf}}$), width ($w$), mean depth ($d$), and discharge ($Q_{\text{bf}}$) to watershed area ($A_w$). Regional curves were compared for urban and reference sites and to other regional curves developed for southern California. Multiple regression models were used to identify dominant watershed and channel controls on geometry, including $A_w$, percent impervious cover ($I$), mean annual precipitation, underlying geology, longitudinal slope, and hydrologic soil group. For the reference streams, regional curves were most robust for $w$ ($p < 0.05$) and $A_{\text{bf}}$ ($p < 0.05$). The regional curves for urban streams had substantially larger intercepts than reference curves, indicating that urban channels have larger $w$ and $A_{\text{bf}}$ for a given watershed size. Both $A_w$ and $I$ were statistically significant predictors of $w$. $A_w$ is a predictor of $A_{\text{bf}}$ only for reference sites; when all sites

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are included in a regression model, I% was the only predictive variable for \( A_{\text{xs}} \), suggesting that urban-induced enlargement in smaller urban channels disrupted the natural \( A_{\text{vs}}-A_{\text{uv}} \) relationship. A majority (68%) of the urban channels were enlarged, defined as a \( A_{\text{xs}} \) larger than the upper 95% confidence interval of the regional curve for reference sites. Of the enlarged channels, 73 percent were located in small watersheds (<10 km\(^2\)). Channel response differed by channel substrate. Sand-bedded channels incised, while gravel-bedded channels widened. Sand-bedded channels in small urban watersheds (<10 km\(^2\)) had much larger d compared to sand-bedded channels in larger urban watersheds (>10 km\(^2\)). Channels draining larger urban watersheds may be less susceptible to enlargement due to stabilization of channel banks through the establishment of riparian vegetation from increased urban baseflow. Management should focus on monitoring sand-bedded channels in watersheds smaller than 10 km\(^2\).

434 10:15 am

*Proposing the San Quintin Bay Hydrodynamic Forecast System Through Data Assimilation Scheme.*

Mariangel Garcia, Computational Science (D)
Jose Castillo, Computational Science Research Center

SQB is located northwestern Mexico with the largest oyster cultivation industry, has already recognized as a high primary productivity coastal lagoon with strong upwelling influence and the most important economic resource for fishermen of the region. So as increasing aquaculture activities, the concern of water quality increase as well, especially during red tide season where entire oyster farms can be contaminated, so there is a need for an operational system to monitoring the area as well to provide reliable prediction for water level, currents, sea surface temperature, salinity. Numerical models have proven to be essential for ocean prediction. Delft3D Model was implemented in the study of the hydrodynamics of San Quintin Bay, however, uncertainties that propagate through simulations of future are mostly unknown, and was not tested in this region. Here is where Data Assimilation (DA) techniques play an important role. This is the first time Data Assimilation has been performed in San Quintin Bay, and it has proven to be a starting point with very promising preliminary results. Using a single machine with 25 Gb RAM, 7-day hindcasts can be done in 8 hours, and 7-days forecast can be done in 14 minutes. This ability is of great importance within the context of the operational forecasting of water levels and currents in the area. However, as a result of the findings presented in this paper, we encourage the SQ community to invest in their operational systems in order to take advantage of the information that can be provided by the local environmental variables, and so increase the aquaculture productivity in the area.

Session G-6

**Oral Presentation:** Range & Wetlands

Saturday, March 7, 2015, 9:00 am

**Location:** Templo Mayor

435 9:00 am

*Locating the Main Central Thrust of the Himalayan Orogen: Results from the Melamchi River Traverse of Central Nepal*

Clint Callanan, Geology (U)
David Kimbrough, Geological Sciences

The Main Central thrust (MCT) is the major thrust fault of many east-west oriented faults in the Himalayan Orogen. These faults are responsible for over one-hundred kilometers of crustal shortening as the Indian plate has pushed under the Eurasia plate to form the Himalaya. The MCT is a ductile shear zone marking the fault boundary between generally crystalline rocks of the Greater Himalayan sequence (GHS) to the north from generally low-grade to unmetamorphosed rocks of the Lesser Himalayan sequence (LHS) to the south. In many places however complications make this boundary hard to identify. The central Nepal Himalaya is one of these complicated areas because the rocks here do not contrast with one another strongly. This study focuses on detrital zircon U-Pb geochronology of three rock samples along a traverse of the Melamchi river valley that span the presumed location of the MCT in this area. The zircon U-Pb ages from these samples should be able to distinguish between Late Proterozoic to Paleozoic GHS rocks from Proterozoic LHS rocks. Samples locations were determined by regional lithology, stratigraphy, and structural deformation indicative of a major thrust fault. Zircons were mounted with standards at SDSU and analyzed by Laser Ablation Multi-collector ICP Mass Spectrometry at the University of Arizona LaserChron Center. Zircon U-Pb ages from the three samples were plotted on relative age-probability diagrams for visual comparison with one another. All three samples are similar to another with age-probability peak ages between 1100 Ma–750 Ma indicating an affinity with GHS rocks. The Kolmogorov-Smirnov statistic was used to compare the age distributions under the null hypothesis that the samples are drawn from the same distribution. Comparison of each pair of samples using the K-S test yields P-values that are all >0.5 indicating that these grains could have been randomly sampled from the same population. The results of this study indicate that the location of the MCT is to the south of the area where these samples were collected. Further sampling and mapping is necessary to accurately map the location of the MCT across the Melamchi river valley in central Nepal Himalaya.
**436  9:15 am**

*Effects of speeds of tidal currents on feeding activity and prey selection of California killifish, Fundulus parvipinnis*

Jaimie L Savoie, Biology (U)
Brian Hentschel, Biology

Abstract: This study focused on the effects of hydrodynamics, specifically tidal current speeds, on the feeding activity and prey selection of the California Killifish, *Fundulus parvipinnis*, in soft-bottom estuarine ecosystems. It is hypothesized that fast tidal current speeds could decrease *F. parvipinnis* feeding rates and cause a shift to prey items disturbed by faster flow speeds. It is anticipated that this study will provide knowledge about the effects of current speeds on salt marsh ecosystems that can be used when planning future restoration projects. To test this hypothesis, *F. parvipinnis* were caged in the Tijuana River National Estuarine Research Reserve for three hours periods, constraining the fish to feed on the natural sediment community during different current speeds. One trial was during a period of low current speeds including the slack Higher Low Water portion of the mixed-semidirunal tidal cycle and the other trial was during the period of fastest current speeds three hours before or after slack Higher Low Water. The fish were recovered from the field, euthanized, and dissected in order to collect data for gut fullness and gut content analysis. Three preliminary trials have been conducted but have not yielded statistically significant results. The fish in both tidal conditions for all three trial days did not feed enough for the data to be used in statistical analysis. The trials show no noteworthy differences between the feeding rate and selectivity of the two tidal current speeds. The preliminary data that has been collected has not been sufficient to conduct analysis and thus, as a result of these limitations it is not yet possible, to come to a conclusion about the validity of the hypothesis. More trials are needed before the collected field data can be used in statistical analysis to yield significant results.

**437  9:30 am**

*The benefits of wetlands filtering out pollutants over time: do they wane or stay strong?*

Ray Hartfield, Mathematics (U)
Raquel Aguilar, Gustavo Rodriguez
Diana Verzi, Mathematics

In Imperial Valley, California, a series of pilot wetlands were created to detoxify the water from the most contaminated river in the United States: the New River. The New River flows north from the Colorado River in Baja California Norte, Mexico, across the International Border, into the United States, through the Imperial Valley, and drains into the Salton Sea. Numerous pollutants within the New River contaminate the water. The elements examined in this study are: nitrogen, phosphorous, and coliform. The wetland examined is located in the region of Brawley, CA. Data from the local Imperial Irrigation District show scientific proof that this wetland has reduced the amounts of pollutants within the river. While the wetland has proven to be effective, will the New River continue to reap benefits from the wetland, or will those benefits diminish? Have the benefits diminished already? Statistical methods were used to analyze the pollution removed with time and temperature as independent variables. In the beginning of the wetland’s lifespan, the amount of pollutants removed was noticeably efficient. However, as time went on, the quantity of pollutants removed gradually decreased, and showed signs of reaching a positive lower bound. Results demonstrate the wetlands are effective, but special attention must be given to the latter years of its lifespan. The New River is a vast body of water and must be cleaned consistently for the pilot project to achieve its end results.

**438  9:45 am**

*The Strength of an Herbivore-Induced Defense in the Brown Seaweed Silvetia compressa is Weakened by the Presence of the Red Seaweed Chondracanthus canaliculatus*

Breanna Goldsby, Biology (U)
Jeremy Long, Biology

Interactions between primary producers and herbivores have profound effects on community and ecosystem processes. In marine communities, a high percentage of macroalgal production is lost to herbivores. As an evolutionary response to grazing, primary producers have adopted a variety of defenses, including the inducible production of defense metabolites. *Silvetia compressa*, a brown alga abundant in the upper intertidal zone, has been known to change palatability in response to herbivore grazing; however, these studies have been conducted in the absence of other seaweed species. Thus in this study, I investigated snail-induced changes in palatability of the target seaweed, *S. compressa* in the presence and absence of a highly palatable seaweed species, *Chondracanthus canaliculatus*. I predicted the presence of this preferred species would decrease grazing on *S. compressa*, reducing the strength of inducible defense. To test this hypothesis, I exposed *S. compressa* to grazing by the snail *Tegula funebralis*, in the presence and absence of *C. canaliculatus*. After two-weeks, I compared the relative palatability of grazed and non-grazed *S. compressa*, when paired with either *S. compressa* or *C. canaliculatus*. I found that snail preference for grazed and non-grazed tissues...
significantly differed when *S. compressa* had been paired with itself during the induction phase, but did not significantly differ when paired with *C. canaliculatus*. To further address whether inducible defenses differed between treatments, I conducted an additional experiment directly comparing the palatability of *S. compressa* when it was paired with itself vs. *S. compressa* paired with *C. canaliculatus*. I found that snails preferred grazed *S. compressa* grown with *C. canaliculatus* compared to *S. compressa* grown alone, even though grazing rates were equal during the induction phase. There was no difference between *S. compressa* non-grazed treatments, suggesting that the presence of only *C. canaliculatus* affect the induced response.

439 10:00 am

**Open Houses on the Open Range: Rangeland Conversion in San Luis Obispo County.**

Kyle Walsh, Geography (M)
Kathleen Farley, Geography

Rangelands are the dominant ecosystem type in San Luis Obispo County, California. They provide a diverse array of ecosystem services to society, including forage production for livestock, water regulation, and carbon sequestration, among others. The conversion of rangeland ecosystems to urban development and intensive agriculture influences the degree to which these landscapes can provide ecosystem services. However, rangeland conversion is not well documented at the county level in California. This study examined (1) the extent of rangeland conversion in the county during the past twenty years, (2) the drivers of conversion, and (3) the perceptions of ecosystem service provision held by ranchers and land managers in the region. We used a mixed-methods approach including geographic information systems analysis, surveys, and semi-structured interviews in order to address these three questions. Rangeland conversion in San Luis Obispo County during the last twenty years has been concentrated around urban centers and in the northern part of the county. Further rangeland conversion in the county may be slowed by severe drought, groundwater use restrictions, and increasing interest among landowners in long-term estate planning and conservation easements. The provision of rangeland ecosystem services in the county is largely contingent on both individual range management practices and an influx of more intensive agriculture. Our findings provide insight from ranchers and land managers into the nature of rangeland conversion in San Luis Obispo County and the influence of land use decisions on the provision of ecosystem services in the region.

440 10:15 am

**Climate Change and Development Initiatives in Napo, Ecuador**

Laurel Hanscom, Geography (M)
Kathleen Farley, Geography

Ecuador is recognized as one of the world’s “hot spots” for biodiversity, ranked second in the world in density of species per hectare and home to nearly twice as many species of birds as the United States and Canada combined (Myers, 1988). However, rapid population growth and expanding agricultural production are the source of extensive deforestation where agricultural production meets primary forests (Carr, 2004). The Amazon region of Ecuador has experienced much higher fertility rates than the national and regional averages, and the pressure on available natural resources mounts (Carr & Pan, 2002). Additionally, the Intergovernmental Panel on Climate Change (IPCC) reports suggest climate change will likely have major impacts in the Ecuadorian Amazon, including increased drought, decreased soil moisture and relative humidity, increased incidents of extreme weather events, and increased soil erosion (Kirtman, et al., 2003). As such, climate change mitigation and adaptation is a growing concern for organizations in and around the region.

The purpose of this project and trip to Ecuador was to assess the current state of institutional support surrounding climate change awareness and adaptation, and the related actions being taken by local, regional, and national governmental bodies in the province of Napo, Ecuador. I met with leadership in various organizations, including municipal and provincial governing bodies, to find out what efforts are being conducted currently, gain understanding of their priorities, and ask about potential partnerships for future endeavors. Several themes emerged regularly throughout the 25 interviews conducted with leaders of local organizations, including municipal and provincial governing bodies, to find out what efforts are being conducted currently, gain understanding of their priorities, and ask about potential partnerships for future endeavors. Several themes emerged regularly throughout the 25 interviews conducted with leaders of local organizations, especially related to the importance of economic and cultural components in environmental projects and the emergence of climate change focus in development projects. My research suggests that the vast majority of conservation projects in the region have a clear focus on culture and economic development, and that climate change is of growing interest as a lens through which to address environmental issues in the region.
Session G-7
Oral Presentation: Cultural Symbols
Saturday, March 7, 2015, 9:00 am
Location: Visionary Suite

441 9:00 am
User Agreement: the Relationship Between "User" and "Owner"
Deborah Fisher, English (U)
Jessica Pressman, English

Every day millions of people log on or enter a website without even looking at what they, as "users," are agreeing or consenting to. User Agreement has become a statement that we have conditioned ourselves to bypass without reading, because we want to find what we need right away. We have "conditioned" ourselves by automatically clicking "Agree" or "I Consent," by syncing all our apps because it seems easier, and scrolling through a document because it appears too time consuming.

Is this considered laziness or too trusting? However, perhaps the User Agreement is something more than a statement we bypass; perhaps, it can be seen as a way to reflect our current situation. By analyzing certain company's "User Agreements," we see that the so perceived "free" internet comes at a price which affects the relationship between "user" and "owner."

By using Scalar, a site which allows anyone to create or have access to a book or project, the analyses of a User Agreement, particularly Facebook's User Agreement, is in-depth. There are links within the User Agreement leading to definitions of words and explanations and the format allows whoever to explore the project and really understand User Agreement, which would be the exact opposite of the usual experience most people have with User Agreement. This concept emphasis the argument within the project and allows for further understanding of the relationship between "user" and "owner."

442 9:15 am
Tracing Chinese Autonomy in the Poetry of Modern China
Simon A Shieh, English (U)
Phillip Serrato, English and Comparative Literature

Through the poetry of Guo Moruo (1892-1978) and Bei Dao (1949-present), I will discuss the origins and development of autonomy in modern China. I will explore Guo Moruo's ideas of autonomy from 1892 until roughly 1925 through an analysis primarily of his poetry, supplemented by his written correspondence, criticism and essays. Guo Moruo's life and work, in his pioneering ideas about the self, can be seen as a microcosm of autonomy's inception and early development in China. He was indeed one of the first Chinese writers to turn his back on tradition and embrace personal autonomy in his quest for freedom.

The life and writings of Bei Dao can similarly be understood as representative of the evolution of the concept of autonomy in China through to the present day. Bei Dao witnessed the fall of Mao and the subsequent rise of China as a world power, paralleled by the usurpation of the Communist ideal by the individualist doctrines of opportunism and consumerism. Bei's poetry dissect the variety of problems that have surfaced as a result of Chinese peoples’ rapid moral pivot towards autonomy.

My analysis examines both the content of certain poems, along with the act of poetic creation in their relation to their writers' search for freedom in autonomy. The poetry of an individual is a window into his/her mind. The poetic line and the human action are both symbols, or many symbols, from which an observer interested in their relation to an abstract concept—in this case freedom—can interpret significant meaning. The poem is a reflection of the ways in which an individual interacts with social structures of significance, and it is the very nature of this interaction with which my exploration of autonomy is primarily concerned.

443 9:30 am
The Light and Dark of the Abyss: Binary Oppositions in and out of "Watchmen"
Amanda M Hurych, English (U)
Jeanette Shumaker, English

Long has the comic book and graphic novel stood waiting on the outskirts of what could be called literary achievement. The nuances that can be found in these texts reveal how deep literary meaning can originate from them. This research focuses on the multiple binaries that can be found to exist in Alan Moore and Dave Gibbons' graphic novel, Watchmen. The graphic novel shows readers an alternate reality in which costumed crime fighters exist and influence the course of history. This research draws upon several literary criticisms of Watchmen and journal articles relating to the postmodernist qualities of the text. Using some aspects of deconstruction, this article argues that each binary found within the text decentralizes the text along with the intertextual elements and the disjointed narrative. The research makes no assertions that this was Moore and Gibbons’ purpose when creating the text, but examines how choices made by the authors could have led to the present graphic novel. Most prominently scrutinized are the character binaries found between the heroes Rorschach and Ozymandias.
**ABSTRACTS**

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**224**

**STUDENT LEVEL:** (U)=Undergraduate; (M)=Masters; (D)=Doctoral

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**444 9:45 am**

*Queens of Noise: Patti Smith, Joan Jett, and Women’s Spaces in Punk Rock*

Cameron M Satterlee, History (U)

Eve Kornfeld, History

This presentation outlines the contributions of Joan Jett and Patti Smith with regards to the representation of women in the punk rock subculture. It asks how Jett and Smith empowered women through their performances of sexuality in the burgeoning punk rock movement. The scope of the presentation is limited to their careers in the first wave of the punk subculture, which lies roughly between 1975 and 1982. The methods of analysis used are lyrical analysis, role analysis, and poststructural analysis. It argues that Joan Jett and Patti Smith were active and effective promoters of women’s sexual expression in music and that they created vital spaces for the discussion of both heteronormative and non-heteronormative sexuality in punk rock music. The main primary sources are drawn from the songs that the artists wrote and performed. The primary sources are backed by secondary sources from social scientists who grew up listening to these women and the impact that they had on them. The presentation backs up existing research on the influence of Jett and Smith and includes a more thorough interpretation of their works using historical methods of analysis. My presentation will impress upon listeners the importance of these women in music culture, especially in the punk rock subculture; how they defined themselves and how their liminal definitions of sexuality upset the norms of American society.

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**445 10:00 am**

*Problem Posing and the Prospect of Reforming the Sciences and the Humanities*

Jeremy Bijan Juybari, Economics and Interdisciplinary Studies (U)

Trevor Auldridge

Dr. Jung Choi, Sociology

Over the past 30 years, there has been a burgeoning sense of antagonism between the Sciences and the Humanities. However, much popular analysis, as exemplified by Steven Pinker and Leon Wieseltier, has fixated on the reality of academic friction—and the respective need for “reform”—more than the foundations of such acrimony. This paper seeks to take the Science-Humanities debate away from the description of antagonistic realities and into an exploration of the socio-political roots of such disciplinary rivalry. By employing a comparative-historical analysis, we argue that the vocationalization and corporatization of United States universities over the past two centuries has disproportionately impacted the balance between the Sciences and the Humanities. Furthermore, we argue that this imbalance and corresponding educational “scarcity” is the crux of the Science-Humanities chasm. We conclude that the Sciences and the Humanities can reform each other—and that disciplinary antagonism can be quelled—through an institutional emphasis on the use of the “meta-question” aspect of Problem-Posing educational philosophy.

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**446 10:15 am**

*Identification and Ideographs: Appeals to Nature and Natural in Environmental Advertising*

Mary M Vidal, Rhetoric and Writing Studies (M)

Ellen Quandahl, Rhetoric and Writing Studies

My research in the field of Rhetoric concentrates on environmental discourse, in particular “green” advertising. In this discussion I will focus on the ways that Seventh Generation’s “sustainable” and “toxic-free” household and beauty products and their packaging rely on ideographs to avoid alienating ideologically disparate groups. In order to examine this issue, I adopt renowned twentieth-century rhetorician Kenneth Burke’s conceptions of “identification” as both necessary for persuasion and reliant on division, and reconcile them with rhetorician and social critic Michael C. McGee’s definition of “ideographs,” or “empty symbols.” I suggest that for the purposes of environmental advertising, “nature” and “natural” function as “ideographs” and, thereby, as rhetorical loopholes in the problem posed by persuading (and identifying with) a variety of ideological groups. Specifically, I assert that over time “nature” and “natural” have become increasingly ambiguous terms that are both imbued with and are void of meaning; in other words, these terms are empty symbols in which viewers can see whatever they wish to project into them.

To demonstrate this function of ideographs in environmental advertising, I concentrate on appeals to “nature” and “natural” on three Seventh Generation products: “Natural Dish Liquid,” “100% Unbleached, Recycled Paper Towels,” and “Natural Skin Serum.” By analyzing the rhetorical approaches that these products rely on, this examination concentrates on the means that Seventh Generation uses to position consumption as an environmentally friendly activity, despite the acknowledgement amongst environmentalists that consumption will always yield negative environmental effects. Moreover, I argue that corporations with pro-environmental practices place blame for environmental degradation on consumers while simultaneously perpetuating the constant consumption of the capitalist system and propagating the myth that consumption is a solution to environmental problems. This will not be to say that an entire economic upheaval is necessary, but instead to encourage a critical look at environmental advertisements and consumption behaviors more generally.
Session H: Oral Presentations

Session H-1
Oral Presentation: Cultural Boundaries
Saturday, March 7, 2015, 10:30 am
Location: Pride Suite

447 10:30 am
_Rio con Cogada: A History of the New River_
Marcie A Rodriguez, History (U)
Diana Verzi, Mathematics


The New River, located primarily in California’s Imperial Valley, is known as one of the most polluted rivers in the United States. It is used as a dumping ground for waste water of all kinds for both Mexico and the United States, and its flow is completely unnatural, relying entirely on the waste waters that make it so polluted. Pesticides, diseases, chemicals, and fertilizers are among the issues that the New River faces. This river winds its way through the Mexicali, Imperial, and Coachella Valleys, finding its way through countryside and cities alike, ultimately pouring its water into the Salton Sea, California’s largest lake. Life along this river continues, despite the biohazard within walking distance of their homes, but it does chance how members of these communities exist along this river. They must learn to avoid this river, or else face terrible illnesses. They also are calling for something to be done about this river. Some simply want the New River to be covered up, as they have done in Mexico, others would like it to be cleaned up. Though there are some efforts, such as the Wetlands Project, but more clearly needs to be done.

448 10:45 am
_Indigenously Remixing Culture_
Lora S Paz, English and American Indian Studies (U)
Margaret Field, American Indian Studies

This research examines how indigenous peoples have used various types of technology and interfaces in order to revitalize their culture, languages, traditions, and histories and to bring awareness of issues that Native communities face in the modern world. It is vital to preserve the ways of the ancestors in the developing world, and remix allows this to happen. Taking the old ways of the ancestors and updating these ways with technology allows these teachings to be passed down and preserved from generation to generation. The digitization of the oral histories of elders is an important factor when it comes to the preservation of a group of people and their culture. Because the elders have experienced a great deal in their lifetimes due to the changes in federal Indian policy, it is vital to preserve their experiences and histories for future generations.

As the stories and traditions are passed down from person to person, they are not told in the same exact way that the speaker initially said; therefore, the traditions or histories are not told exactly the way they were originally told. It is important to archive the history of the elders because capturing their knowledge on tape can not only be preserved for many generations to come, but it is told exactly the way that they told it. Indigenous peoples are an extremely marginalized group due to the history with the United States and federal Indian policy; therefore, it is important for these groups to continue to thrive in their ancestral ways so that their identities as “Indians” can be retained.

I went out to the Santa Ysabel Reservation to archive the history of elders. I went to the tribal chairman to get permission for the project, had to ask for permission to attend an elder’s council meeting, and present the project to the elders. Many of the elders did not want to do the project for a number of reasons. However, I got one elder, Myrtle Osuna Welch, who was willing to do the project.

449 11:00 am
_What is the pronunciation of Los Angeles?_
Eric J Spoelstra, History (M)
Eve Kornfeld, History

The question of how to pronounce Los Angeles has baffled both city residents and visitors. In the early twentieth century, this question was causing civic and social anxiety. City officials interpreted the different pronunciations as cacophonous sounds poorly reflecting city pride. In 1908, city librarian Charles Lummis went on a sonic reform movement to conform the city residents to a fixed pronunciation of the city’s name. While his intentions were applauded, his pronunciation was rejected, and a debate ensued. A close analysis of private correspondences, editorials, and the newspaper columns devoted to the debate show how pronunciation was thought to function as a performative ritual creating and reinforcing civic unison. Residents expressed their civic duty through vocalizing the proper pronunciation of the city. Different pronunciations reinforced or hindered sonic associations to the city. Many of the city elite attempted to appropriate the Spanish mythos and language through an exoticized Spanish
pronunciation that dismissed local usage. Others wanted to use the name’s religious content to associate the city to heavenly characteristics. These sonic associations worked concurrently to give the city a multi-leveled sonic meaning that hindered any official pronunciation or regulation. This research builds on sound studies and performative rituals as well as the formation of a Los Angeles identity. It contributes to the study of Los Angeles by showing how pronunciation was a focal point of identity formation related to racial appropriation and religious assumptions.

450 11:15 am

Letters from Oma: The Study of Abandonment through the Life of a Mixed Race Orphan Living in a Post-Colonial Society

Jayme M Navalle, History (M)
Eve Kornfeld, History

The pencil is a pivotal tool in the field of history, and a valuable guardian of family memory. Its use can be appreciated through mediums like letters, diaries and memoirs. These pieces become invaluable as a demonstration of history in the making; they can be utilized as windows to the lives of those who precede us. There are times, however, when grave situations encourage the act of abandoning the pencil. More crucially, these grave situations can make its eraser appear more powerful than its lead. This decision causes the next generations to inherit scattered pieces of paper coated with eraser shavings. They are left to trace the faded remnants of word that were once imprinted with a heavy hand. Eventually, in this generation or the next, they take out their own newly sharpened pencils and try to fill in the blanks.

In 1938, five year old Indo-Dutch girl Ingrid Francis said goodbye to her mother as she entered the Jesuit orphanage near her hometown of Batavia, Dutch East Indies. The decade that followed was plagued by foreign occupation, World War II, a national fight for independence, and eventual decolonization. In the midst of this national and international upheaval, Ingrid simply longed for her family. The life of Ingrid, or Oma as her grandchildren called her, represents both family and national abandonment. As a young child, she became orphaned. As an adult, she was orphaned yet again. This time, however, it was not by her family, but by her heritage. After independence, her mixed race status made her unpopular with her Fatherland of Holland and Motherland of Indonesia. She and her family found a home in California where she chose to seldom return to childhood memories. While Ingrid’s story is unique, her hardships are shared with several people of mixed race, especially following decolonization. This presentation will address the motives behind putting down the pencil, the hurt that led to erasing the past, and the wonder that pushed a family to begin writing again.
Session H-2

Oral Presentation: Cancer, Support & Media
Saturday, March 7, 2015, 10:30 am
Location: Park Boulevard

452  10:30 am

A New Kind of Normal: Two Families Balance the Complicated Communicative Process of Support—Post-Cancer Diagnosis
Sarah-Jane K Winstead, Communication (Applied) (U)
Kristen Gascon
Patricia Geist-Martin, School of Communication

Cancer is a major contributor to mortality rates in the United States within our society today. An estimated 580,350 Americans will die from cancer this year, “corresponding to 1,600 deaths per day” (Siegel, Naishadham, & Jemal, 2013, p. 16). When families are faced with the life altering reality of a cancer diagnosis, dealing with everyday communication becomes exponentially more complex. Research reveals that the intricacies of support surrounding cancer are multi-faceted, and families often experience a wide range of conflicts centered upon the shifting of roles and identities. This research examines the complexities of communicating support within two families who face life after a member’s cancer diagnosis. The first author is a cancer survivor and the second author is a sister to a family member who is a cancer survivor. Both authors conducted either face-to-face or Computer-mediated interviews with all of their family members. By juxtaposing the narratives of two families’ faced with a cancer diagnosis, we see a struggle to understand their new identities and roles as they face a life of uncertainty. Results reveal how essential outside sources of support are for families who are learning to live life with this new post-cancer diagnosis reality. A cancer diagnosis is never something people expect, however navigating through this loss of control and insecurity complicates the communicative process of giving and receiving support wherein families discover new sources of strength within the family unit.

453  10:45 am

Learning from Celebrities: Cancer Information in the Media
Julia H Drizin, Psychology (M)
Kristen Wells, Psychology

Breast cancer is one of the most widely discussed chronic illnesses in American media. One type of breast cancer news coverage is a celebrity’s disclosure of a personal experience with breast cancer. These disclosures are often emotionally charged and draw public attention to breast cancer, but little is known about how effective they are at increasing breast cancer knowledge. In May 2013, the New York Times published an op-ed authored by celebrity Angelina Jolie in which she discussed her inheritance of a breast cancer gene (BRCA1) mutation, her increased risk of breast cancer, and her decision to undergo a preventative double mastectomy. This study examined BRCA knowledge and breast cancer worry among college women who were aware and were not aware of Jolie’s decision. One hundred and ninety-eight female undergraduate students at San Diego State University completed an online questionnaire assessing their family history, knowledge of BRCA gene mutations (assessed using a scale developed for the National Center for Human Genome Research Cancer Genetics Studies Consortium), awareness of Jolie’s decision, and breast cancer worry (assessed using the Lerman Cancer Worry Scale-Frequency item). T-tests revealed that women with a family history of cancer were more likely to be aware of Jolie’s decision, t(194) = -2.767, p = .006. Additionally, those who were aware of Jolie’s decision worried more about breast cancer than those who were unaware, t(196) = -1.736, p = .084. However, they were no more knowledgeable about BRCA gene mutations, t(182) = -.644, p = .521. This study indicates that people with a family history of disease may pay more attention to a celebrity’s disclosure regarding their history of that disease. However, while celebrity health disclosures might increase awareness of a health issue, they do not necessarily make the public more knowledgeable about it.

454  11:00 am

Advice about Cancer Disclosure from Cancer Survivors in College
Tonya M Pan, Clinical Psychology (D)
Vanessa Malcarne, Psychology

Cancer patients and survivors experience challenges surrounding disclosure of their history of cancer, and little guidance exists regarding this important topic. Seven men and 13 women, ranging in age from 18 to 30 years old (mean = 21 years, standard deviation = 2.8 years), participated in an individual, semi-structured interview. Participants’ ages at diagnosis ranged from 18 months to 22 years old (mean = 13 years). The amount of time from first cancer diagnosis to the study interview...
ABSTRACTS

Student Level: (U)=Undergraduate; (M)=Masters; (D)=Doctoral

ABSTRACTS

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Two participants had experienced cancer recurrences. Two participants started college while undergoing cancer treatment, and five participants were diagnosed with cancer while attending college. Among the other 13 participants, the approximate time elapsed between treatment completion and the study interview ranged from two to 18 years (mean = 11 years). As part of a larger qualitative study, we asked participants, “What advice would you give to other young cancer survivors about sharing their cancer history?” Participants’ responses fell into three thematic categories: 1) encouraging disclosure of cancer diagnosis and highlighting the benefits of disclosure, 2) offering support to other young cancer survivors, and 3) discouraging cancer disclosure and warning about possible unwanted reactions to disclosure. Benefits of cancer disclosure mentioned by participants included connecting with other people and strengthening relationships, acknowledging and taking ownership of one’s cancer survivor identity thereby enhancing personal development, contributing to a larger purpose, and making a positive impression. Four types of supportive advice were suggested for other young cancer survivors: 1) finding courage and strength, 2) being comfortable with one’s self and not being ashamed of one’s experience, 3) remaining cognizant that disclosure is one’s decision, and 4) dealing with other people’s reactions. Finally, participants advised against early cancer disclosure to avoid scaring people away. Cancer disclosure is a personal, highly individualized experience, but these words of wisdom from young survivors may provide useful guidance for other young cancer survivors.

455 11:15 am

Mapping the Online Social Network of Cancer Bloggers

Sharon H Baik, Clinical Psychology (D)
Kristen Wells, Psychology

Social media (e.g., social networking sites, blogs) are interactive Internet-based communication tools that are increasingly being used to find and share health-related information. Cancer bloggers represent users that share their cancer experiences on the Internet. Bloggers both provide and seek emotional and informational support. While social media have the ability to quickly disseminate information and reach large audiences, cancer blogs as a communication platform have not yet been well studied. An online social network analysis was conducted on 89 active cancer blogs, using web crawler software to extract hyperlinks from each site and record inter-linking between blogs. Results indicated that the overall online cancer blog network is widely distributed and decentralized, with a number of separate clusters of blogs. However, the pattern of inter-linking demonstrated that cancer blogs are clustered by cancer type, indicating that cancer bloggers link to other bloggers with the same cancer. Additionally, a deeper network analysis identified breast cancer blogs as the most significant and highly linked blogs, indicating their prominence and influence within the cancer blog network. This study provides evidence of the interconnected nature of cancer bloggers by cancer type, with breast cancer bloggers currently dominating this online community. Efforts to disseminate cancer-related information may focus on identifying key breast cancer bloggers, or creating a platform that links key bloggers of various cancers to create a more inter-linked network and expand its reach within this online community.

Session H-3

Oral Presentation:

Solar Energy, Sand & High Temperature Materials
Saturday, March 7, 2015, 10:30 am
Location: Tehuano

456 10:30 am

Heliostat Field Design and Optimization for a Small Particle Solar Receiver

Eduardo Palomar Trullen, Mechanical Engineering (U)
Fletcher Miller, Mechanical Engineering

As part of a SunShot project the SDSU Combustion and Solar Energy Laboratory is designing a 5 MWth prototype small particle solar receiver to test at the National Solar Thermal Test Facility at Sandia. Unlike a conventional tubular receiver, the angle at which the radiation arrives at the receiver plays a large role in a small particle solar receiver design due to the volumetric absorption. In this paper we consider from a blank slate what the ideal heliostat field layout should be for a small particle receiver both with and without a secondary concentrator. Simulations with secondary concentrator suggest increased solar receiver efficiency and a boost in receiver outlet gas temperature.

For this research we obtain results using two computer codes called MIRVAL from Sandia National Laboratory, and SolTrace. MIRVAL has been modified to improve its efficiency, and an additional code for the secondary concentrator has been employed. Both codes generate solar rays using a Monte Carlo Ray Trace method and then compute some of the different radiation aspects in the heliostat field. Our program uses that output to calculate the receiver efficiency as a function of heliostat field layout, tower height, and time of day.

We have studied many different shapes and distributions known of the heliostat field, changing all the variables and comparing all the results given by MIRVAL and SolTrace looking for the optimal layout on an annual basis.
To study the field's shape, we have to study the radiation performance on the field all along the year to locate the best position and study the efficiency of every individual mirror to give shape to our heliostat's field, removing the heliostats with worst performance.

We have studied a new distribution mimicking the plant form, known as phyllotaxis. This spiral has phyllotactic patterns where the numbers of spirals which can be traced through a phyllotactic pattern are predominantly integers of the Fibonacci sequence.

This new distribution provides better results than the others, obtaining a better efficiency per field's square meter and a higher number of rays and energy reaching the concentrators from all the surrounding field.

457 10:45 am

**A Comparison Of The Monte Carlo Method To The Discrete Ordinates Methods In Fluent For Calculating Radiation Heat Transfer In A Particle Receiver**

Eugene Cho, Mechanical Engineering (M)
Fletcher Miller, Mechanical Engineering

The Combustion and Solar Energy Laboratory (CSEL) at San Diego State University is developing a Small Particle Heat Exchange Receiver (SPHER) to absorb and transfer heat from concentrated solar radiation. The SPHER is to be used with a Concentrated Solar Power (CSP) system where a heliostat field is used to direct highly concentrated solar radiation on the optical aperture of the SPHER. The heated fluid flow is then used to power a turbine to generate clean renewable electricity.

This paper focuses on comparing a Computation Fluid Dynamics (CFD) model using the ANSYS FLUENT Discrete Ordinates Model and a code developed by the CSEL which uses a Monte Carlo Ray Trace (MCRT) method to estimate the spatial and directional distribution of radiation within the cavity. The new numerical Discrete Ordinate Model of the SPHER is divided into two main components: 1. The input solar radiation calculated using MIRVAL, developed by Sandia National Laboratory which uses the MCRT method for the heliostat field, 2. Defining the input solar radiation given by MIRVAL into a boundary condition that will input into CFD software ANSYS FLUENT. The alternative approach is to replace step 2 above with a MCRT simulation of the radiation within the cavity. This research focuses on developing the radiation model entirely within FLUENT by a user defined code that defines the proper boundary conditions.

As an initial study, the Monte Carlo program VEGAS was used to calculate the incoming solar radiation from the solar simulator at SDSU for the lab scale receiver. The proven boundary conditions were then implemented in the lab scale receiver with a participating medium, a condition that VEGAS cannot treat. In that case a second Monte Carlo code, developed by the CSEL at SDSU, was used for comparison to the Discrete Ordinates Method. In addition, a benchmark case using a diffuse input solar radiation was also calculated for the SPHER along with the input file from MIRVAL. The results show a wider distribution of radiation for the diffuse case and a narrow concentrated distribution for the case using the MIRVAL input file, as expected.

458 11:00 am

**On and Off-Design Performance of a Combined Cycle Solar-Fossil Hybrid Gas Turbine Plant**

Matthew Virgen, Mechanical Engineering (M)
Fletcher Miller, Mechanical Engineering

All current commercial concentrating solar power (CSP) plants operate at relatively low thermodynamic efficiency due to lower temperatures than similar conventional plants and due to the fact that they all employ Rankine conversion cycles. I present here an investigation on the effects of adding a bottoming steam power cycle to a hybrid CSP plant based on a Small Particle Heat Exchange Receiver (SPHER) driving a gas turbine as the primary cycle. Due to the high operating temperature of the SPHER being considered (over 1000 Celsius), the exhaust air from the primary Brayton cycle still contains a tremendous amount of exergy. Not only do we expect the efficiency of this model to be competitive with conventional power plants, but the water consumption per kilowatt-hour will also be on reduced by nearly two thirds as compared to most existing concentrating solar thermal power plants as a benefit of having air as the primary working fluid, which eliminates the condensation step present in Rankine-cycle systems.

Coupling a new steam cycle model with the gas-turbine CSP model previously developed at SDSU, a wide range of cases were run to explore options for maximizing both power and efficiency from the proposed CSP combined cycle gas turbine (CGT) plant. The code, written at SDSU in Matlab, first iteratively runs over a range of temperatures and pressures to find the optimal design point parameters. Due to the generalized nature of the bottoming cycle modeling, and the varying nature of solar power, special consideration had to be given to the behavior of the heat exchanger and Rankine cycle in off-design scenarios. This is especially true, since variable guide vanes on the compressor allow the mass flow rate in the Brayton cycle to be varied depending on the solar input to the receiver, thus changing the power available to Rankine cycle. Correlations are used to find new heat exchanger efficiency and resultant overall power from both cycles based on the deviation from the design point case. Current results show that the combined cycle efficiency can reach up to 50%, significantly higher than any solar power plant currently in operation.
**459  11:15 am**  
**Strength and Ductility of Polymer Bonded Sands**  
Nicole F Garcia, Civil Engineering (M)  
Julio Valdes, Civil Engineering

Cementation can be used to improve soil properties for the construction of pavement base layers, in the protection of slopes of earthen dams, for liquefaction mitigation, and in the improvement of ballast layers for railroad tracks. The present study was carried out to examine the strength characteristics of an artificially cemented soil created by mixing quartz sand and polyethylene fines, and subjecting the mixture to heating (for polymer softening) and cooling (for curing). The unconfined compression strength was found to decrease with decreasing polymer content, in a trend similar to that observed for mineral-cemented soils. The triaxial shear strength was found to vary nonlinearly with confinement, with cementation controlling the strength at low confinement and friction controlling the strength at high confinement. Acoustic emission monitoring proved to be a useful tool for revealing the pre-failure strain associated with debonding, and therefore, for enabling potential healing of the material via heating.

**460  11:30 am**  
**An Evaluation of Containment Materials for High Temperature Phase Change Metal Thermal Storage**  
David J Curran, Mechanical Engineering (M)  
Fletcher Miller, Mechanical Engineering

Two features of concentrated solar power that will promote widespread adoption are higher operating temperatures and Thermal Energy Storage (TES). In conjunction with Thermaphase Energy, I am developing the Liquid Metal Thermal Energy Storage System, an innovative TES system based on phase change in Al-Si and Mg-Si alloys (PCM) that stores thermal energy at temperatures above 800°C. Containment vessels must be simultaneously compatible with the PCM and high-temperature oxidizing gases (e.g., air), facilitate heat transfer between PCM and air, and accommodate internal stresses in TES operation.

To evaluate the compatibility of any of the candidate vessels with PCM, I constructed an experimental set-up in which the vessel and PCM could be exposed to high temperatures (up to 1100°C) in an inert or air environment at 1 atmosphere of pressure. Each vessel is exposed to a thermal cycle, alternating between variable temperatures above and below the melting temperature of the PCM. A ceramic-metallic material (TCON) initially showed promise; however, TCON produced macroscopic nodules during thermal cycling, eliminating it from further consideration. On the other hand, siliconized silicon carbide (SiSiC) performed well when exposed to high-temperature, AlSi36, MgSi56, and air. I conducted additional thermal cycles with variable temperature profiles, duration of test, and gas environments. Before and after each thermal cycle, I conducted a mass analysis and performed SEM and EDS analysis on prepared samples. The results confirm SiSiC is a good candidate for a containment vessel.

At this point I am evaluating Morcoset, a silicon carbide-based mortar, for creating an air-tight seal for SiSiC. I assessed the quality of the seal by comparing the mass loss of the system due to Mg vapor escaping the system to that of a controlled system with no alloys sealed after thermal cycling. Results confirmed that Mg vapor did not exit the system. There is still more work to be done, but preliminary results indicate the Morcoset + SiSiC system is a good containment system for AlSi36/MgSi56. In this presentation the results of the long-duration thermal cycling tests as well as electron micrographs of the containment seals and phase change materials are presented.

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**Session H-4**  
**Oral Presentation: Undergraduate Cardiac Biology**  
Saturday, March 7, 2015, 10:30 am  
Location: Aztlan

**461  10:30 am**  
**Design, Expression, and Preparation of an NF-κB p50 Homodimer-GFP Fusion Protein**  
Carlos A Nowotny, Chemistry/Biochemistry (U)  
Tom Huxford, Chemistry

NF-κB is an inducible transcription factor that controls the expression of numerous stress response genes. The prototypical NF-κB protein functions as a complex composed of two subunits known as p50 and p65. In resting cells NF-κB exists in an inactive state within the cell cytoplasm through its noncovalent association with a separate inhibitory protein known as IκB. In response to diverse environmental stimuli, the inhibitory IκB protein becomes phosphorylated, marking it for degradation via the ubiquitin-dependent 26 S Proteasome-mediated system. Free of its inhibitor, NF-κB rapidly migrates into the nucleus where it binds to specific DNA sequences located within promoter regions of target genes leading to their increased expression. Elevated expression of most target genes relies upon the presence of the NF-κB p65 subunit. However, significant amounts of p50:p50 homodimer can be detected in the nucleus of resting cells. Upon
Myosin Storage Myopathy (MSM) is a rare congenital disorder characterized by progressive muscle weakness and hypertrophic cardiomyopathy. MSM is caused by point mutations or a single amino acid deletion in the slow/β myosin heavy chain, which is encoded by the MYH7 gene. Myosin, a contractile protein located in thick filaments of the sarcomere, is vital to muscle structure and function. Previous studies in E. coli have revealed that several pathways may lead to MSM. The molecular mechanism leading to defects in assembly and stability remain unclear. Using Drosophila melanogaster to create mutants similar to the human disease allows us to investigate MSM in a physiologically relevant model. This transgenic model mimics many of the phenotypes observed in humans showing significant impairment in skeletal and cardiovascular function. Analysis of indirect flight muscles uncover defects in the ultrastructure of sarcomeres. The mutations in MSM alter the electrostatic properties of myosin rod structure and are localized around the Assembly Competence Domain, a critical region for thick filament formation. This links the damaging effects observed in MSM to the ability of myosin to form proper thick filaments or develop into protein aggregates. We are analyzing an MSM mutant that will undergo multiple tests to characterize the effect of the mutation on the transgenic Drosophila. Specifically MSM mutant E1914K, occurs when glutamic acid (neutrally charged, E), is replaced with lysine (positively charged, K). Initial data on flight and jump ability show a dramatic decrease in function when compared to wild type. Further investigation into the pathophysiological mechanism of MSM will be explored using a molecular-based approach. Utilizing an in vitro filament assembly assay, and solubility assay will provide data that should lead to the better understanding of the mechanism of this disease.
potential. Antagonizing CPC senescence and aging is an attractive target for interventional and clinical therapies. mTOR is an atypical serine/threonine protein kinase which integrates intracellular and extracellular inputs differentially by mTOR complex 1 (C1) and 2 (C2). mTORC1 mediates cell cycle progression, growth, metabolism, and protein translation whereas mTORC2 regulates metabolism, cell survival, and cytoskeletal organization. PRAS40 (Proline Rich AKT Substrate of 40kDa) is a selective inhibitor of mTORC1 leading to mTORC2 activation thereby promoting cell survival and metabolic maintenance. Through studying the impact of mTOR activity on cellular senescence in CPCs isolated from various mouse strains and comparing them to CPCs from human patients, mTORC1 inhibition will potentially emerge as an approach for improving the stem cell pool. Methods & Results: To investigate the mechanisms contributing to myocardial aging and regeneration, mTOR activity will be analyzed in wild-derived mice, *Mus musculus castaneus* (CAST), relative to common laboratory mouse inbred strain, FVB/NJ and C57/B16. CAST mice display early cardiac aging and CPCs derived from CAST mice display a slower proliferation rate, and increased expression of p53, p21, and senescence associated beta-galactosidase activity, similar to human-derived CPCs. This study will demonstrate the effect of PRAS40 overexpression in CPCs to antagonize phenotypic and molecular senescence, and support survival, proliferation, and cardiomyogenic commitment. Conclusions: The perversiveness of mTOR signaling in metabolism, survival, proliferation, and growth identifies this signaling cascade as an important target for understanding and modulating cellular senescence. PRAS40 mediated inhibition of mTORC1 rejuvenates cardiac progenitor cells, emerging as a molecular therapy to antagonize cellular senescence and to promote cardiac stem cell youth.

The effects of expressing full-length ATF6 on cell viability are unknown. Expression of full-length ATF6 promotes cell viability and does cause cell death. Moreover, promotion of cell viability requires ATF6 transcriptional activity. To test this hypothesis, native (active) or mutated (inactive) full-length ATF6 was expressed in cultured fibroblasts from mice in which ATF6 has been deleted by gene-targeting, i.e. ATF6-deficient cells. Native or mutated ATF6 was reintroduced into ATF6-deficient cells using gene transfer involving expression plasmid transfection. Cells were then treated with chemicals that induce ER stress, thus mimicking ischemia, after which the ability of the cells to survive was examined using cell death assays. Compared to cells transfected with a control plasmid, transfection of ATF6-deficient cells with a plasmid encoding full-length native ATF6 decreased ER stress-induced cell death, even after long times of expression. Moreover, reintroduction of mutated inactive full-length ATF6 promoted ER stress-induced cell death. This study supports the hypothesis that expression of full-length ATF6 promotes cell viability and does not lead to maladaptive cell death. Therefore, in contrast to the fragment of ATF6, overexpression of full-length ATF6 might be a promising therapeutic approach for diseases associated with ER stress, such as ischemia.

### Session I: Oral Presentations

#### Session I-1

**Creative Arts:**

**Visual, Performing, Creative Arts & Design III**  
Saturday, March 7, 2015, 9:20 am  
Location: Montezuma Theatre

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**465  11:30 am**

*Enhancing the Adaptive ER Stress Response as a Possible Therapy for Ischemic Disease*

Zoe G Sand, Cellular and Molecular Biology (U)  
Christopher C. Glembotski, Biology

All secreted and membrane proteins are made in the endoplasmic reticulum (ER). The proper folding of such proteins is critical for cell viability. Conditions, such as lack of nutrients or oxygen, or ischemia, impair ER protein folding, causing cell death. The adaptive ER stress response, which protects cells from death, is mediated partly by the transcription factor, ATF6, an ER-transmembrane protein. When ATF6 detects misfolded ER proteins it is cleaved. Forced expression of the cleaved form of ATF6 shows that it localizes to the nucleus and upregulates many genes that restore ER protein folding, thereby promoting cell survival. Thus, the ATF6 fragment could be a good treatment for ischemic diseases, such as heart disease. However, it was recently shown that after long-term expression, the ATF6 fragment switches from being protective to promoting cell death.

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**466  9:20 am**

*Expression through Dance: Shakti*

Nitya Bhaskaran, Microbiology (M)  
Robert Meffe, Theatre, Television and Film

Bharatanatyam is an ancient Indian dance form that is still taught and performed today. This dance combines the elements of rhythm, expression and theater into a graceful performance. Although Bharatanatyam is deeply embedded in Indian culture, the universality of this dance form has the potential to inspire the western audience. The two aims of this project are to create an awareness for Bharatanatyam in our art community and to show that, despite its cultural context, expression through Bharatanatyam is universal.

To accomplish these aims, we looked into concepts which have personal significance and that could also be easily conveyed. This led us to do research on the concept of “Shakti” which can be defined as a divine energy or power that is associated with...
the feminine forms of nature. Being brought up in a culture that respects and idealizes the strength of women, we wondered why this strength is not seen when we hear about violence or abuse against women from all around the world. As strong and independent young women, our main message through this presentation is that all women have the same inner strength to achieve anything they desire.

Expression in Bharatanatyam has four means of communication: song, costume, body language and gestures of emotion. In presenting our interpretation of Shakti, we have chosen a song that praises Goddess Shakti, who is the personification of feminine energy. We have chosen to use shades of reds in picking traditional costumes which will add to the theme of the fiery feminine energy. Furthermore the choreography was achieved by integrating technique and innovation while effectively portraying different female characters.

The dance sequence begins with Goddess Shakti who dissolves into three women in different stages of life: a little girl, a woman in love and a mother. These characters then portray their strength through their activities before the dance rolls into a presentation of intense movement as the song picks up words and momentum. The energy and strength is then portrayed through intricate footwork, exuberant leaps and subtle gestures. The song then ends with the three women transforming back into Goddess Shakti.

467  9:40 am

**Life is**

Desmond Hassing, Theatre : Youth Theatre (U)
Katie Rich, Chris Yarrow
Peter Larlham, Theatre, Television and Film

Desmond Hassing’s research project is a short play *Life is________* which explores the differences between the universal experience of life we all share (one that it is finite), and the manner in which we make individual choices which shape and differentiate our lives. The play deals with the processes by which human beings prepare food for consumption and what these processes can teach us about the human condition, both as a species and as individuals. How are we all the same and how are we all unique? The play is a series of three short scenes in which each actor prepares and consumes a piece of fruit, the act of food preparation chosen by each actor will represent one of the myriad ways in which we, as humans, choose to live our lives.

Drawing on the short Samuel Beckett plays *Breathe and Act Without Words I* as inspiration, *Life is__________* is a wordless play which draws on the traditions of Mime, Clowning, and Post Modern Theatre. Detailed research into Post Modern Theatre, Silent Film and Situational Improvisation has allowed me to create a play which deals with broad themes while allowing the actors the freedom to discover a uniquely individual performance. To aid in this, the play will not be directed by a single director. The direction will instead be collaborative, each actor being directed by other members of the cast. Designed as a play for three actors *Life is__________* will be performed and directed by Desmond Hassing, Katie Rich, and Chris Yarrow and is 4 to 5 minutes in length.

468  10:00 am

**Kingdom Catalina Overture**

Marcos I Trejo, Music Education (U)
Brent Dutton, Music

*Kingdom Catalina Overture* is a work of programme music, composed for full orchestra, that calls on a palette of serialism, texture, and timbre to paint a heroic tale through music. The programme music genre gained popularity during the Romantic period. I was led to study this style through the work of Hector Berlioz, whose *Symphonie Fantastique* is possibly the most well-known works of the genre. This form of composition is intended to tell a story; program notes are essential to a full appreciation of the work. The compositional techniques chosen for *Kingdom Catalina* serve the story, not just accepted rules of composition.

My use of serialism is inspired by the works of Arnold Schoenberg and Luciano Berio, two 20th century giants of composition. Schoenberg theorized that music could be composed in such a way as every pitch holds equal importance. His work led to the creation of serialism music — music which is derived from ordered numbers assigned to specific pitches. I have used this technique in the style of Luciano Berio, who was less strict than the original composers of serialism music. The tool is used for aural effect, not academic effect, and can be heard particularly in the introduction of the antagonist character Koarpow at rehearsal letter D, then throughout the work as he appears in the story.

Texture and timbre also figure strongly into *Kingdom Catalina*. I studied with Professor Brent Dutton, who led me through study of Wagner, Tchaikovsky, and Stravinsky in order to better understand how to use the various instruments of the orchestra to achieve the right timbre and aural texture for my characters and my story. Researching their work showed me powerful ways to use the orchestra that I had not considered on my own.

Composing *Kingdom Catalina* required that I delve more deeply into study of music’s greats, past and present, and the techniques which they gifted to music through their own study. I combined a story of my own that provided powerful imagery over which to layer my growing knowledge of composition.
Rhythm tap is a dance form that focuses on musicality and specific rhythms, rather than movement and choreography and women are not as represented in this dance style. Throughout the history of rhythm tap dance, female dancers have appeared in masculine costumes and in low-heeled tap shoes, to gain respect among the male dancers and the audience when presenting rhythm tap. Tap is connected to a certain outfit and style, and therefore, the audience expects it to be performed by a male dancer. In *Dancing is a Man's Game*, telecast, (CBS-TV, 21 December 1958,) Gene Kelly said:

> Tap is a man’s game…. And if he does it well, he does it better than a woman. I don’t want this to sound as if I’m against women dancing, we must have to remember that each sex is capable of doing things the other can’t (Hill 3).

A woman that would prove Kelly wrong is Brenda Bufalino, the “Queen of Tap Dance”, who paradoxically broke out of the expected femininity by wearing a white tuxedo as the only female performer on stage with only male dancers from Kelly’s generation.

Where is tap dance today and do female performers still need to wear hats and low-heeled tap shoes to gain respect in a man’s world?

### 471 11:00 am

"*Times Like This*, Lucky Stiff Character Analysis

Kelsey M Morash, Theatre Arts Performance (U)  
Robert Meffe, Theatre, Television, and Film

In my research for the performance of this song, I conducted a thorough character analysis on Annabel who sings “Times Like This”. I researched a lot of the background information on the musical and plot where this song is from. A lot of my research also included hypothetical questions that I should be able to answer about my character, although they might not necessarily have been included in the script. I answered these questions through a thorough investigation of all details about my character already given and then using my imagination to explore further but along the lines of what could be possible from the information given. Some of the questions I answered about my character that were not directly given in the text but required deeper research included exploring the kind of life my character may have lived at that time: social level, education, community, relationships, how my character speaks, what she finds attractive in life, gender roles, what she does for fun, her religious/spiritual beliefs, who is in charge, and recent advantages in technology and exploration. All these questions I answered helped me to...
fully understand my character and step into her shoes while singing the song. Although the main focus of my performance was singing to the outside eye, a lot of this project had to do with the acting. There was less pretending and uncertainty in my character portrayal because of all the research I did beforehand on Annabel. I had concrete ideas of the needs and wants of my character that I had researched in pages of notes. This research freed my character portrayal to be more believable for myself and the audience. The research I conducted was an exciting exploration and helped me to become Annabel more readily.

**472  11:20 am**

**Jack Cole: The Father of Theatrical Jazz Dance**

Kikau L Alvaro, Musical Theatre (M)
Rob Meffe, Theatre, Television, and Film

I will be taking a piece choreographed by Jack Cole, known as “the father of theatrical jazz” and demonstrating my own version of the piece. He has had great influence on major choreographers such as Jerome Robbins, Michael Kidd, Bob Fosse and Michael Bennett, to name a few, and thus on the theatrical choreographers that we know today. Cole’s combination of East Indian movement combined with the Broadway idiom brought a completely unique style to theatre and my presentation will be a celebration of his legacy.

Cole’s work is both acrobatic and angular, with a major focus on footwork and body positions. He typically used a smaller group of dancers, rather than a large company. It is my plan to teach this combination to several dancers to demonstrate how the piece should be seen.

Over the next month, I will choose the piece, notate the choreography, and rehearse with a small group. I will document the rehearsals to share with the committee. I will use research about his career on Broadway and Hollywood to get as much information about his style. As a choreographer and teacher, this information will be applicable. I will be using this research to teach the undergraduate students in my movement class and graduate students in a directing seminar about Jack Cole.
ACKNOWLEDGEMENTS

Our thanks and appreciation to the following individuals, units and groups for their support of student involvement in research, scholarship and creative activities.

Administration
Elliot Hirshman, President
Chukuka S. Enwemeka, Provost and Senior Vice President
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ACKNOWLEDGEMENTS

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Brandon Kim
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Fred Kolkhorst
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ACKNOWLEDGEMENTS

Special thanks to:

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