# SCHEDULE OF EVENTS

**APRIL 15-17, 2014**

<table>
<thead>
<tr>
<th><strong>TUESDAY, APRIL 15TH</strong></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time</strong></td>
<td><strong>Event</strong></td>
<td><strong>Location</strong></td>
</tr>
<tr>
<td>8:00 a.m. - 2:00 p.m.</td>
<td>Registration opens</td>
<td>Lubbock Room</td>
</tr>
<tr>
<td>8:00 a.m. - 9:20 a.m.</td>
<td>Breakfast</td>
<td>Matador Lounge</td>
</tr>
<tr>
<td>8:00 a.m. - 9:20 a.m.</td>
<td>Day 1 Poster Set-up</td>
<td>Matador Room</td>
</tr>
<tr>
<td>9:00 a.m. - 4:00 p.m.</td>
<td>Visual Art Display</td>
<td>Traditions Room</td>
</tr>
<tr>
<td>9:30 a.m. - 9:50 a.m.</td>
<td>Conference Welcome</td>
<td>Allen Theatre</td>
</tr>
<tr>
<td>10:00 a.m. - 11:30 a.m.</td>
<td>Poster Session # 1</td>
<td>Matador Room</td>
</tr>
<tr>
<td>10:00 a.m. - 2:00 p.m.</td>
<td>Graduate and Professional School Expo</td>
<td>Croslin Room (Library)</td>
</tr>
<tr>
<td>11:00 a.m. - 12:30 p.m.</td>
<td>Come-and-Go Luncheon</td>
<td>Matador Lounge</td>
</tr>
<tr>
<td>12:40 p.m. - 1:50 p.m.</td>
<td>Plenary Speaker # 1 (Scott and Amy Faris)</td>
<td>Allen Theatre</td>
</tr>
<tr>
<td>2:00 p.m. - 3:40 p.m.</td>
<td>Oral / Paper Session # 1</td>
<td>SUB Various Rooms</td>
</tr>
<tr>
<td>3:00 p.m. - 4:40 p.m.</td>
<td>Performing Arts Performance Session # 1</td>
<td>Allen Theatre / Escondido Theater</td>
</tr>
<tr>
<td>4:00 p.m. - 5:00 p.m.</td>
<td>Poster &amp; Visual Art Take-Down</td>
<td>Matador Room / Traditions Room</td>
</tr>
<tr>
<td>5:00 p.m. - 6:30 p.m.</td>
<td>Networking Social Event: inside-out BBQ</td>
<td>Rawls College of Business</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>WEDNESDAY, APRIL 16TH</strong></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time</strong></td>
<td><strong>Event</strong></td>
<td><strong>Location</strong></td>
</tr>
<tr>
<td>8:00 a.m. - 1:00 p.m.</td>
<td>Registration opens</td>
<td>Lubbock Room</td>
</tr>
<tr>
<td>8:00 a.m. - 9:00 a.m.</td>
<td>Breakfast</td>
<td>Matador Lounge</td>
</tr>
<tr>
<td>8:00 a.m. - 11:00 a.m.</td>
<td>Day 2 Poster Set-up</td>
<td>Matador Room</td>
</tr>
<tr>
<td>9:00 a.m. - 4:00 p.m.</td>
<td>Visual Art Display</td>
<td>Traditions Room</td>
</tr>
<tr>
<td>9:30 a.m. - 11:10 a.m.</td>
<td>Oral / Paper Session # 2</td>
<td>SUB Various Rooms</td>
</tr>
<tr>
<td>11:30 a.m. - 1:00 p.m.</td>
<td>(HHMI Luncheon) Honorary Scholars Round Table</td>
<td>McKenzie - Merket Alumni Center</td>
</tr>
<tr>
<td>1:30 p.m. - 3:00 p.m.</td>
<td>Poster Session # 2</td>
<td>Matador Room</td>
</tr>
<tr>
<td>2:30 p.m. - 4:10 p.m.</td>
<td>Performing Arts Performance Session # 2</td>
<td>Escondido Theater/Senate Room</td>
</tr>
<tr>
<td>4:10 p.m. - 5:30 p.m.</td>
<td>Poster &amp; Visual Art Take-Down</td>
<td>Matador Room / Traditions Room</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>THURSDAY, APRIL 17TH</strong></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time</strong></td>
<td><strong>Event</strong></td>
<td><strong>Location</strong></td>
</tr>
<tr>
<td>5:30 p.m. - 6:30 p.m.</td>
<td>Mocktail Hour</td>
<td>Frazier Alumni Pavilion</td>
</tr>
<tr>
<td>6:30 p.m. - 8:00 p.m.</td>
<td>TTU Undergraduate Research Spring Banquet</td>
<td>Frazier Alumni Pavilion</td>
</tr>
</tbody>
</table>
2014 Texas Tech University
Undergraduate Research Conference

Schedule of Events...........................................................................................................................................1
A message from the Associate Vice Provost..........................................................................................................3
Center for Active Learning & Undergraduate Engagement.................................................................................4
List of Conference Partners....................................................................................................................................5
TTU URC Speakers and Performances..................................................................................................................6
Graduate School Expo............................................................................................................................................11
Presenter Program Affiliations.............................................................................................................................12
Abstract Category Key..........................................................................................................................................13
Poster Abstracts: Tuesday, 10:00-11:30 PM............................................................................................................14
Poster Abstracts: Thursday, 1:30-3:00 PM............................................................................................................40
Oral Abstracts: Tuesday, 2:00-3:40 PM..................................................................................................................65
Oral Abstracts: Wednesday, 9:30-11:10 AM.........................................................................................................78
Oral Presentation Panel Schedule..........................................................................................................................94
Visual Art Information...........................................................................................................................................96
Campus Partners..................................................................................................................................................97
Alphabetical Listing of Presenters..........................................................................................................................101
Poster Presentation Session Maps........................................................................................................................113
Welcome Conference Attendees:

Thank you for joining us for the 6th Annual Texas Tech University Undergraduate Research Conference (URC). As a comprehensive research university, we are pleased to showcase the outstanding undergraduate research of our students to faculty, staff, students, and the local community. This year we have over 160 presenters from a variety of disciplines and research topics. In addition, we are welcoming more than 50 registered reviewers, seven distinguished Texas Tech alumni as Visiting Honorary Scholars, a number of graduate schools, and student presenters from as far away as Zamorano University in Honduras. These achievements have further established the TTU URC as one of the largest undergraduate research conferences in the region.

The 2014 TTU Undergraduate Research Conference will host an array of activities including poster and oral presentations, a Graduate School Expo, a networking social event, and a stimulating discussion on the convergence of research and the creative process. New this year, we are excited to include performances and displays that showcase undergraduates from the TTU College of Visual and Performing Arts. These events are part of the Center for Active Learning and Undergraduate Engagement’s effort to increase awareness of the excellent research being conducted in disciplines that are not typically showcased.

I want to thank you for attending the 2014 Texas Tech University Undergraduate Research Conference and sharing your expertise with fellow researchers.

Sincerely,

Patrick C. Hughes, Ph.D.
Associate Vice Provost
The Center for Active Learning & Undergraduate Engagement (CALUE) works with a variety of campus partners to promote and support four key areas of active learning: Service Learning, Internships, Study Abroad, and Undergraduate Research. In regard to undergraduate research, CALUE hosts events such as training sessions, networking events, and graduate school expos throughout the semester. Further support for undergraduate research is provided through student researcher travel and project funding. With the support of campus partners, CALUE is able to host its flagship undergraduate research event, the annual Texas Tech University Undergraduate Research Conference (URC). In addition, the CALUE team seeks creative opportunities to promote active learning and facilitate student/faculty connections to support academic excellence.

During the 2013-2014 academic year, CALUE provided over $30,000 in funding to over 35 undergraduate researchers in support of their travel to present research at regional, national, and international conferences. Furthermore, CALUE provided over $20,000 in undergraduate student project funding. This funding enabled undergraduate students to work on projects such as the TTU LAZARUS interdisciplinary supercomputing research project and the TTU Digital Humanities Lab.

CALUE looks forward to concluding the 2014 URC by awarding the 2014 Dr. Sarah Kulkofsky Scholarship recipient, recognizing outstanding undergraduate researchers, and honoring exceptional faculty mentors during the annual TTU Undergraduate Research Spring Banquet on April 17th. Thank you for joining us during this campus wide celebration. We hope you enjoy all of the conference activities hosted this week.

Center for Active Learning & Undergraduate Engagement Team:

Erin Justyna  
Assistant Director

Jerylme Robins  
Unit Coordinator

Hillary Siegfried  
Unit Coordinator

Christine Hunt  
Senior Business Assistant

Center for Active Learning & Undergraduate Engagement  
Administration Building #233  
calue@ttu.edu / 806.742.1095
The TTU Undergraduate Research Conference committee would like to recognize Texas Tech University for its support of undergraduate research. Additionally, we would like to extend our appreciation to the following partners for their support of the Undergraduate Research Conference.

Special thanks to the following:

- The Center for Active Learning and Undergraduate Engagement, Academic Testing Services, STEM Center for Outreach Research and Education, University Honors College, University Student Housing, and TTU Graduate School for providing administrative assistance and financial support for the conference.

- Presenters, faculty mentors, moderators, reviewers, Graduate School Expo participants, and other conference volunteers.

- Office of the Provost, Office of the President, and Office of the Vice President for Research.

- Undergraduate Research Conference Committee for their dedication to undergraduate research and the spring conference.

**TTU Campus Partners:**

- Animal and Food Sciences
- Academic Testing Services
- Center for Active Learning and Undergraduate Engagement
- Department of Theatre and Dance
- Division of Undergraduate Education and Student Affairs
- Graduate School
- Howard Hughes Medical Institute Program at the Center for the Integration of STEM Education and Research
- Office of the Vice President for Research
- School of Art
- School of Music
- STEM Center for Outreach Research and Education
- Student Union & Activities
- Top Tier Catering
- Undergraduate Research Organization
- University Honors College
- University Student Housing
- Women’s Studies Program

**Community Partners:**

- FarisWheel Productions
- Kaplan Test Prep and Admissions
Merging Historical Film and Modern Music: The Creative Process Behind Metropolis Elektro
April 15, 2014
12:40 p.m. – 1:50 p.m.
Student Union Building: Allen Theater
(Plenary Speaker)

Synopsis:
Composers Amy and Scott Faris give a behind-the-scenes look at the launch of Metropolis Elektro, a new original soundtrack for the 1927 silent film Metropolis. The critically acclaimed cinematic and musical experience debuted in 2013 to sold-out audiences and featured twenty-four musicians synced live with the film.

In their multimedia presentation Merging Historical Film and Modern Music: The Creative Process Behind Metropolis Elektro, the Farises share intimate moments in their artistic process and discuss the convergence of research and creativity that led to this exciting new work.

Amy Faris
As a teen, Amy studied composition with world-renowned composer David Kneupper. She received a BFA in Music Composition from Texas Tech University. Amy has toured as a keyboardist for numerous regional bands, played in Lubbock’s famed Cactus Theatre as part of the Texas Rhythm Machine and performed alongside musicians such as Todd Caldwell (Burlap to Cashmere), Joe Ely, Mac Davis, Richie McDonald, Tom Braxton and Terry Allen. Amy’s keyboard and piano work, along with her string and horn arrangements, grace numerous CDs, and she has composed and arranged for everything from chamber orchestras and choirs to metal bands and classical guitar. Besides doing session work, Amy maintains a full teaching roster in Lubbock, Texas.

Scott Faris
Producer, guitarist, and visual artist Scott Faris has spent the last 20 years doing what he loves: creating. The proprietor of FarisWheel Productions, a graphic and web design firm, and the owner of the Amusement Park Recording Studio in Lubbock, Texas, Scott is a veteran of the independent music and art scene. He has toured as the guitarist for 100 Love Sonnets, Meltdown Morning and The Reagan Administration and has played on, recorded and produced hundreds of songs with over 50 albums to his credit.

Scott began his career as a guitar teacher for the world-renowned classical guitarist David Brandon. He later became the Director of Guitar Studies and founder and co-director of the Entertainment Business program at South Plains College (Levelland, Texas), alma mater of Natalie Maines (The Dixie Chicks), Lee Ann Womack and Jedd Hughes. During his tenure at SPC, Scott was instrumental in developing its guitar program and was the founder of AlternaTV, an audition-only, student-led rock band that filmed a live televised concert monthly.

Scott and Amy currently perform with their original rock band Strawberry Crush. They live in Lubbock, Texas with their daughter, Rachel.
About Metropolis Elektro

Metropolis Elektro is a visually stunning and historically important film. A diverse group of musicians perform a soundtrack that spans decades and genres to create an exciting cinematic experience. Metropolis Elektro is a new work by composers Scott and Amy Faris, a score which is performed live, in sync with the 1927 silent film Metropolis.

Fritz Lang’s Metropolis was a groundbreaking movie, featuring special effects that influenced filmmakers from Alfred Hitchcock to George Lucas. Its array of traditions - Art Deco, futuristic, biblical, and Gothic imagery - has greatly informed the visual art and fashion communities. Its portrayal of the dangers of a dystopian, classist society gives it fresh urgency in a world where such movements as Occupy Wall Street and the Arab Spring demand our attention. The Faris’ score accompanies the 2010 Kino Lorber re-release of the film, which is visually much clearer than earlier prints. The 25 minutes of original footage in this release, found and restored only recently, make the plot much clearer as well.

Blending both classically trained and street musicians, Metropolis Elektro is designed to bring together divergent cultures. The score seamlessly weaves together a variety of music: 1920's swing, modern rock, classical, dub step, choral pieces, hip hop, acoustic, industrial, and almost every genre in between.

As the audience enjoys a thought-provoking and beautiful piece of cinematic history, the live soundtrack adds even greater emotional power to the experience. To achieve its broad spectrum of musical styles, Metropolis Elektro uses a rock band, a string quartet, a small choir, a rap artist, and a DJ. Additionally, the score calls for bassoon, flute, trumpet, two guitarists, and two pianists/keyboardists. The composers enjoy being part of the performance, Scott on acoustic and electric guitars and Amy on piano, Fender Rhodes, and keyboard.

The Louise Hopkins Underwood Center for the Arts in Lubbock, Texas, was the catalyst for the project. LHUCA asked the Faris’s to compose a new soundtrack for a silent film to kick off its 2013 Flatland Film Festival series; the composers chose Metropolis and started to work. In March 2013, Metropolis Elektro debuted at LHUCA’s Firehouse Theater and was the first production in LHUCA’s history to sell out both nights. The community was extremely supportive in underwriting the debut performances.
Performing Arts Performance Session 1
April 15, 2014
3:00 p.m. – 4:40 p.m.
Allen Theatre / Escondido Theater

Synopsis:
Ensembles featuring undergraduates from the TTU College of Visual and Performing Arts will showcase their work through performances in Dance, Theatre, and Music. This session will also include a collaborative performance from The Elegant Savages Orchestra & the Eagles' Heart Sisters Dance Troupe.

Performing Arts Performance Session 2
April 16, 2014
2:30 p.m. – 4:10 p.m.
Escondido Theater / Senate Room

Synopsis:
Ensembles featuring undergraduates from the TTU College of Visual and Performing Arts will showcase their work through performances in Dance, Theatre, and Music. This session will include a fascinating performance by the TTU Tango Camarata Ensemble.
Visiting Scholar Panel Discussion: Eat, Think, Be Successful
April 16, 2014
11:30 a.m. – 1:00 p.m.
McKenzie-Merket Alumni Center
(BY INVITATION ONLY)

Synopsis:
Enjoy lunch and inspirational discussion with seven Texas Tech University alumni who have found success in various fields. Take the opportunity to hear how being Red Raiders has effectuated lasting changes within the panelists’ lives and led to successful professional careers.

2014 Visiting Alumni Scholars include:
Todd Cowan, MD; Gary Fish, MD; Ed Graviss, MD; Daragh Heitzman, MD; Mark Johnson, MD; Jay Vollet, PhD
2014 TTU Undergraduate Research Banquet
April 17, 2014
6:30 p.m. – 8:00 p.m.
Frazier Alumni Pavilion
(BY INVITATION ONLY)

Keynote Speaker: Robert V. Duncan, PhD

Photo by: Neal Hinkle

Dr. Robert Duncan joined Texas Tech University as the Vice President for Research in January 2014. Prior to accepting this position, he served as the Vice Chancellor for Research at the University of Missouri. He supervises TTU’s research administration and its major research facilities, including multiple interdisciplinary research centers, and associated economic development and technology licensing and incubation efforts.

Duncan received his bachelor’s degree in physics from MIT in 1982 and his doctorate in physics from the University of California-Santa Barbara in 1988. He has served as a professor of physics and astronomy, as a joint associate professor of Electrical and Computer Engineering at the University of New Mexico (UNM), as a visiting associate on the physics faculty at Caltech, and as the associate dean for research in the College of Arts and Sciences at UNM.

He has published extensively in experimental low-temperature physics, including the observation of new phenomena near the superfluid transition in helium, and in new instrumentation development for physics research in space. Previously, Duncan served as principal investigator on a fundamental physics research program for NASA. As the founding director of the New Mexico Consortium’s Institute at Los Alamos National Laboratory, he worked to fund major conferences and summer schools in quantitative biology, information science and technology, energy and environment, and astrophysics and cosmology. In 2012, Duncan formed the Sidney Kimmel Institute for Nuclear Renaissance at the University of Missouri, which was empowered by a major gift from Sidney Kimmel. Duncan has received more than $8 million in federal funding on research efforts that he has led as principal investigator.

Dr. Duncan is a Fellow and a life member of the American Physical Society. He was named the Gordon and Betty Moore Distinguished Scholar in the Division of Physics, Mathematics, and Astronomy at Caltech in 2004, and he chaired the Instrumentation and Measurement Topical Group for the American Physical Society in 2002, and the International Symposium on Quantum Fluids and Solids in 2003. He has consulted extensively to industry, and co-invented and assisted in the formation of companies. Duncan chaired the Panel of the National Academy of Sciences on Fundamental Physical Sciences in Space, which has been released as Chapter 8 within the Decadal Survey report titled: Recapturing a Future for Space Exploration: Life and Physical Sciences Research for a New Era through the National Research Council (2011). He also served on the National Academy of Sciences Panel to evaluate the effectiveness of the Experimental Program to Stimulate Competitive Research, which spans many government research funding agencies. Their report was published through the National Academies in November 2013. Duncan serves as a reviewer for many journals and federal funding agencies, and has recently been a Member of the Visiting Committee to recommend revisions of the curriculum at the United States Military Academy at West Point, NY.
Graduate School Attendees:

1. Abilene Christian University
2. Kaplan Test Prep
3. Texas Tech University Department of Plant and Soil Sciences
4. Texas Tech University Graduate School
5. Texas Tech University Health Sciences Center Graduate School of Biomedical Sciences
6. University of Texas Arlington
7. University of Texas at San Antonio – Graduate School
8. University of North Texas Toulouse – Graduate School
9. West Texas A&M University – Graduate School

We encourage you to visit the Graduate School Expo as part of the Undergraduate Research Conference activities. We invite you to network, ask questions, and visit with graduate schools to learn more about graduate opportunities and the application process.

Please be sure to have your student I.D. swiped and pick up a raffle ticket for your chance to win a $2,000 graduate school test prep certificate provided by Kaplan Test Prep.
<table>
<thead>
<tr>
<th>Honors URS</th>
<th>Honors College</th>
<th>SOWER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amini Guthikonda</td>
<td>Amanda Gray</td>
<td>Alvaro Garcia</td>
</tr>
<tr>
<td>Adeet Amin</td>
<td>Caitlin Yoakum</td>
<td>Andrea Chica</td>
</tr>
<tr>
<td>Addison Ciavaglia</td>
<td>Jacob Gresham</td>
<td>Cindy Ventura</td>
</tr>
<tr>
<td>Alejandro Figueroa</td>
<td>Joshua Williams</td>
<td>Corany Banegas</td>
</tr>
<tr>
<td>Ana Navarrete</td>
<td>Kate Ehnis</td>
<td>Dany Rivas</td>
</tr>
<tr>
<td>Anthony Toops</td>
<td>Philip Jarrett</td>
<td>Fernando Vargas</td>
</tr>
<tr>
<td>Arnold Yu</td>
<td>Stacy Philip</td>
<td>Olga Gabriela Perez</td>
</tr>
<tr>
<td>Ashleigh Smith</td>
<td>Tailor Brown</td>
<td>Susana Andrade</td>
</tr>
<tr>
<td>Ben Jackson</td>
<td>Tyler Quincy</td>
<td>Ximena A. Paz</td>
</tr>
<tr>
<td>Brittany D. Lancaster</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Christopher Klaassen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cynthia Sacco</td>
<td>Angela Cueva</td>
<td></td>
</tr>
<tr>
<td>DK Kim</td>
<td>Elias Carrillo</td>
<td></td>
</tr>
<tr>
<td>Eunjee Kim</td>
<td>Sharon Polackal</td>
<td></td>
</tr>
<tr>
<td>Francis Atore</td>
<td>Stacy Philip</td>
<td></td>
</tr>
<tr>
<td>Hannah Pham</td>
<td>Theresa Tokar</td>
<td></td>
</tr>
<tr>
<td>Huy Dong</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jenna Stanopiewicz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jesse Latimer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jessica Eastman</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kaitlin Foss</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kate Lewis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Logan Dobbe</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Margaret Piper</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Matthew Hansen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Michael Ijeh</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Michael Wurmstein</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Michelle Harold</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nadia Tello</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Narah Alcoreza</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rachel Summerlin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sara Schumacher</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sarah Cotton</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scott Ferrell, Jr.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sharon Polackal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tabitha Threat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taylor Robertson</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tiffany Nguyen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trevor O'Loughlin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vanessa Torres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vidhur Sohini</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zachary Aybar</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Mentor Tech       |                                |                            |
|                  |                                |                            |
|                  |                                |                            |

| PRISM            |                                |                            |
| Belinda Pacheco  |                                |                            |
| Danna Naser      |                                |                            |
| Jonathan Tran    |                                |                            |
| Kate Ehnis       |                                |                            |
| Luke Anderson    |                                |                            |
| Rebecca R. Owens |                                |                            |
| Sabrina Deleon   |                                |                            |
| Stacy Philip     |                                |                            |
| Taylor Farley    |                                |                            |

| SACNAS           |                                |                            |
| Angel Cueva      |                                |                            |
| Carlos Garcia    |                                |                            |
| Dalia Martinez-Marin |                      |                            |
| Elias Carrillo   |                                |                            |
| Jesus Cano       |                                |                            |
| Rocio Rodriguez  |                                |                            |
| Stephanie Deleon |                                |                            |
| Theresa Tokar    |                                |                            |

| SOWER            |                                |                            |
| Alvaro Garcia    |                                |                            |
| Andrea Chica     |                                |                            |
| Cindy Ventura    |                                |                            |
| Corany Banegas   |                                |                            |
| Dany Rivas       |                                |                            |
| Fernando Vargas  |                                |                            |
| Olga Gabriela Perez |                      |                            |
| Susana Andrade   |                                |                            |
| Ximena A. Paz    |                                |                            |

| TTU/HHMI @ CISER |                                |                            |
| Angel Cueva      |                                |                            |
| Carlos Garcia    |                                |                            |
| Dalia Martinez-Marin |                      |                            |
| Elias Carrillo   |                                |                            |
| Hayley Sparks    |                                |                            |
| Jessica Stilwell |                                |                            |
| Jesus Cano       |                                |                            |
| Joshua Willms    |                                |                            |
| Lauren Littlefield|                                |                            |
| Maria Nunez      |                                |                            |
| Naureen Suteria  |                                |                            |
| Philip Jarrett   |                                |                            |
| Rachel Dziuk     |                                |                            |
| Ryan Dean        |                                |                            |
| Stephanie Deleon |                                |                            |
| Tailor Brown     |                                |                            |

| URO              |                                |                            |
| Christopher Klaassen |                      |                            |
| Kaitlyn Jones     |                                |                            |
| Michael Ijeh      |                                |                            |

2013-2014 SKS Recipient

| Tabitha Threat |    |

Honors URS = Honors College Undergraduate Research Scholar
Prism = Proactive Recruitment in Introductory Science and Mathematics
SACNAS = Society for Advancement of Chicanos and Native Americans in Science
SKS = Dr. Sarah Kulkofsky Scholarship
SOWER = Sustaining Our World through Educations and Research
TTU/HHMI @ CISER = TTU Howard Hughes Medical Institute Program at the Center for the Integration of STEM Education & Research
URO = Undergraduate Research Organization
The following key can be used to make finding abstracts in specific categories more convenient:

<table>
<thead>
<tr>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arts</td>
</tr>
<tr>
<td>Biological and Chemical Sciences</td>
</tr>
<tr>
<td>Business Emphasis</td>
</tr>
<tr>
<td>Humanities and The Arts</td>
</tr>
<tr>
<td>Law, Public Policy, and Education</td>
</tr>
<tr>
<td>Physical Sciences</td>
</tr>
<tr>
<td>Social Sciences</td>
</tr>
</tbody>
</table>

Each category includes:

**Arts**
- Art History
- Dance
- Music
- Theater
- Visual Arts

**BIOLOGICAL AND CHEMICAL SCIENCES**
- Biology / Biochemistry
- Chemistry / Biochemistry
- Environmental Studies
- Health Professions

**BUSINESS EMPHASIS**
- Business

**PHYSICAL SCIENCES**
- Computer Science
- Engineering
- Geosciences
- Mathematics
- Physics / Astronomy

**HUMANITIES and THE ARTS**
- Cultural Studies
- Gender Studies
- Literature
- Media and Communications

**LAW, PUBLIC POLICY, & EDUCATION**
- Education
- Legal Studies
- History
- Philosophy
- Political Science

**SOCIAL SCIENCES**
- Anthropology / Archaeology
- Economics
- Psychology
- Social Work
- Sociology
Tuesday April 15, 2014

Poster Presentations

Abstracts 1-57
BIOLOGICAL AND CHEMICAL SCIENCES
(Biology/Biochemistry, Chemistry/Biochemistry, Environmental Studies, and Health Professions)

Abstracts 1-37
1. IMPLICATIONS OF VARIANTS IN ESTROGEN RECEPTOR GENES IN THE PATHOGENESIS OF ALZHEIMER’S DISEASE IN WOMEN

**Presenter(s):** Caldwell, Joseph  
**Author(s):** Caldwell, Joseph; Ferrari, Raffaele; Wang, Xing; Thumma, Avinash; Momeni, Parastoo

Alzheimer’s disease (AD) is a neurodegenerative dementia characterized by a progressive deterioration of memory, cognition, and behavior. AD is the leading cause of dementia and the sixth leading cause of death in the United States. Currently, more than 5.2 million Americans live with AD, and the incidence of late-onset AD (LOAD) is twice as high in women compared to men. We hypothesize that, apart from the hormonal, metabolic, and inflammatory changes during the peri-menopausal years, genetic factors contribute to the differential pathogenesis and increased risk of LOAD in women. To identify these genetic factors, we developed a genotyping assay containing 384 single nucleotide polymorphisms (SNPs), which could be involved in the differential pathogenesis of AD in women. Statistical analysis revealed the gene for estrogen receptor alpha (ESR1) to be significantly associated with LOAD in women based on the allelic frequency of the SNPs residing in the gene. ESR1 is a nuclear receptor highly expressed in areas of the brain known to be affected by AD. In order to determine the role of ESR1 in the pathogenesis of AD in women, we screened ESR1 and the closely related gene ESR2 in 652 female and male patients and controls. Our results revealed many known and novel variants. To determine the possible pathogenicity of these variants, we have performed an extensive in silico analysis and screened DNA of neurologically normal controls. We are currently seeking to recruit family members of the mutation carriers to determine the cosegregation of the variants with the disease.

2. AGRONOMIC EVALUATION OF GRAIN SORGHUM HYBRIDS FOR CATTLE FEEDING PURPOSE

**Presenter(s):** Campanili, Pedro  
**Author(s):** Campanili, Pedro; Sarturi, Jhones; Trojan, Sara; Tabke, Melissa; Schmidt, Tanner

Agronomic parameters of grain sorghum hybrids were evaluated. Two hybrid cultivars were used from Sorghum Partners®: a) NK7829 (Traditional); b) NK8416 (Stay-green). Sorghum was grown in an experimental area with subsurface drip irrigation system (230 mm of rainfall plus 100 mm of irrigation) at the Plant and Soil Science Research Station, Texas Tech University, located at Idalou, TX. Date of seeding and harvesting were June 24 and November 18 of 2013, respectively. Cultivars were randomly assigned within blocks (n = 6) to zones (n = 12; 2.63 ha each) in a RCB. Whole plant samples (n = 3; 0.91 m of line) were collected from zones 129 d after seeding, and used to estimate whole plant yield (WPY). Samples (n = 2 per zone) were ground for DM determination and sorting (n = 1 per zone) for the following yields: head (HY), stem (SY) and leaf (LY). For harvested grain yield (HGY) a commercial combine and a truck scale were used. Leaf/stem ratio (L:S) and head/plant ratio (H:P) were also evaluated. Data were analyzed using the GLIMMIX procedure of SAS, using zone as experimental unit and block as random. Greater WPY (13079 vs. 9363 kg DM/ha; P < 0.01), HGY (1464 vs. 1155 kg DM/ha; P = 0.05), SY (1497 vs. 2129 vs. kg DM/ha; P < 0.02), HY (8453 vs. 5315 kg DM/ha; P = 0.01) were observed for Stay-green than Traditional. Greater L:S (1.83 vs. 1.27; P < 0.01) was observed for Traditional hybrid. No differences were observed for LY (2523 vs. kg DM/ha; P = 0.86) and H:P (0.60; P = 0.17). Stay-green cultivar appears to better attend agronomic parameters for forage production purpose compared to traditional cultivar.

3. INHIBITION OF LISTERIA MONOCYTOGENES WITH A LACTIC ACID BACTERIA TREATMENT FOR FRESH STRAWBERRIES

**Presenter(s):** Castelli, Erin  
**Author(s):** Castelli, Erin; Campos, David; Zhang, Qingli; Brashears, Mindy

Approximately 600 outbreaks associated with fresh produce have occurred since 1990. Listeria monocytogenes may contaminate fresh produce commodities such as strawberries so it is necessary to investigate interventions such as lactic acid bacteria (LAB) to inhibit this pathogen. The purpose of this study was to evaluate different combinations of LAB strains to inhibit L. monocytogenes on fresh strawberries. Three pounds of fresh strawberries were inoculated with a cocktail of L. monocytogenes strains (Sct A and Brie) at less than 4.00 log10 CFU/g. A portion of strawberries were reserved as an inoculated control and the remaining strawberries were divided into the following LAB treatments, each applied as a dipping: 1) Lactococcus lactis FS56, 2) Lactobacillus acidophilus NP51 and Lactobacillus plantarum C28, and 3) L. lactis FS56, L. acidophilus NP51, and L. plantarum C28. After treatment, the strawberries were stored at 4 C with samples collected on days 0, 1, 3, and 7 to enumerate L. monocytogenes by plating on Modified Oxford agar. All three LAB treatments resulted in significantly less (p = 0.005) L. monocytogenes when compared to the control. The LAB treated strawberries had 2.4 log10 CFU/g, 1.6 log10 CFU/g, and 2.3 log10 CFU/g less L. monocytogenes for treatments 1) L. lactis FS56, 2) L. acidophilus NP51 and L. plantarum C28, and 3) L. lactis FS56, L. acidophilus NP51, and L. plantarum C28 respectively. These data suggest that the LAB treatments can serve as an effective intervention to reduce L. monocytogenes on fresh strawberries and will improve the safety of the product.
4. ANTIBIOTIC RESISTANCE OF SALMONELLA ISOLATES RECOVERED BEEF CATTLE FROM THE UNITED STATES, MEXICO AND HONDURAS

Presenter(s): Chica, Andrea  
Author(s): Chica, Andrea; Maradiaga, Martha

OBJECTIVES: Determine the antibiotic resistance or susceptibility of Salmonella isolates from three countries and compare resistance patterns within sample type and among countries. METHODS: Salmonella isolates were previously isolated and confirmed positive from beef (retail or carcass) and cattle (hide or fecal) in Mexico (n=30), Honduras (n=22), and the United States (n=30). All confirmed Salmonella isolates were isolated on Blood Agar plates. Antibiotic resistance or susceptibility was evaluated using Sensititre Standard Plate CMV2AGNF with micro-broth dilution techniques (Trek Diagnostic System). Resistance and susceptibility patterns were evaluated using Swin’s software 2011.

RESULTS: All hide and carcass isolates from the US were pan-susceptible to all antibiotics tested. In Mexico, 46.6 % (n=15) of hide samples were resistant to nalidixic acid and 6.6% were resistant to ampicillin and tetracycline. In retail beef, 40% (n=15) of isolates were MDR (resistance to ≥1 agent in ≥ 3 antibiotic categories), 53.3% was resistant to sulfisoxazole and tetracycline; and 6.6% was resistant to nalidixic acid. Hide samples from Honduras indicated that 14.3 % (n=7) of isolates were resistant to ampicillin and tetracycline. Finally, 40% (n=15) of retail beef isolates were MDR, 13.3% of isolates were resistant to sulfisoxazole and tetracycline, and 6.6% was resistant to amoxicillin/clavulanic acid 2:1 ratio and ampicillin.

CONCLUSIONS: Salmonella obtained from US samples appear to be broadly susceptible to antibiotic drugs. In Mexico and Honduras, there is significant antibiotic resistance present in Salmonella isolates. Of particular concern is the fact that retail samples in Mexico and Honduras contain large amounts of resistant Salmonella.

5. NATURAL KILLER CELL CYTOTOXICITY DRAMATICALLY REDUCED WITH HDIA1 KNOCKDOWN

Presenter(s): Cotton, Sarah  
Author(s): Cotton, Sarah; Kitten, Erin

Natural killer (NK) cells are an integral component of the innate immune system and their function is to locate stressed, virally infected or tumorigenic cells and destroy them effectively by secreting lytic granules. The lytic synapse (LS) is the junction or interface between the NK cell and the potential target cell and formation of the LS requires precise coordination of signaling and adhesion receptors, as well as a rearrangement of the cytoskeleton. Cytoskeletal reorganization promotes lytic granule polarization towards the target cell thus leading to target cells lysis. Two components of the cytoskeleton include actin and microtubules, with actin rearrangement responsible for LS formation and microtubules are responsible for the transport of the lytic granules to the lytic synapse. In this study, hDia1, a member of the formin family of actin nucleators, expression was knocked down to determine what role it plays in the structure and function of the lytic synapse. In this study, we observed that hDia1 is not required for adhesion to the target cell or lytic synapse formation, however, NK-mediated cytotoxicity was still greatly decreased. This indicates that hDia1 is integral in the transport of the lytic granules to the lytic synapse rather than establishing the structure of the synapse.

6. UPTAKE, TRANSLOCATION, AND STRESS EFFECTS OF CARBON NANOTUBES IN DROUGHT-INDUCED CORN

Presenter(s): Delean, Sabrina  
Author(s): Delean, Sabrina; Parra, Amanda M.; Kohl, Kristina L.; Green, Micah J.; Cañas-Carril, Jaclyn E.

Carbon nanotubes are currently one of the most used manufactured nanomaterials. However, these materials are not regulated and there are concerns regarding their safety for the environment and human health. This study was conducted to evaluate uptake of various types of carbon nanotubes in corn under ideal watering and drought conditions. Corn was exposed to either non-functionalized carbon nanotubes (CNTs) or functionalized carbon nanotubes (COOH-CNTs). Corn plants were grown for 21 days in soil with no CNTs/COOH-CNTs or 10 mg/kg of CNTs or COOH-CNTs in a greenhouse with natural day:night conditions. In addition to growing plants under ideal conditions, plants were also grown under conditions simulating a seven-day drought and photosynthesis measurements were taken using a LI-6400XT Portable Photosynthesis System. Following harvest after 50 days, roots, stems, and leaves were dried, ground, and analyzed using a microwave-induced heating technique to quantify CNT and COOH-CNT concentrations in the corn. Plants analyses are currently ongoing.
7. THE CONCENTRATIONS OF ANIONS AND CATIONS IN MIDDLE EAR FLUID OBTAINED FROM PEDIATRIC PATIENTS WITH CHRONIC EAR INFECTIONS VARY

**Presenter(s): Dong, Huy**

**Author(s): Dong, Huy; Vercellino, Tony; Wang, James; Hamood, Abdul; Klein, David**

Objective: The environment at different infection sites influences the virulence of pathogenic bacteria. During middle ear infection, patients accumulate a mucus or serous fluid (exudates) within the middle ear. Depending on its nature, this fluid may influence the virulence of different otopathogens including Pseudomonas aeruginosa, Staphylococcus aureus, and Haemophilus influenzae. This study was designed to determine the individual components (cations and anion) of the middle ear fluid obtained from patients with otitis media.

Methods: Through a protocol approved by the Institutional Review Board (IRB) at Texas Tech University Health Sciences Center, four mucoid ear fluid samples were obtained from pediatric patients with otitis media at Texas Tech University Medical Center, Lubbock, TX. Using appropriate standards, the level of anions (chloride, sulfate and phosphate) and cations (sodium, ammonium, potassium, magnesium and calcium) was determined. The levels of anions was measured using the IonPac AS20 column while that of the cations was measured using the IonPac CS-16 column.

Results: Initial analysis revealed the presence of chloride, sulfate, phosphate, and sodium within the ear fluid samples. The level of sulfate, phosphate, and sodium was significantly lower than that of the chloride.

Conclusion: Our results suggest that the level of different ions within the ear fluid from patients with otitis media varies. Further experiments will be conducted to determine the level of additional ions within this sample and other future samples.

8. ATTACHMENT AND BIOFILM FORMATION OF SHIGA-TOXIN PRODUCING ESCHERICHIA COLI (STEC) TO STAINLESS STEEL AT VARYING TEMPERATURES

**Presenter(s): Gray, Amanda**

**Author(s): Gray, Amanda; Loneragan, Guy; Parks, Amy; Brashears, Mindy**

In 2012, six additional serogroups of shiga-toxin producing Escherichia coli (STEC) were termed adulterants in non-intact beef products. Understanding the ability of STEC to attach and form biofilms under varying conditions is needed to improve current food safety policies and techniques. The objective of this study was to measure the attachment and biofilm formation of seven STEC strains previously determined to have a strong affinity for attachment on stainless steel coupons over time when incubated at 7 °C and 25 °C. Stainless steel coupons were inoculated in M9 minimal salts media at either 7°C or 25°C for up to 96 h. At 4 h, media was removed, all coupons were rinsed with water, and fresh media was added. At the time interval (4, 48 or 96 h), the coupons were removed, rinsed, stained with crystal violet, and absorbance at 590 nm was measured. Significant interactions (p<0.0001) were found for strain temperature and temperature time. At 25°C, no differences in attachment were found after 48 h. Strain attachment varied by temperature. Significant differences between strains at each temperature were found for E. coli O103, O111, O45, and O157:H7. These data indicate that strains tested can attach and form biofilms at both ambient and refrigerated temperatures, which is a concern for food processing plants. Attachment and biofilm formation appears to be strain dependent. Further research is needed to understand if other strains within these serogroups have the ability to form biofilms under similar conditions and methods to effectively remove these bacteria from these surfaces.

9. EFFECTS OF CRYSTALLOIDS AND COLLOIDS ON RBC VASODILATORY SIGNALING AND OXYGEN AFFINITY

**Presenter(s): Gresham, Jacob**

**Author(s): Gresham, Jacob; Simoni, Grace; Moeller, John; Simoni, Jan**

Background: Besides carrying O2 and CO2, RBCs control vascular tone. It was established that elevated shear stress, low pO2 or acidic pH accelerates the release of ATP from RBCs, which stimulates P2Y receptors and increases blood flow. Our previous study evidenced that hemodilution with crystalloids (0.9% NaCl and Lactated Ringer's) and colloids (Hespan) can affect RBC signaling and respiratory function. In fact, all tested fluids significantly decreased ATP release and disturbed O2 affinity. This study examined the impact of other clinically used crystalloids (Normosol R) and colloids (Dextran) on RBC shear-induced ATP release and respiratory function.

Materials and Methods: Fresh human RBCs were diluted 3:1 with Normosol R, pH 7.4 (NDC 0409-7670-09) and 1:1 with 10% Dextran in 0.9% NaCl (NDC 0409-7419-03) and subjected to a shear rate of 100 s⁻¹. After 5 minutes of treatment, RBCs were evaluated for O2 affinity (P50 and Hill coefficient) with a Hemox Analyzer (TCS Scientific Corp., New Hope, PA) and release of ATP using luciferase-luciferin and a Lumi-Aggregometer (Chrono-Log Corp., Havertown, PA). Whole blood served as a control.

Results: Normosol R treatment accelerated ATP release (3.5 fold) and slightly decreased RBC O2 affinity as compared to whole blood. 10% Dextran also increased ATP release (1.8 fold) and did not affect RBC P50 and Hill coefficient.

Conclusions: Our previous studies and the current data suggest that crystalloids and colloids have different impacts on RBC vasodilatory signaling and respiratory function and this must be taken into account during fluid resuscitation.
10. OCCUPANCY ESTIMATES OF FERRUGINOUS HAWKS IN THE SNAKE RIVER BIRDS OF PREY AREA  
**Presenter(s):** Gulick, Chris  
**Author(s):** Gulick, Chris; Skipper, Ben; Boal, Clint

We modeled estimates of occupancy for ferruginous hawks (Buteo regalis), a large, prairie dwelling raptor of widespread conservation concern, in the Snake River Birds of Prey National Conservation Area, Idaho. We surveyed 50 randomly located fixed radius plots for one hour, three times each during May of 2012 and 2013. We used occupancy modeling to evaluate the effects of year, utility pole presence, and distance to cliffs on occupancy estimates. Temperature, time, utility pole presence, and year were used to estimate probability of detection. Using these covariates, we evaluated a set of ten a priori models. Our top model included the effect of utility pole presence on probability of detection. Our probability of detecting ferruginous hawks was more than twice that when utility poles were absent, and estimates of occupancy were 0.95 and 0.37, for plots with and without utility poles, respectively. Models including effects of year, time, temperature, and proximity to cliffs received little support. Our data suggests utility poles affects occupancy and detection, and possibly current distribution, of ferruginous hawks.

11. TENSILE PROPERTIES OF THE ILIOTIBIAL BAND  
**Presenter(s):** Guthikonda, Amini  
**Author(s):** Guthikonda, Amini

Iliotibial band (ITB) syndrome is a common and persistent athletic injury with a prevalence of 12% in the runner population. The major symptom of this syndrome is a sharp pain on the side of the knee. As a lateral thickening of the fascia latae that encapsulates the thigh, the ITB is said to have properties similar to those of “soft steel.” However, there are no conclusive findings in the literature regarding the stretch properties of the ITB, and stretching of the band is still clinically used as a conservative treatment option for ITB syndrome. The objective of this study is to investigate, in vitro, the tensile (stretch) properties of the ITB - specifically, the amount of force required for the tissue to exit the tow region of a stress-strain curve, the force at yield point, and peak load. ITBs from un-embalmed human cadaveric specimens were dissected and separated from the tensor fascia latae muscle. Each ITB was individually placed in a materials testing system, pulled at a strain rate of 5 mm/sec, stretched until failure, and a stress-strain curve was developed. A study of six ITBs resulted in an average of 371 N to exit the tow region (21.3% strain), and a peak load of 979.6 N. These results indicate that clinical stretches on the ITB are most likely working in the tow region of a stress-strain curve; the amount of force in this region is not sufficient enough to lead to a permanent deformation in the soft tissue.

12. THE ACUTE METABOLIC RESPONSES TO HIGH SATURATED FAT MEALS BEFORE AND AFTER A 7-DAY HIGH POLY-UNSATURATED FAT DIET  
**Presenter(s):** Harold, Michelle  
**Author(s):** Harold, Michelle; Stevenson, Jada; Cooper, Jamie

Objective: To compare the metabolic response to high-fat (HF) meals rich in saturated fatty acids (SFAs) before and after a 7-day polyunsaturated fatty acid (PUFA)-rich diet.

Design and Methods: Four, normal weight (BMI=18-24.9kg/m2), sedentary (performed exercise <3 hr/wk) males between 18-45y participated in this study. At visit 1, height, weight, body composition and resting metabolic rate were measured. Participants then consumed a SFA-rich HF meal at 0800h and again at 1200h. Indirect calorimetry was used to measure respiratory gases every 30min for an 8-h postprandial (PP) period. Data collected was used to determine respiratory exchange ratio (RER), substrate oxidation, and energy expenditure for the determination of diet induced thermogenesis (DIT). For the next 7 days, participants consumed a high PUFA diet. At visit 2, the same measurements were taken as visit 1.

Results: There were no differences between visit 1 and visit 2 for EE (102.7±8.3kcals/8h vs. 105.2±6.8kcals/8h), carbohydrate oxidation (2.7±0.4g vs. 2.9±0.2g), fat oxidation (1.2±0.1g vs. 1.1±0.2g), or DIT (16.1±2.9 vs. 17.9±4.4), respectively. There was a trend for a difference (p=0.08) in substrate utilization with the visit 2 having a higher PP RER average (0.85±0.0) than visit 1 (0.83±0.0).

Conclusions: With additional participants, we may be able to significantly show an increase in substrate utilization (indicating greater carbohydrate oxidation) following the 7-day PUFA-rich diet.

13. CYCLOPROPANE FATTY ACID SYNTHASE IN LEISHMANIA PARASITES  
**Presenter(s):** Huang, Yiheng  
**Author(s):** Xu, Wei; Huang, Yiheng; Zhang, Kai

Protozoan parasites of the genus Leishmania are vector-borne pathogens which primarily infect humans, rodents and canines. A better understanding of Leishmania-host interaction will provide useful clues to help develop new treatments. Phospholipids are major components of cell membranes. They also control many cellular activities. The cyclopropanation of phospholipid bilayer is a post-synthetic modification catalyzed by the enzyme cyclopropane fatty acid synthase (CFAS). In bacteria, CFAS has been implicated in pathogenicity and stress response. Meanwhile, its function in eukaryotes is extremely understudied. We have constructed a Leishmania mexicana mutant that lacks CFAS. Interestingly, CFAS-null mutants exhibit profound defects in cell shape, acid resistance, and membrane protein synthesis. In this study, we examined the growth of CFAS-mutant in both regular condition and starvation condition. Results will help understand how a trace amount cyclopropanated lipid can have such a significant impact on Leishmania biology.
14. GALECTIN-3C INHIBITS MURINE BREAST CANCER CELL GROWTH AND MAY INCREASE THE ANTICANCER ACTIVITY OF PACLITAXEL

Presenter(s): Kim, Eunjee
Author(s): Kim, Eunjee

Galectin-3 is a human lectin involved in numerous cellular processes such as apoptosis, differentiation, neoplastic transformation, angiogenesis, and metastasis. Galectin-3C is an N-terminally truncated form of galectin-3, thought to function as a dominant negative inhibitor of this galectin and has potential anti-cancer activity. Galectin-3C has been tested in multiple myeloma cells, and has shown to inhibit cell growth. We predict that galectin-3C will have same inhibiting effect on 4T1 cells proliferation. A baseline was run on 4T1 cells using Western Blot, RT-PCR, ELISA, and IF. After treatment with galectin-3C, paclitaxel, and the combination, the same tests were performed for expression of galectin-3 and sperm protein 17 (sp17) as biomarkers. Cell viability was also performed to check for the efficacy of drugs as well as cell antiproliferation. Results indicate that treatment with galectin-3C significantly reduced the expression of galectin-3 and sp17, 4T1 cell proliferation, and cell viability. Galectin-3C has antineoplastic characteristics and inhibits 4T1 cell growth. Data suggests testing of galectin-3 should be continued to further examine its anticancer activity.

15. USE OF GENERALIST CHRYSOPERIA RUFILABRIS IN A TUNNEL HOUSE FOR SUSTAINABLE BIOLOGICAL CONTROL

Presenter(s): LeFors, Jessica A.
Author(s): LeFors, Jessica A

The green lacewing (Chrysoperla rufilabris) is a generalist predator that has been used for biological control of phytophagous insects in greenhouses. The high-tunnel house is a combination of greenhouse and field conditions; few studies have investigated lacewings for biological control in these systems. In this experiment, 192 Capsicum annuum (peppers) were planted in a tunnel house with a history of large whitefly and aphid outbreaks. Sixteen field cages were placed over each group of 12 plants in a randomized block pattern. Levels of treatment inoculum were eight live larvae per plant, 208 loose eggs per plant, 100 eggs per plant and a no-treatment control. Treatment was initiated when aphid and whitefly instars were easily observed on the vegetation. Aphids and lacewings were counted weekly. There were not significant differences in aphids or whiteflies across treatments. However, numbers of aphids and whiteflies showed an inverse relationship, with the aphids consistently increasing and whiteflies decreasing on the same plant. Further investigations toward understanding this relationship could aid sustainable growing methods in high-tunnel houses.

16. CARDIAC ADAPTATION TO EXERCISE DURING PREGNANCY

Presenter(s): Looten, Kalli
Author(s): Looten, Kalli; Chung, Eunhee

Although engaging in exercise during pregnancy is commonly recommended and thought to be beneficial for both the mother and the fetus, the essence of gestational exercise and how it may be beneficial still remains poorly misunderstood. This study will provide more knowledge about the contributions of maternal exercise during pregnancy and to assess changes in the heart mass due to both exercise-induced and pregnancy-induced cardiac hypertrophy. Research has shown that partaking in exercise causes the heart to grow and is considered to be beneficial for improving cardiac function. Pregnancy also portrays another example of a hypertrophic stimulus that is associated with a cardiac volume overload. However, there has not been enough research on what is the result of a female’s heart that is not only exercise-induced cardiac hypertrophic but also pregnancy-induced cardiac hypertrophic. In order to study the effect of exercise during pregnancy on cardiac adaptation, C57BL/6 mice were divided into 4 groups: virgin female for non-pregnant sedentary controls, an exercise only group, a pregnant only group, and an exercise during pregnancy group. The pregnant mice in the exercise group were subjected to voluntary wheel running from gestation day 1 to 17. The exercise only group was exercised for 17 days, the same length as exercise during pregnancy group. Mice will be sacrificed on Day 17 of the gestation (3 days before delivery), and we will measure the heart weight and compare to other groups. Future studies will include signaling pathways analyzing the effects of exercise and pregnancy-induced cardiac hypertrophy.
17. GLUCOSE AND INSULIN RESPONSE TO CEPHALIC STIMULATION OF SWEETENED MOUTH RINSES

Presenter(s): Messier, Aujehl

Author(s): Hawkins, Keely; Messier, Aujehl; Stamatikos, Alexis; Cooper, Jamie

Cephalic phases of digestion initiate rapid responses in energy metabolism before any postigestional consequences occur. Purpose: To investigate if nutritive or nonnutritive sweetened mouth-rinse (MR) elicit a blood glucose or HR response. Methods: Sixteen normal weight (NW) and 7 obese (OB) subjects rinsed for 45 seconds and expectorated four different MR solutions: water for control (C), sucrose (SU), xylitol (X), and sucralose (SL). Glucose (GLU) and heart rate (HR) were measured at baseline and 1, 3, 5, 7, 9, and 12 min after expectoration. Results: For all subjects, GLU (p=0.01) and HR (p=0.02) response was different between the solutions and over time, but no treatment by time interaction. SL induced a significantly higher HR response compared to SU, X, and C (73.4±2.92, 70.27±2.21, 70.4±2.51, 70.4±2.49 bpm, p≤0.001, respectively). For NW subjects only, there was a treatment effect for GLU (p<0.001) with the SU treatment having a greater post-rinse GLU compared to all other treatments (91.9±1.8, 88.4±1.6, 87.1±1.5, and 88.9±1.8 mg/dl (p<0.05) for SU, C, X, and SL, respectively). There were no differences in GLU and HR for OB subjects only. Peak change in glucose was greater in the NW compared to the OB (8±0.02% and 4±0.01%, p<0.001). HR responses were also greater in the NW compared to the OB (15%±0.02 and 9%±0.03, p<0.001). Conclusion: Overall, NW individuals had a greater cephalic response in GLU and HR than the OB individuals suggesting that obesity could result in an impairment of cephalic phases of digestion.

18. EVALUATION OF CAPTURE TECHNIQUES ON LESSER PRAIRIE CHICKEN TRAP INJURY

Presenter(s): Mitchell, Natasha

Author(s): Mitchell, Natasha; Borsdorf, Philip; Dixon, Charles; Grisham, Blake; Haukos, David

Ethical treatment of research animals is required under the Animal Welfare Act. This includes trapping methodologies that reduce unnecessary pain and duress. Traps used in research should optimize animal welfare conditions within the context of the proposed research study. Several trapping techniques are used in the study of lesser prairie-chickens, despite lack of knowledge of trap injury caused by the various methods. We captured 144, 40, and 217 lesser prairie-chickens using drop-nets, rocket-nets, and walk-in funnel traps, respectively, in New Mexico and Texas, 2006–2012. We recorded few injuries with rocket (2%) and drop-nets (6%), but trap injuries were common in walk-in funnel traps (23%). All trap injuries related to rocket and drop nets were broken feathers (primaries, secondaries, and tail feathers). Conversely, walk-in funnel traps ranged from cuts and scrapes on the head, cere, and patagium to broken feathers. Frequency and intensity of injuries in walk-in funnel traps are due to the passive nature of these traps (sit and wait) and indirect capture of individuals not needed for research. Comparatively, rocket and drop nets allow observers to target birds for capture and require immediate removal of the captured individuals from the trap. Based on our results, we recommend researchers monitor and remove birds from walk in funnels before they injure themselves, move traps to target birds and reduce recaptures, limit the number of consecutive trapping days on a lek, and use proper netting techniques with quick, efficient, trained handling.

19. MYCORRHIZAE INFLUENCE DROUGHT TOLERANCE IN OLEA CULTIVARS

Presenter(s): Moses, Andrew

Author(s): Sharma, Jyotsna

Olea (Olive) cultivars are cultivated for culinary and ornamental uses. Texas olive orchards are located primarily in south-central parts of Texas. Considering that water is a limiting resource for all agriculture and especially within drought affected Texas, any mechanism to improve water use while maintaining plant health would be beneficial. Mycorrhizae are known to benefit plant growth by improving water and nutrient acquisition. We tested the interaction of 3 irrigation frequency treatments (once every other day, 2x a week, or 1x a week) and 3 inoculation treatments (52g of Glomus intraradices, Glomus clarum, or uninoculated) on growth of the olive cultivars 'Mission' and 'Picual.' Six replicate plants represented each treatment combination. Plants were transplanted into a sterile 1:1 v:v mix of sand:peat, in 2L containers and pruned to 10 cm height. Plants were grown for 16 weeks in a greenhouse. When comparing the different mycorrhizal treatments in the drought stressed plants, Glomus intraradices yielded the tallest plants with a significant difference in height compared to Glomus clarum. However, at 16 weeks, uninoculated plants yielded similar mean height as inoculated plants. Our data suggest that Glomus intraradices may have a greater effect on drought tolerance than Glomus clarum. Colonization was not observed in any of the experimental units. This indicates that mycorrhizal colonization in olive roots takes longer than 12 weeks. We expect that with longer incubation mycorrhizae will improve drought tolerance.
20. THE EFFECTS OF MEDIA ON PUBLIC PERCEPTION OF WILDLAND FIRE

Presenter(s): Navarrete, Ana  
Author(s): Navarrete, Ana  

Wildland fires are natural phenomena that occur in many ecosystems. Wildland fires have been highly publicized in recent years, as more fires have occurred in the complexities of the wildland-urban interface. Popular media covers wildland fires regularly, reaching millions of people and affecting their perception of fire. Vocabulary choice used to describe fire can influence whether the public views wildland fire positively or negatively. I performed a popular media review of articles from the years 2002-2013 focusing on the most common words used to describe wildfires. I surveyed 150 articles and picked the most frequently use adjectives for analysis. I then surveyed a pool of people who were asked to rate each word as positive or negative on a sliding scale to determine the connotation of each word. I found that the vocabulary in these articles was mostly perceived as negative, with few positive words to describe wildland fire. Language has the power to persuade thinking; the adjectives used to describe wildland fire have the ability to influence public perception.

21. CHANGES IN TEXAS PLAYAS OVER THE PAST THREE DECADES

Presenter(s): Owens, Rebecca R.  
Author(s): Owens, Rebecca R.; McIntyre, Nancy E.  

Playas are ephemeral freshwater wetlands that are important resources for people and wildlife in Texas. Playas are filled from precipitation and thus are wet only during wet periods of time. Due to intense land conversion, playas have been deliberately or inadvertently modified. Activities such as drainage and infill have caused some playas to be lost altogether. However, it is unknown the quantity of playas that have been lost, particularly given seasonal and interannual wet/dry periods, and the inherently dynamic nature of playas. This is important information to know in light of projected climate change in this area. In my project, I used satellite imagery to identify playas containing water during wet and dry portions of three decades (1980's, 1990's, 2000's) relative to historic locations of playas based on hydric soils in a 34,000 km^2 portion of the Texas panhandle. I then examined the number and size (surface area) distributions of playas that held water at least once versus those that were wet the entire time or dry the entire time. There were over 8,000 playa basins identified in my study area based on hydric soil. I found that a large number of these playa basins no longer held water even during wet times; in contrast, there were relatively few playas that never went dry. There were differences seen in the average sizes of playa basins that held water in the previous decades. My research provides important foundational information of temporal changes in playa wetlands.

22. AN ANALYSIS OF VARIATION IN PIGMENTATION PATTERNS OF THE GENUS CORYDORAS

Presenter(s): Pacheco, Belinda  
Author(s): Pacheco, Belinda  

In general, humans lack the ability to categorize objectively without the inclusion of bias. Human bias has been a particularly prevalent problem among biologists in terms of their assignments of formal taxonomic names to species within genera that contain significant variability. Consequently, many species could have possibly been incorrectly categorized or misnamed due to variability that biologists have failed adequately to account for. The overall purpose of this project is to characterize the patterns of variation in pigmentation in highly variable genera using a model organism from which quantification and consequent classification of pigmentation patterns could be attained. Corydoras, a popular and problematic genus of South American catfishes known for their complex pigmentation variation, is being used as a model organism. The problem addressed by this study is being approached using imaging of pigmentation patterns followed by the quantitative and statistical analysis of those images. Catfish images were taken from colored photographs and morphometric methods were used to quantify and characterize patterns of variation.

23. REDUCTION OF LISTERIA MONOCYTOGENES ON CURED AND UNCURED HOTDOGS USING 5% LACTIC ACID

Presenter(s): Perez, Olga  
Author(s): Perez, Olga Gabriela; Fermin, Kathleen L.; Garcia, Lyda; Brashears, Mindy M.  

Contamination of ready-to-eat meat products with Listeria monocytogenes during slicing and packaging continues to be a concern and thus, interventions are needed to reduce post-processing contamination. This study was conducted to investigate the efficacy of 5% lactic acid on the reduction of L. monocytogenes on beef hotdogs. Chilled natural uncured and conventional hotdogs were surface-inoculated with 106 cfu/ml of four-strain L. monocytogenes. Inoculated samples were dipped in 5% lactic acid and in sterile water for ten seconds. Control and treated samples were packed in bags, vacuum sealed and placed in a display cooler. On day 0, samples were serially diluted, spread plated onto modified oxford agar, followed by incubation at 35°C for 24 hours. When compared to the control, uncured hotdogs dipped in water resulted in a reduction of 0.36 log10 cfu/g while a significant reduction of 0.91 log10 cfu/g (p<0.05) occurred when dipped in lactic acid. The reduction by lactic acid was also significant in comparison with the treatment of uncured hotdogs with water. L. monocytogenes on conventional hotdogs was reduced significantly by 0.72 log10 cfu/g when dipped in water and 0.89 log10 cfu/g when dipped in lactic acid. However, these two interventions applied on conventional hotdogs did not have significant difference indicating that the reductions are likely due to physical washing rather than actually killing of the pathogen (p>0.05). In the future, we will evaluate the long term efficacy of the two treatments in reducing L. monocytogenes on hotdogs in vacuum-sealed packages during retail storage.
24. INVESTIGATING APOPTOSIS INDUCTION IN BREAST CANCER CELLS BY THE NATURAL PRODUCT NI-07

**Presenter(s):** Pham, Hannah  
**Author(s):** Pham, Hannah; Gollahon, Lauren

NI-07 is a natural anticancer compound derived from Arctium lappa, commonly known as Greater Burdock. Previous studies in our lab have shown that NI-07 preferentially kills a variety of cancer cell types (e.g. breast, thyroid, pancreas, lung, sarcoma, etc.) while eliciting no cytotoxic effects on normal cells. In this present study, we are attempting to identify the major mechanism by which NI-07 induces breast cancer cell death. My study focuses on determining whether apoptosis is the primary form of programmed cell death elicited by NI-07. To that end, MCF 7 and 1419 breast cancer cell lines were analyzed in vitro by Western and immunocytochemistry for markers indicative of apoptosis such as p53, Bcl-2, and caspase 7. Furthermore, the cells were analyzed using Annexin V at time points <24h to determine how rapidly apoptosis occurs. We also analyzed mammary tumors from NI-07 treated and untreated mice to determine if these same results were recapitulated in vivo. While multiple mechanisms of cell death may be induced by NI-07, we predict that apoptosis will be identified as one of them.

25. LISTENING TO THE HUMAN BRAIN

**Presenter(s):** Philip, Stacy; Ehnis, Kate  
**Author(s):** Ehnis, Kate; Philip, Stacy; Ramirez, Fredrick; Gonik, Renato; Seaquist, Carl

Ten patient Electroencephalogram (EEG) recordings were selected from a study conducted at a Lubbock hospital. These recordings include 2 normal and 8 abnormal EEGs, which were stripped of personal identifying information. Recent publications indicate that sonification (converting data to sound) allows the human ear to analyze series data and detect irregularities that might otherwise go unnoticed. Since brain rhythms are typically lower than the human hearing range, signal-processing techniques, including but not limited to modulation, Fourier transforms, wavelet analysis, and digital filtering, will be applied to convert EEGs to sound. Our objective is to demonstrate that in addition to traditional visual analysis, auditory acuity may be useful in the analysis of EEGs and aid in the early detection of abnormal EEG activity. The project will be a success if an algorithmic approach to sonification leads to the identification of important features of the EEGs by listening to the transformed signals.

26. A NOVEL ANTIMICROBIAL AGENT INHIBITS BIOFILM DEVELOPMENT BY STAPHYLOCOCCUS AUREUS AND PSEUDOMONAS AERUGINOSA

**Presenter(s):** Polackal, Sharon  
**Author(s):** Polackal, Sharon; Bounds, Kayla; Colmer-Hamood, Jane; Hamood, Abdul

Wounds (severe burns, traumatic wounds, or surgical wounds) are colonized by different microorganisms, which proliferate within the damaged tissues and establish an infection. Wounds are colonized by different Gram-positive and Gram-negative pathogens including; Pseudomonas aeruginosa and Staphylococcus. Within the biofilm, the microorganisms are surrounded by a glycocalyx composed of a combination of an extracellular matrix (EPS) that is produced by the microorganisms and the host surrounding tissues. The glycocalyx contributes to the enhanced resistance of microorganisms to the host response as well as to various antibiotic treatments. Therefore, it is essential to investigate alternative antimicrobial agents. Next Sciences, LLC (Florida), has developed a novel proprietary antimicrobial agent technology (MDSA) designed to destroy bacterial biofilms. Using the in vitro two-dimensional wound biofilm model, we examined the effectiveness of MDSA in inhibiting and/or eliminating biofilms formed by P. aeruginosa and S. aureus. Nitrocellulose disks inoculated with the individual microorganism and MDS were incubated at 37°C for 24 hours and the biofilms were quantified by determining the number of microorganisms (colony forming unit, CFU) per disk. The CFU recovered from MDS treated disks were significantly lower than those recovered from untreated disks. Image analysis of S. aureus and P. aeruginosa strains that carried the gene for the green fluorescent protein confirmed theses results. Our results suggest that MDS is a potential novel antimicrobial agent to treat infected wounds.

27. A PRELIMINARY ASSESSMENT OF FATIGUE AND BURNOUT AMONG MEDICAL RESIDENTS IN AN ACADEMIC ENVIRONMENT

**Presenter(s):** Quezada, Karina; Jean, Michaeille  
**Author(s):** Quezada, Karina; Jean, Michaeille; Penrose, Lindsay; Prien, Sam

Residents in medical training in the United States work 60-80 hours per week. Residents often express feelings of fatigue and/or high stress levels due to the perceived intensity and strenuousness of medical training. Residents are often unaware of the available of psychological programs meant to help them cope with the amount of pressure that comes with the career. In order to truly evaluate the fatigue and stress levels of residents in training, residents were subjected to a series of surveys and standardized scoring systems to evaluate the levels of burnout, stress including relationship stress and their knowledge of availability of help. The Maslach Burnout Inventory Human Service Survey (MBI) was distributed to residents throughout Residency programs in the TTUHSC system (Lubbock, Amarillo and Permian Basin). The questionnaires included questions concerning the residents’ background, personal routines, and their perception of their quality of work. Initial analysis concentrated on response to individual questions. A total of 86 residents from 13 areas of study participated in the survey. There appeared to be some relationship between subspecialty and degree of perceived stress. The female to male ratio was equal with equal perception of fatigue and burnout. While a number of the residents were married and/or had children, there appear to be no correlation between family status and fatigue or stress. Scoring of the MBI is ongoing and will be presented at the time of the conference.
28. MASS LOADING OF Fe(III) ON DIFFERENT MINERAL PARTICLES
Presenter(s): Robertson, Meghan
Author(s): Robertson, Meghan

Using iron as a catalyst for redox reactions with organic contaminants has interested researchers because it is non-toxic and is abundantly available in the natural environment. There is still much to be learned concerning the reactivity of iron on the surface of common mineral oxides. This study aims to quantify the mass loading of iron on the mineral particles of titanium oxide (TiO2), aluminum oxide (Al2O3), and silica (SiO2). Specifically, we used a range of an iron to mineral oxide ratio. These were all brought to the same pH before we studied the reactions of the iron. Samples of each solution were then taken at the initial time, after 6 hours, and then after 48 hours of shaking to reach equilibrium. Using the Atomic Absorption spectroscopy (AAS), we were able to analyze the samples for the Fe(III) concentration. These findings will provide a better understanding of the surface chemistry of mineral colloids coated with Fe(III) and the catalytic activity for oxidation of aqueous contaminants.

29. SURVIVAL OF ESCHERICHIA COLI IN RELATION TO THE DISACCHARIDE TREHALOSE
Presenter(s): Sams, Tyler
Author(s): Sams, Tyler

The survival of Escherichia coli at extreme temperatures has led scientists to study how this bacterium responds to environmental stressors and changes. One proposed method of survival identifies the production of a specific disaccharide, trehalose, as crucial to the formation of a protective slime layer that retains water and essential nutrients. This study aims to determine if E. coli collected from Canada geese fecal matter, deposited at playa lakes in West Texas, utilize trehalose as a cold shock protectant. In addition, the study shows how E. coli responds to cold shock temperatures by determining the change in trehalose concentrations over time. E. coli was isolated from Canada geese feces (sample FP-12) and grown to logarithmic phase. The bacteria were then incubated in flasks containing 150 mL of Luria broth at 16°C, allowing the E. coli to acclimate by increasing levels of trehalose. The flasks were then incubated at 4, 8, and 12°C. Aliquots and cell counts were collected from each flask every 48 hours. Aliquots were treated with trehalase, an enzyme that cleaves trehalose into two molecules of glucose and a standard Glucose (HK) Assay (Sigma-Aldrich) kit was used to determine the concentration of glucose in each sample. E. coli control samples (ATCC 25922 and K12) were also subjected to the same conditions. Data from this study will suggest whether trehalose functions as a cold shock protectant or a nutrient source at different temperatures.

30. CATALYTIC HYDROSILYLATION OF CARBONYL COMPOUNDS USING Fe- AND Co-COMPplexes
Presenter(s): Smith, Ashleigh
Author(s): Smith, Ashleigh; Saini, Anu; Findlater, Michael

The tBuPNP (2,6-bis(di-tert-butyl-phosphinomethyl)pyridine) complexes of iron, (tBuPNP)FeCl2 (1), and cobalt, (tBuPNP)CoCl2 (2), and the corresponding tBuPONOP (2,6-bis(di-tert-butyl-phosphinito)pyridine) complexes (Fe(3) and Co(4)) have been investigated as catalysts for the hydrosilylation of carbonyl compounds. Both complexes were found to be catalytically active when treated with NaBEt3H, presumably generating a metal-hydride species in-situ.

31. DOES LIMB LENGTH INFLUENCE THERMAL TOLERANCE IN HARVESTER ANTS?
Presenter(s): Sohini, Vidhur; Fell, Cody
Author(s): Sohini, Vidhur; Fell, Cody; Verible-Pearson, Robin

Critical thermal maxima (CTmax) are temperatures above which organisms cannot survive. Factors that may influence thermal maxima are habitat, previous short-term exposure to hot sub-lethal temperatures (i.e., heat hardening), species, size, and limb length. Specifically, long limb size may benefit ants that live in hot climates by allowing them to “stilt” their bodies away from warm surfaces while foraging. We manipulated limb length in red harvester ants (pogonomyrmex rugosus) and examined their CTmax. Worker ants were collected in Lubbock, and maintained in laboratory colonies for up to 48 hours. Five individuals from each colony were randomly assigned to a treatment (shortening of all legs, none, front, middle and/or hind legs). Ants were encapsulated in thin plastic vials and submerged in a water bath. The temperature of the bath was increased 1°C/minute until the ants exhibited a “loss of righting response” (a common physiological measurement of critical thermal maximum). Temperatures were recorded and treatments were compared with an analysis of variance. A correlation was found between thermal tolerance and seasonality through the CTmax range between colonies. Additionally, limb length is found to be an important mechanism for thermal tolerance with a wide intra-colony variation.
32. EXPRESSION OF CD35 MRNA IN HUMAN PERIPHERAL CD4+ T CELLS  
**Presenter(s): Stanopiewicz, Jenna**  
**Author(s): Stanopiewicz, Jenna; Van Stelten, Anna; Reilly, Brian**

The complement system is comprised of over thirty soluble and membrane proteins that are involved in both innate and adaptive immune defense. Our laboratory focuses on the function and expression of Complement Receptor 1 (CR1/CD35) on various cells of the immune system. Previous work by us and others have shown CD35 is expressed on a small percentage of CD4+ T-cells suggesting one of two possibilities. Either CD35 is an inducible receptor that is homeostatically regulated or CD35 marks a separate lineage of T-cell. To further assist us in this determination we purified CD4+ T cells from human peripheral blood mononuclear cells using immunomagnetic beads followed by fluorescence activated cell sorting to separate the CD35+ T cells from the CD35- T cells. The cells were then lysed and the lysate was prepared for the detection of CD35 mRNA by real time PCR. Thus far our results indicate that the CD35- T cells express CD35 mRNA but at a level three fold below that of the CD35+ CD4+ T cells. These preliminary results are from one donor. Further testing will include both resting and activated CD4+ from multiple donors. We will also increase the stringency of our cell sorting to eliminate the potential contamination by a small number of CD35+ cells into our CD35- CD4+ T cell sample.

33. LC-MS GLYCOMIC ANALYSIS OF BREAST CANCER CELLS  
**Presenter(s): Tello, Nadia**  
**Author(s): Tello, Nadia; Mechref, Yehia; Zhou, Shiyue**

A significant number of breast cancer patients develop brain metastasis, the spread of cancer from the breast to the brain. To enter the brain, breast cancer cells must penetrate the Blood Brain Barrier, which is a vital structure made of endothelial cells held together by tight junctions that separates the brain from the circulatory system and protects the central nervous system from foreign substances, while regulating the flow of nutrients in and out of the brain. The method by which breast cancer cells invade the brain is unknown and poses a great threat to breast cancer patients today. LC-MS quantitative glycomic analysis is utilized to better understand which cancer cells possess the ability to invade the brain. The cell line sample preparation entails six steps before analysis. First glycans are extracted and exposed to the cell surface through sonication and denaturation. Then an N-glycan-targeting enzyme, PNGase F, cleaves N-glycans from the peptide backbone. These steps are followed by the removal of buffer salts from the sodium phosphate buffer solution and reduction of glycans using borane-ammonia complex. The final step of sample preparation is solid-phase permethylation of the released and reduced glycans using iodomethane reagent in conjunction with sodium hydroxide beads. The permethylated glycans are then quantitatively analyzed by LC-MS to determine N-glycan components in each type of cell line. Thus far, our analyses suggest an overexpression of N-acetylgalactosaminic acid and high mannose groups in brain-targeting metastasis cancer cell lines, suggesting a role for these structures in crossing the BBB.

34. CHANGES IN BODY WEIGHT AND HEALTH MARKERS FROM A SHORT-TERM VACATION  
**Presenter(s): Tokar, Theresa**  
**Author(s): Tokar, Theresa; Cooper, Jamie**

The average adult gains about 2 pounds per year. Research has shown that certain times of the year, such as holidays, account for most of that weight gain.

**Purpose:** The purpose of this study was to explore the effects of a short-term vacation on changes in body weight and other health measures in adults.

**Methods:** Seventy-three adults (31 Males, 42 Females, Age = 34±14yrs) who were going on a vacation lasting 1-3 weeks completed 3 study visits. Visit 1 (V1) took place before the vacation, visit 2 (V2) occurred right after the vacation, and a follow-up visit (visit 3-V3) within one week of departing and returning from the vacation, respectively. Visit 3 (V3) occurred five weeks after V2. Measurements collected at each visit included height, weight, waist-to-hip ratio, blood pressure (BP), body composition, and stress levels.

**Results:** Weight increased from V1 to V2 (76.3±16.2kg vs. 76.7±16.4kg for V1 vs.V2, respectively, p<0.05); however, weight had returned to baseline levels by V3 (76.5±16.3kg). Both stress and systolic BP were higher at visit 1 compare to visit 3 (stress: 18±5 vs. 16±6 for V1 vs. V3, respectively, p<0.05 and systolic BP: 119±1 vs. 117±1 for V1 vs. V3 respectively, p<0.05). There were no differences in body composition, diastolic BP or waist-to-hip ratio between visits.

**Conclusions:** Short-term vacations result is significant weight gain. However, that weight was lost by 5-weeks post-vacation. Stress levels and BP were higher prior to the vacation, but had decreased at both post-vacation time points.

35. AN ANALYSIS ON RED HARVESTER ANTS AND THEIR EFFECT ON SOIL TEXTURE  
**Presenter(s): Torres, Vanessa**  
**Author(s): Torres, Vanessa**

Red harvester ants (Pogonomyrmex barbatus) build large conspicuous nests in arid ecosystems. Previous literature has established that these nests aerate the soil and alter soil nutrient supply via food storage. However, we hypothesize that excavation of nest sites also results in a change in soil texture. Specifically, we predict that soils surrounding the ant mound will be coarser than soil from other “non-ant” locations. We excavated soil cores 10 cm from nest entrances and 10 m from nest entrances. Soil from each core was sieved and weighed. We used a paired t-test to examine differences in soil texture at each grain size. Results indicate that harvester ants may be manipulating their environment by altering soil texture.
36. IN SITU RUMINAL DEGRADATION PROPERTIES OF THE RESIDUE OF TWO GRAIN SORGHUM VARIETIES

Presenter(s): Vargas, Fernando
Author(s): Vargas, Fernando; Campanili, Pedro; Schmidt, Tanner; Sarturi, Jhones; Trojan, Sara

The objective of this experiment is to perform an evaluation between the residue of two grain sorghum varieties; grain sorghum NK7829 (traditional hybrid) versus grain sorghum NK8416 (stay-green hybrid). Physical properties of each variety were measured: leaf averages for each of the varieties were similar, 0.26 kg/m² for the traditional hybrid and 0.25 kg/m² for the stay-green hybrid, and the leaf:stem ratio for the traditional hybrid was 0.15 Kg/m², whereas the stay-green hybrid was 0.21 Kg/m². In situ ruminal degradation properties of each of the residue varieties will be evaluated using 6 cannulated steers. Steers will have ad libitum access to one of the two grain sorghum residue varieties and will be adapted to the respective diet for 10 days prior to the experimental incubation period. Ground samples of each of the residue varieties will be incubated in the rumen in duplicate in Dacron bags for 0, 3, 6, 12, 24, 36, 48, and 72 hours to evaluate properties of ruminal degradation for dry matter, organic matter, crude protein, neutral detergent fiber and acid detergent fiber. Results from this study will help characterize the feeding value of grain sorghum residue in beef cattle diets.

37. DEVELOPMENT OF A MECHANICAL CONTROLLED RATE FREEZER FOR CRYOPRESERVATION OF EXOTIC SPECIES

Presenter(s): Wright, Bradley
Author(s): Wright, Bradley; Penrose, Lindsay; Prien, Samuel

Cryopreserving semen is a painstaking process, especially in exotic species, and is optimally done using a controlled rate freezer (CRF) to produce the ideal freezing rate. Unfortunately, these freezers are extremely expensive, require electricity, and cannot be used outside the laboratory. The goal of the present study was to modify an inexpensive, mechanical controlled rate freezer (MCRF) developed in this laboratory and being used in domestic species, for use in exotic species. The system can be used in non-laboratory settings and could be a boon to exotic animal preservation in a field setting. Standard semen straws were prepared with temperature probes and placed inside the MCRF. Temperature of the straws was collected every minute for two hours. All data were analyzed and compared to the set freezing curve from the CRF. While the MCRF has been used to successfully mimic the freezing curves necessary for domestic species; to date, it has failed to match the freezing curve of the CRF for the endanger species of interest. Further modifications are pending. Once these preliminary studies produce freezing curves similar to the CRF, the MCRF will be used in attempts to freeze semen from exotic species.
BUSINESS EMPHASIS (Business)

Abstract 38
Free trade refers absence of commercial barriers like quotas or duties which hinder exchange of goods or services between countries and allows a person acquire products that cannot buy in his country either it’s too expensive or their production is impossible. In 2004 Central American Free trade agreement (CAFTA) was signed and all countries ratified the agreement in different dates. Now, after seven years of CAFTA on average there are doubts about the effectiveness of the treaty. The aim of this research is provide a general view about CAFTA and their effectiveness in agricultural sector, it prepared a study that shows the performance of countries in exports, imports and his commercial balance. Were analyzed the top 5 agricultural categories, and a total of 10 products. It used simple regressions with significance below 0.05, based on historical data before signing of CAFTA to project behavior in trade and, compared with real values determine exchange rates to observe effects of FTA in general. Effectiveness was measured using three indicators; growth in commercial balance surplus, diversification in export portfolio and market shares gained by countries.

Results suggest that CAFTA has had a measurable effect in countries and Guatemala has gained 49% of all monetary benefits after CAFTA, compared with his neighbors. While it seems that Costa Rica has won less than 6% despite being the country with best economic indicators in the region. Honduras and El Salvador has reduced his balance deficit, while Nicaragua shows more growth in relative terms.
HUMANITIES (Cultural Studies, Gender Studies, Literature, and Media and Communications)

Abstract 39
Since the debut of the MTV show 16 and Pregnant, there has been a significant decline in U.S. teen pregnancy rates. A recent study credited a 5.7 percent reduction in teen birth rates to the show, in part because it spurs teen discussion and information seeking about birth control (Kearney & Levine, 2014). Although post-viewing discussion about 16 and Pregnant is partially credited with lower teen birth rates, no study has examined the content of these discussions. The study presented seeks to qualitatively examine these post-viewing discussions.

Audio recordings were made as part of a study that supplied show episodes and a supplemental discussion guide to Boys & Girls Clubs. These discussion guides cover topics related to teen parenting, and are meant to encourage teenagers to take measures to avoid teen pregnancy. The current study examines recordings made of post-viewing discussions (similar to focus groups) at nine Boys & Girls Clubs after each of three episodes were watched (27 total discussions). Participants, aged 10-17, skewed low income (73 percent free/reduced school lunch). Transcription and development of the coding guide have begun with systematic coding results expected to answer the following research questions: What are teens’ reactions to the show’s themes, what do teens know about safe sex and contraception, how do teens think parenthood would affect them, and how do teens identify with the characters on the show? Anticipated results will provide insights into how teens and pre-teens actually talk about and are affected by the show.
LAW, PUBLIC POLICY, & EDUCATION
(Education, Legal Studies, History, Philosophy, and Political Science)

Abstracts 40-41
40. WHY IS OBESITY LINKED TO LOWER INCOME HOUSEHOLDS AND WHAT CAN BE DONE ABOUT IT?

Presenter(s): Alcoreza, Narah

Author(s): Alcoreza, Narah; Willett, Julia

Why is obesity linked to lower income households and what can be done about it? The public’s lack of education is detrimental to nutritional needs of nearly half the population. There are various documentaries, studies, and publications that capture the harsh reality of food consumption and production. Refined foods, prepackaged meals and highly saturated products are being bought and sold at higher levels than “healthy” foods. Price, accessibility, and knowledge are some of the reasons why obesity has been steadily increasing. Food deserts, for example often limit families to convenience store shopping. Public policies are not able to pass due to corporate interests. Also the increasingly popular trend of buying organic or wholesome foods caters to middle and upper income households who have accesses to healthier choices. The question that arises is, why aren’t certain populations getting exposed to these healthier trends and products? Some suggest that farmers markets are the key to changing the dietary intake of every social economic class. The feasibility of that actually happening is low due to geographic limitations. There is a lot to consider when trying to come up with a solution to decreasing obesity, but the most feasible could be the introduction of nutrition courses throughout elementary, middle and high school. Courses that not only educate youth, but inspire them to challenge the contemporary process of food production and consumption.

41. SEARCH ENGINES AND SCIENCE INTEGRATION (SESI): SURF ON THE WEB

Presenter(s): Diordieva, Cristina

Author(s): Diordieva, Cristina; Yeter, Ibrahim

The purpose of this study is to have an extensive literature review about how search engines have been used to find science terms. The study will be carrying a recommendation point for the educational environment such as school district and teachers. As an inclusion and exclusion criteria, the study will investigate studies from 2000 to 2013, and including from kindergarten to high school students related studies. Overall, the study will suggest increasing the awareness of using the web, for instance, searching science in the web as efficient as possible. The result section is forthcoming and will be emphasized in the paper as well as with the recommendation section. Since this study is about teaching with technology, it will also be helpful to engage the students, teachers and school principals through 21st century skills and learning.
PHYSICAL SCIENCES (Computer Science, Engineering, Geosciences, Mathematics, and Physics/Astronomy)

Abstracts 42-52
42. FISHNET EFFECT IN GRAPHENE DISPERSIONS  
**Presenter(s):** Atore, Francis

**Author(s):** Atore, Francis; Sweeney, Charles; Green, Micah

Graphene, i.e., single-atom layers of graphite, is prized for its unique combination of strength, flexibility, electrical properties, and thermal conductivity. Unfortunately, graphene cannot be stably dispersed in liquids in its pristine form; instead, it restacks to form graphite. Our group utilizes dispersing agents such as polymers and surfactants to prevent the aggregation of graphene sheets in solution.

We analyze the effects of centrifugation on graphene-stabilized dispersion quality, by comparing gravity settled dispersions versus centrifuged dispersion quality. Graphite is mixed into a dispersant-containing solution, then mechanically exfoliated into graphene layer sheets using sonication. Afterwards, multilayer graphitic artifacts are settled out of solution using gravity rather than centrifugation, thus leaving pristine graphene suspended in solution. However, as graphitic pieces descend, they may bind to the larger lateral dimension graphene sheets, crashing them out of solution, like rocks causing a fishnet to submerge. We therefore characterize sheet sizes and graphene concentration as a function of centrifugal forces using Dynamic Light Scattering (DLS). We hypothesize that the fishnet effect is worsened by centrifugation and reduces the quantity of large lateral dimension graphene sheets present in the dispersion, which is disadvantageous for most graphene electronic and composite applications.

43. INTEL GALILEO DEVELOPMENT BOARD BASED EMBEDDED APPLICATIONS  
**Presenter(s):** Crabtree, Jacob; Williams, Joshua

**Author(s):** Crabtree, Jacob; Williams, Joshua; Marler, Nicholas; Gattis, Matthew; Lim, Sunho

Embedded systems characterized by single-functioned, tightly-coupled, and real-time constrained have been deployed in numerous applications ranging from civilian to military, and become increasingly popular. In this research, we design and develop multiple embedded applications using Arduino-compatible Intel Galileo development board, partially supported by Intel Corporation. The board is based on the Intel Quark SoC X1000 application processor, which is a 32-bit Intel Pentium-class system on a chip. Four different applications are explored in the areas of Web server, wireless communication, music, and user interface. We are investigating system configuration and setup and programming in integrated development environment. This research will expose the cutting-edge technology and significantly enhance hands-on experience in embedded systems.

44. MAGNETIC IRON NANOPARTICULARS TETHERED TO GRAPHENE  
**Presenter(s):** Fullerton, Robert

**Author(s):** Fullerton, Robert

We describe a novel approach for coupling pristine graphene with superparamagnetic iron oxide nanoparticles to create dispersed, magnetically responsive hybrids. The magnetic iron oxide (Fe3O4) nanoparticles are synthesized by a co-precipitation method using ferric (Fe3+) and ferrous (Fe2+) salts and then grafted with polyvinylpyrrolidone (PVP). These PVP-gated Fe3O4 nanoparticles are then used to stabilize colloidal graphene in water. The PVP branches non-covalently attach to the surface of the pristine graphene sheets without functionalization or defect creation. These Fe3O4-graphene hybrids are stable against aggregation and are highly responsive to external magnetic fields. These hybrids can be freeze-dried to a powder or magnetically separated from solution and still easily redisperse while retaining magnetic functionality. At all stages of synthesis, the Fe3O4–graphene hybrids display no coercivity after being brought to magnetic saturation, confirming superparamagnetic properties. Microscopy and light scattering data confirm the presence of pristine graphene sheets decorated with Fe3O4 nanoparticles. These materials show promise for multifunctional polymer composites as well as biomedical applications and environmental remediation.

45. OPTIMIZATION OF GRAPHENE DISPERSIONS VIA PHOTODEGRADATION OF POLYVINYLPYRROLLIDONE  
**Presenter(s):** Klaassen, Christopher; Hansen, Matthew

**Author(s):** Hansen, Matthew; Klaassen, Christopher; Green, Micah; Sweeney, Charles

Graphene, i.e., few-layer 2-D sheets of graphite, possesses excellent thermal conductivity, electrical conductivity, and mechanical properties and may be used in a variety of high-performance composite materials. Graphene is made by adding graphite to a solvent (e.g. water or ethanol). This mixture is subjected to tip sonication, and then purified via centrifugation and separation of the stable dispersion from the graphite aggregates. However, due to its large surface area, graphene sheets tend to be attracted to each other by strong van der waals forces. This attraction causes aggregation of the graphene sheets to reform graphite. To overcome this issue, polyvinylpyrrolidone (PVP) is added to the solution prior to sonication. The PVP absorbs onto the graphene surface and counteracts the van der waals attraction forces between graphene layers, which prevents the layers from reforming into graphite. A problem arises in that the presence of PVP impairs the graphene’s desirable properties. Specifically, the PVP inhibits the electrical transport between graphene sheets. In an effort to combat this issue, our group investigated polymer photodegradation. The presence of ultraviolet light initiates a radicalization reaction within the polymer chain. This causes PVP to degrade into strands of lower molecular weight. Radical catalysts, such as hydrogen peroxide (H2O2) and iron (III) chloride (FeCl3), can magnify this reaction. Ideally, we can reduce the size of the PVP, and still maintain a high-quality dispersion. As a further result of this decrease in polymer size, we hope to stave off the electrical conductivity dampening of the PVP on graphene.
46. THE SIGNIFICANCE OF DEBRIEFING IN HRO THROUGH CONCEPTUAL RECURRENCE PLOTS
Presenter(s): Kim, DK; Schumacher, Sara
Author(s): Baty, Amanda; Schumacher, Sara; Kim, DK

This research assessed surgical team awareness and resiliency through conceptual recurrence of communication patterns. Through a simulation study, communication patterns of surgical procedures were collected. The simulation study consisted of 5 teams, 4 surgical procedures each, and debriefing that followed afterwards as part of the last step. Specifically, we had surgical teams complete 4 simulated scenarios. The scenarios gave the team a chance to react to a hidden complication, such as equipment failure, and an obvious complication, such as the patient going into cardiac arrest. After the simulations the team members partook in a debriefing. Then the debriefing was transcribed and analyzed using conceptual recurrence. CRP (Conceptual Recurrence Plots) are used to find a pattern or sequence within the communication of the participants. Concepts established in HRO (High Reliability Organization) were used to evaluate the communications patterns between the participants. The main objective in HRO is to succeed in keeping their error rate low in a hazardous environment due to their internal operational practices. Debriefing is an important process for HRO in order for them to be successful because that is when crucial information such as causes and root causes are discussed. These concepts evaluated by the conceptual recurrence plots included improvement, failure, understanding, communication, learning, lessons, and experience. Additionally, metrics were analyzed. The metrics included leadership, engagement, and fixation. The conceptual recurrence plots provided a visualization of the debriefing while the metrics provided the qualitative metrics.

47. EXAMINING AIR QUALITY AND SYNOPTIC METEOROLOGY FROM 2002-2012, IN HOUSTON, TEXAS
Presenter(s): Leachman, Kaitlin
Author(s): Leachman, Kaitlin

Addressing synoptic weather patterns and atmospheric pollution is important in cities with sources of air pollution. This study will combine air pollution and weather data and relate them to extreme air mass days in Houston, Texas and will address the current state of how air quality and ozone are presented to the public. The Spatial Synoptic Classification website provides daily maps of air mass types. Synoptic air mass data for Houston will be downloaded from the SSC for 2002-2012. Daily air pollution data will be collected from the TCEQ concerning ozone concentrations and air quality index values. SSC data for each year will be analyzed and grouped by season. Air mass frequencies within each season will be indentified to produce tables categorizing the air mass type, specific season, air quality index, and ozone concentration with specific extreme weather events being targeted. By correlating air pollution levels with each air mass, relationships will be derived. A discussion with a Houston meteorologist on the public reporting of air quality will be included. This research will be analyzed in conjunction with the data acquired to determine if there is a more accurate way that this data could be presented to the public. This study will produce results that will allow for a greater understanding of the relationship between an air mass, air quality, and ozone levels for the city of Houston to eventually provide guidelines for predicting future ozone and air quality levels based on incoming air mass and meteorological variables.

48. DESIGN AND ANALYSIS OF A NOVEL CAPACITANCE-BASED DROP SENSOR
Presenter(s): Mohan, Siddharth
Author(s): Mohan, Siddharth; Wurmstein, Michael; Bhattacharjee, Biddut; Vanapalli, Siva

In recent years, Drop-based microfluidic platforms have been a subject of intensive investigations due to their applications in bio-chemical processes such as drug screening, protein crystallization and cell-based assays. The ability to sense and detect droplets is playing an increasing role in the development and application of such platforms. Imaging techniques have often been utilized for drop detection, but their bulky and costly off chip components put limitations on their use. We propose an electrical method of drop sensing, wherein the capacitance of the liquid in the channel and the solid material forming the wall between the electrodes is utilized. The novel design of the electrode facilitates signal generation which can be interpreted to detect not only the presence of droplets, but the size and speed can also be derived.

49. ANALYTIC AND GEOMETRIC PROPERTIES OF THE HYPERGEOMETRIC FUNCTION
Presenter(s): Naser, Danna
Author(s): Naser, Danna; Barnard, Roger

We will define the hypergeometric function and discuss some of its analytic properties. We will then use Mathematica images to illustrate how varying the parameters of a hypergeometric function changes the images from circular regions to non-convex domains.
50. IN-SITU DECARBONIZATION OF FOSSIL FUEL

Presenter(s): Obianyor, Chiamaka
Author(s): Obianyor, Chiamaka; Wiesner, Theodore

With global climate change becoming a pertinent issue in this century, carbon dioxide and other greenhouse gases are being investigated more closely. The source of this problem is the fact that carbon dioxide is a byproduct from most of the fuel in use today. The purpose of this study is to decarbonize fossil fuels by reforming them to hydrogen and carbon dioxide underground, and bringing only the hydrogen to the surface for fuel use. The project involves designing an underground reforming reactor followed by a membrane separator which allows hydrogen gas to sift through it and go to the surface, while trapping the carbon dioxide underground. Thus we prevent the need to do carbon capture and storage and other surface removal methods for CO2. We will run various simulations for the reactors with varying temperatures, pressures and flow rates until we arrive at one which yields the most energy compared to the existing decarbonization methods.

51. EFFECT OF IONIC LIQUIDS ON THE THERMAL DENATURATION OF RIBONUCLEASE A

Presenter(s): Toops, Anthony
Author(s): Toops, Anthony; Xue, Lianjie; Tamas, George; Parrish, Hayden; Mendoza, Kayla

The protein Ribonuclease A was thermally denatured in the presence of imidazolium ionic liquids (IL). In protein denaturation the secondary and tertiary structures are disrupted causing the protein to unfold. In the experiment, the enthalpy change (ΔH) and the thermal denaturation temperature (Tm) was measured by a differential scanning calorimeter. The protein was denatured in the presence of the symmetric IL 1,3-dibutylimidazolium bromide ([C4C4im]+[Br]-) and the asymmetric IL 1-heptyl-3-methylimidazolium bromide ([C7C1im]+[Br]-) at three different concentrations of 0.5, 1.0, and 1.5 M in pH 5.5 aqueous solution. Results showed that the more concentrated the IL the lower the Tm. The results also showed that the asymmetric [C7C1im]+[Br]- lowered the Tm more than the symmetric [C4C4im]+[Br]-. The asymmetric IL also had a higher reversibility of thermal denaturation than the symmetric IL with the difference being greatest at the IL concentration of 1.5 M.

52. A BIOLOGISTS PERSPECTIVE ON THE FINE TUNING OF OUR UNIVERSE FOR LIFE

Presenter(s): Willms, Joshua
Author(s): Willms, Joshua; Green, Micah

Over the past hundred years, physicists and cosmologists have begun to notice that if certain fundamental characteristics of our universe were even a few percentage points away from their current values, life in our universe could not exist. Examples of these characteristics, called “parameters,” include the gravitational constant, the cosmological constant, Planck’s constant, and the speed of light. The general consensus of the scientific community is that these parameters are finely tuned for life, meaning that miniscule variations in the parameters would have rendered the universe unable to support life. There is significant debate, however, on the interpretation of this information. Over the past four years, Dr. Victor Stenger and postdoctoral fellow Luke A. Barnes have engaged in the most modern and scientifically informed version of this conversation. In this work, I will provide a biologist’s perspective on a topic largely dominated by physicists. I argue that the target for fine tuning is not our kind of life specifically, but rather the environmental parameters required for any kind of abiogenesis.
SOCIAL SCIENCES (Anthropology / Archaeology, Economics, Psychology, Social Work, and Sociology)

Abstracts 53-57
53. TRAUMA TRAINING FOR FOSTER PARENTS IN TEXAS

**Presenter(s):** Camacho, Cecilia

**Author(s):** Camacho, Cecilia; Henderson, Desiree; Wherry, Jeffrey

Problem: Rork and McNeil (2011) reviewed 17 studies of foster parent training and found that 10 studies were flawed in their methodological design. The content of training focused on issues which have little relevance to the reason children were placed (e.g., abuse/trauma).

In Texas, Cenpatico, the behavioral health care company serving children in the care of CPS, provides training in trauma-informed care. This study sought to evaluate the success of the Cenpatico training for foster parents.

**Method**

Participants. Respondents were adults providing foster care in Texas. Evaluations were obtained through a survey sent to 2,168 participants. There were 334 respondents (31.1% male, 68.9% female) to the survey (a 15.4% return rate).

Training. There were three types of training offered, 52.4% received “Basic Caregiver” training, 12.6% received “Introduction to Parenting” training, and .9% received “Advanced” training. The trainings were based on two resources available through the National Child Traumatic Stress Network (NCTSN).”

**Results**

Differences in ratings were examined based on the sex of the participant and the age of children served by participants. Neither the t-test for sex of the parent nor ANOVA for the different age groupings of children served was statistically significant.

**Conclusion**

Participants responded favorably to the training. The use of a vetted set of curricula products designed by the NCTSN is commendable and may have contributed to the overall success of the training. Specific items related to the performance or execution of training by the individual trainers was not assessed which is a limitation of the survey.

54. VOLUNTARY PHYSICAL ACTIVITY LEVELS ARE NEGATIVELY ASSOCIATED WITH THE SEVERITY OF SYMPTOMS IN WOMEN WITH FIBROMYALGIA

**Presenter(s):** Chatrath, Amritpaul

**Author(s):** Chatrath, Amritpaul; Umeda, Masataka

Fibromyalgia (FM) is a chronic pain condition that is characterized by widespread musculoskeletal pain and several psychological comorbid symptoms such as depression and anxiety. Epidemiological research indicates that FM disproportionately affects women. Although there is no established therapeutic approach to treating the clinical symptoms of FM, evidence suggests that a regimen of prescribed exercise can help manage their clinical symptoms. However, there is little evidence that supports the relationship between voluntary physical activity (PA) and clinical symptoms of FM. This study examined the association between voluntary PA levels and the severity of FM symptoms. Forty-two women with FM (age= 51.05 ± 13.046) were assessed on the levels of voluntary PA using the Baecke PA Questionnaire (BPAQ). Further, the impact of FM on daily function, the intensity of pain and depressive symptoms, and general anxiety levels were assessed using the Fibromyalgia Impact Questionnaire (FIQ), the Visual Analogue Scale (VAS), the Beck Depression Inventory (BDI), and the Trait Anxiety Inventory (TAI), respectively. The BPAQ scores were negatively correlated with the FIQ scores (r = -0.363, p = 0.018), the VAS scores (r = -0.491, p = 0.001), the BDI scores (r = -0.307, p = 0.048), and the TAI scores (r = -0.358, p = 0.020). These results suggest that voluntary PA levels are negatively associated with the severity of FM symptoms. Future research is needed to develop interventions that will help increase their voluntary PA levels.

55. IS PERSONAL GROWTH INITIATIVE A PROTECTIVE FACTOR FOR SUICIDAL THOUGHTS AND BEHAVIORS?

**Presenter(s):** Ciavaglia, Addison

**Author(s):** Ciavaglia, Addison; Robitschek, Christine; Cukrowicz, Kelly

Suicide is an important and leading cause of death that can be prevented (Ribeiro et al., 2013). Suicidal risk factors include feelings of not belonging, perceived burdensomeness, feelings of hopelessness, intolerable suffering, and other feelings along those lines (Ribeiro et al., 2013). Less is known about protective factors for suicide. The current research tests the possibility that Personal Growth Initiative (PGI) is one of those protective factors among adults seeking outpatient psychotherapy. PGI is a skill set for self-improvement. A person with a high level of PGI constantly seeks opportunities to grow, and is more adaptable and able to cope with change (Robitschek, 1998). A person with a high level of PGI will also be more likely to see changes or challenges as growth experiences (Robitschek, 1999). Thus, we hypothesized that PGI skills would protect against developing suicidal thoughts and actions. Archival data for this experiment came from closed client files at a community outpatient psychotherapy clinic. Specific data includes history and current suicide symptoms at phone screening, and scores on the Personal Growth Initiative Scale- II, and Depressive Symptom Index- Suicidality Subscale collected at intake session. It is predicted that clients with higher levels of PGI will report lower levels of suicidal thoughts and behaviors. Results, future directions, and clinical implications will be discussed.
56. VALIDATION OF THE CHILD AND ADOLESCENT SCALES OF HOPE  
Presenter(s): Lancaster, Brittany   
Author(s): Lancaster, Brittany D.; Van Allen, Jason; Cushing, Christopher C.  
This study was designed as an initial measurement validation of the “Child and Adolescent Scales of Hope” (CASH) among late-adolescents. The CASH is an 18-item self-report questionnaire designed to measure three subcomponents of Snyder’s (1991) original Hope Theory, namely pathways, agency, and goals. In addition to conducting a confirmatory factor analysis (CFA) of the measurement model, we also designed this study to examine relations between total hope scores on the CASH with various demographic characteristics to determine whether there are any differences in self-reported hope based on age, ethnicity, gender, and factors that influence socioeconomic status among participants. We hypothesized that total hope scores would be positively correlated with participants’ parents’ education, family income, and marital status.  
We collected data from a convenience sample of undergraduate students at Oklahoma State University. The sample (N=412) primarily consisted of Caucasian (N=315; 76.5%) females (N=285; 69.2%), with a mean age of 19.48 years. The CFA indicated that the factor structure of the CASH was a good fit to the data overall (CFI=0.977, SRMR=0.026, RMSEA=0.047) using the higher order factor structure proposed. Further, results indicated that there were no significant differences between total hope scores and participants’ age, gender, or ethnicity; however, there was a significant positive correlation between the mothers’ education and the participant’s total hope score (r=0.126, p<.05). Alternatively, there was not a significant association between total hope scores and father’s education level.

57. THE INFORMATIONAL CONTENT OF THE DIVISIA MONETARY AGGREGATE FOR INFLATION EXPECTATIONS  
Presenter(s): Lynch, Nathan   
Author(s): Lynch, Nathan; Valcarcel, Victor  
Recent periods of higher economic uncertainty have come in stark contrast with remarkably well-anchored levels of inflation expectations from professional and consumer surveys. Dramatic expansions of the Fed’s balance sheet, increases of the monetary base and rates stuck at their lower bound do not seem to portend higher inflation expectations, at least not yet. We estimate alternate specifications of Bayesian structural VARs where the covariance matrices are allowed to vary over time. We identify monetary shocks with permanent effects on the spread between the 1-year ahead and 10-year ahead inflation expectation as an ‘expectations anchor’ (EA) shock and shocks with only temporary effects on the spread as ‘inflation news’ (IN) shocks. Preliminary results suggest the simple-sum monetary aggregate (M2) and growth rate of DIVISIA quantity index have a contrasting relationship with inflation expectations as measured by the Survey of Professional Forecasts (SPF). This has important implications in the discussion of the informational content of monetary aggregates at a time when the Federal Funds rate remains largely uninformative.
Wednesday April 16, 2014

Poster Presentations

Abstracts 58-114
BIOLOGICAL AND CHEMICAL SCIENCES
(Biology/Biochemistry, Chemistry/Biochemistry, Environmental Studies, and Health Professions)

Abstracts 58-96
Many cancerous tumors produce recognizable antigens which can incur an antitumor response from an adaptive immune system. Until recently, most cancer immunotherapy studies have focused on the CD8+ CTLs that recognize MHC class I molecules and their antigens on tumor cells. Recent studies have shown that cancer cells are beginning to evolve and avoid recognition by CD8+ CTLs. Because of this evolution, focus has begun to shift to CD4+ T cells. Recent studies show that CD4+ Th1 and Th2 cells can act independently of CD8+ CTLs to eradicate tumor cells. A set of three equations were constructed to model the relationship between cancer cells, CD4+ T cells, and two important cytokines (IL-4 and IL-2). It has been found that without treatment even a small tumor cannot be eliminated. However, with cytokine treatment it may be possible to shrink, stabilize, or eliminate a tumor depending on its antigenicity.
62. CONSUMER PREFERENCE OF BEEF FROM HONDURAS AND THE UNITED STATES
Presenter(s): Andrade, Susana
Author(s): Andrade, Susana; Bueso, Maria; Miller, Mark

The increasing presence of the international market has influenced consumer preference and acceptability of meat. These evolving preferences have helped consumers to create an ideal biotype of meat. The objective of this study is to measure the effects of beef from Honduras and the United States on the palatability traits of flavor, tenderness, juiciness and all overall liking of beef strip loin steaks (longissimus dorsi) as determined by consumers, putting emphasis on the role of region on beef flavor and overall palatability. The study consisted of a taste panel with voluntary consumers (n=250) during the Panamerican Fair at Zamorano University. The treatments were USDA Top Choice, USDA Select, Honduran grass fed, and Honduran grain finished steaks. Consumers were fed 1 in 2 samples of the four different treatments. A 2x4 factorial design was arranged to determine the effect of region on palatability traits. A statistical analysis was used in order to determine if there were significant differences. As a result of the study differences were observed for tenderness, flavor, and overall qualities. No differences were observed among Top Choice and Select for tenderness acceptability and overall acceptability (P > 0.05), and no differences were observed among Select and Honduran grass for juiciness, flavor acceptability and juiciness acceptability.

63. REDUCTION OF SALMONELLA AND ESCHERICHIA COLI O157:H7 IN DRINKING WATER USING MICROWAVE TECHNOLOGY
Presenter(s): Banegas, Coranyi
Author(s): Banegas, Coranyi; Fermin, Kathleen; Stull, Don; Chaves, Byron; Brashears, Mindy

The search for improved water decontamination techniques is of primary public health importance to reduce the incidence of waterborne illnesses and to provide a safer water supply worldwide. The objective of this study was to determine the efficacy of a multi-functional microwave system (MicroZap) on the reduction of Salmonella and Escherichia coli O157:H7 in water samples. Sterile water inoculated with cocktails of 108 CFU/ml of either bacterium was subjected to one of five treatments: A (2 cycles, 20% speed, 95% power, 180 s), (2 cycles, 30% speed, 95% power, 6 min), C (2 cycles, 30% speed, 95% power, 10 min), D (2 cycles, 30% speed, 95% power, 15 min), E (2 cycles, 20% speed, 95% power, 10 min). After treatment, samples were serially diluted and plated for enumeration on selective microbiological media. Microbial counts were log-transformed and analyzed via one-way ANOVA on the Statistical Analysis Systems (SAS Version 9.3, Cary, NC). Means were separated using Tukey’s test and differences were considered significant at p<0.05. Both pathogens were significantly reduced by 5.5 log10 CFU/ml on average with respect to the control. After all of the treatments, Salmonella numbers on XLD media were deemed too few to count whereas E. coli O157:H7 was recovered on MacConkey agar at 0.24 log10 CFU/ml of water, in average. The results of this study prove the efficacy of microwave technology as a decontamination method for water. Further studies are underway to expand our knowledge on other potential uses of this technology in developing countries.

64. A MICROFLUIDIC DEVICE FOR LIFESPAN STUDIES OF CAENORHABDITIS ELEGANS
Presenter(s): Birze, Nikolajs
Author(s): Birze, Niko; Rahman, Mizanur; Solomon, Deepak; Szewczyk, Nathaniel; Vanapalli, Siva

To understand ageing from a molecular point of view, one must generate large amounts of lifespan curves upon genetic/environmental/physiological manipulation or a combination of those. Ageing research also requires a short-lived animal model (Caenorhabditis elegans) and a method/device for observing the animal over its entire lifetime. Currently, C elegans lifespan studies are entirely carried out in agar plates. During the reproductive stage individual animals are transferred from their progeny into a new agar plate by hand picking. Use of agar plates and manual intervention makes lifespan studies the slowest step in ageing research. We report the development of a unique microfluidic device for measuring the lifespan of C. elegans and its genetic mutants. The device consists of an array of deformable circular pillars arranged in a square lattice. These circular pillars enable flushing out of the progeny from adult animals while efficiently retaining the adult worms in the arena. This unique feature makes the device suitable for observing the population for their entire lifetime. This device is equipped for washing the old fluid and feeding when necessary with no loss of animals. Individual devices can be imaged using an automated stage/camera arrangement. As a result, large number of experiments can be carried out simultaneously. In this study, we report the lifespan study for wild type animals and two of its long lived mutants, age-1 and daf-2 using the lifespan device. In conclusion, the reported device is a powerful tool capable of lifespan studies for C elegans in a high throughput manner.
65. A REACTIVE COAGULATION PROCESS FOR OPTIMAL REMOVAL OF ARSENIC IN WATER

**Presenter(s): Bland, Garret**

**Author(s): Bland, Garret; Li, Yue; Yan, Weile**

Arsenic is a highly toxic chemical that appears naturally in groundwater in many parts of the world. One of the most common methods to remove arsenic is coagulation and flocculation. Coagulation involves injecting a small amount of chemicals such as ferric chloride (FeCl₃) into the water, which forms ferric hydroxide flocculants to bond with many contaminants including dissolved arsenic. During flocculation, ferric hydroxide precipitates attach to each other to form large clumps and the clumps then settle out of water with contaminants trapped inside. It has long been recognized that coagulation with ferric chloride is effective in removing the penta-valent arsenic (As (V)), but eliminating the tri-valent (As (III)) has remained a challenge. The performance of an oxidation-and-coagulation process for arsenite removal was assessed. Many variables were adjusted to look for the optimal process conditions. They include the type of coagulants, dosage of the coagulants, initial concentration of arsenic, concentration of hydrogen peroxide (H₂O₂), solution pH, and the presence of common background ions in groundwater. We setup a baseline then adjusted variables and compared arsenic removal efficiency with that of the baseline conditions. The results indicate that the dose of ferric chloride and the addition of H₂O₂ are two key variables with large impacts on arsenite removal efficiency. We consider that H₂O₂ has served to oxidize As (III) to As (V), which is less mobile and toxic. We also tested two other coagulants, aluminum and iron (II), and evaluated the sequence of coagulant injection.

66. FEEDING ECOLOGY AND NICHE OVERLAP OF CO-OCCURRING KILLIFISH SPECIES IN THE PECOS RIVER

**Presenter(s): Breaux, Jared**

**Author(s): Breaux, Jared; Wilcut, Chris; East, Jessica; Pease, Allison**

Two native killifish species, Fundulus zebrinus and Lucania parva, commonly co-occur together along with non-native Fundulus grandis in the Pecos River. Little is known about the ecological impacts of F. grandis invasion, but it has been suggested that interspecific competition has led to declines of native F. zebrinus where F. grandis is established. We examined dietary resource use of the three killifish species from sites on the main-stem of the Pecos River in summer and fall of 2013. Analyses of stomach contents revealed that F. zebrinus and L. parva consumed high proportions of aquatic invertebrates, whereas F. grandis was largely piscivorous. Trophic niche overlap was high between F. zebrinus and L. parva, but low for F. grandis with the native killifish species. Our results suggest that interspecific competition for trophic resources between adult F. grandis and native fundulids may not play a significant role in this system, but future research should examine the impacts of predation by F. grandis on declining native Pecos species.

67. A NUTRITION INTERVENTION FOR COMMUNITY-FAMILY COOKING PROGRAM: LETS' COOK, EAT, AND TALK

**Presenter(s): Bunting, Kari; Jeong, Kim**

**Author(s): Bunting, Kari; Jeong, Kim; Park, Oak-Hee; Hoover, Linda**

Obesity is one of the serious epidemic concerns around the world. Many nutrition intervention programs have been conducted not only to solve obesity problems but also to improve healthy eating behavior for public populations. Locally, in the Lubbock area, community based nutrition intervention programs are still set in infancy stage, especially targeting underserved family populations. Lets’ Cook, Eat, and Talk (LCET) program was created as the part of East Lubbock Promise Neighborhood grant program to provide a practical nutrition education program to families in the east Lubbock area where at least thirty percent of residents falls below the poverty line. The objectives of this program are twofold: to examine the impact of nutrition education and practical cooking skills increasing consumption of fruits and vegetables, and to investigate the influence of family meal time interactions at the dinner table with regard to healthy eating behavior. Two community nutrition researchers, two dietitians, and several chefs from Lubbock Chef Association developed nutrition education contents including: preparation of economic meals, healthy meal preparation, grocery shopping, kitchen organization, food storage, food safety, and family communication skills. Previous nutrition intervention survey items were adapted and modified based on objectives of this study. Face validity was confirmed by research teams and community nutritionists. Several pilot tests will be conducted to verify reliability and validity of the survey questionnaire before the program starts. Twenty voluntary families will be assigned for experimental group (N= 10 families) or control group (N= 10 families), and will be assessed using pretest and posttest survey questionnaire. After the intervention program, a follow-up survey will be sent to the participants to obtain longitudinal data. This community-family nutrition intervention for the underserved neighborhood will be a good example to facilitate community nutrition programs in U.S. building tailored programs for different communities.
68. ASSESSING THE EFFECT OF GOAT MEAT CONSUMPTION AND NUTRITION EDUCATION ON MATERNAL FUNCTIONING IN MALAWI AFRICA
Presenter(s): Bunting, Kari
Author(s): Bunting, Kari; Murimi, Mary; Hoover, Linda

Chronic malnutrition in rural Malawi is highly prevalent. Lack of access to nutrient-dense foods and unawareness of the benefits of a varied diet can affect overall dietary intake with health and life quality compromised as a result. This project is aimed to assess changes in dietary behavior, physiological variables, and nutritional knowledge of rural mothers in Malawi, after the introduction of goat meat from the Circle of Hope International (COHI) feeding program coupled with a nutrition education program over a 12 month period. Information about food safety, breastfeeding, sustainable dietary changes, and proper feeding practices to prevent malnutrition was provided as part of the nutrition education component. Baseline dietary behavior and physical assessments conducted on July 2013, will be compared in quarterly and yearly data collections through July 2014. Data from 24 Hour Dietary Recalls have been analyzed to date. Results from July to October show a significant increase in the frequency of eating breakfast on a daily basis and an improved variety of food groups included in meals and snacks. Ranging 50 voluntary mothers will be assigned for baseline and experimental group (N= 28) or control group (N= 22), and will be assessed. Significant increases in hemoglobin levels and nutritional knowledge are also expected. Equipping this susceptible population with essential nutritional knowledge to improve health outcomes can aid to effectively reduce chronic malnutrition in Malawi.

69. ISOKINETIC FATIGUE CHARACTERISTICS FOR THE LEG EXTENSORS VERSUS FLEXORS
Presenter(s): Carrillo, Elias
Author(s): Carrillo, Elias; Stock, Matt; Mota, Jacob

Isokinetic testing is often used in research studies to examine fatigability and even estimate muscle fiber-type. The purpose of this study was to compare the percent decline values for the quadriceps versus hamstrings for 50 and 100 fatiguing isokinetic muscle actions. Healthy men (mean ± SD age = 23 ± 3 years) with previous strength training experience volunteered to participate in this study. Following a thorough familiarization session, each subject performed 100 repeated, maximal concentric isokinetic muscle actions of the left quadriceps and hamstrings. Each muscle action was performed at 180 degrees/second through a full 90 degree range of motion. Percent decline was determined using the mean peak torque values of the initial and final three muscle actions for each muscle group (i.e., quadriceps versus hamstrings) and condition (i.e., 50 versus 100 repetitions). There was no significant muscle group x condition interaction (p=.114; partial eta squared = .169). There were, however, main effects for both factors. When collapsed across condition, the quadriceps fatigued more so than the hamstrings. Similarly, when collapsed across muscle group, the percent decline values were greater following 100 repetitions. These finding demonstrated greater isokinetic fatigue characteristics for quadriceps versus hamstrings. Furthermore, the additional decline in peak torque from repetitions 50-100 was more pronounced for the quadriceps. We speculate that these findings could be related to differences in muscle fiber-type, lower absolute strength and mass for the posterior aspect of the thigh, and/or unfamiliarity with single-joint testing of the hamstrings.

70. PSEUDOMONAS AERUGINOSA QUORUM SENSING IN CHRONIC WOUND INFECTIONS
Presenter(s): Cueva, Angel
Author(s): Cueva, Angel; Armstrong, Andrew; Everett, Jake; Fleming, Derek; Whitley, Marvin

Pseudomonas aeruginosa is one of the most frequent causes of chronic wound infections. The production of most virulence factors that contribute to the pathogenesis of P. aeruginosa is regulated by cell to cell signaling, or quorum sensing (QS). We have previously demonstrated that QS is essential to the pathogenesis of P. aeruginosa in burn wound infections and quorum signals have also been detected in ischemic wounds; however, little has been elucidated about the role of QS in the chronic wound environment. To determine the extent of QS activity in P. aeruginosa-infected chronic wounds we: used LCMS to detect QS signals in murine chronic wound tissue; used fluorescent QS ‘reporter’ strains and confocal microscopy to indirectly visualize the expression of P. aeruginosa QS genes in situ; analyzed the global expression of P. aeruginosa in vivo with RNAseq technology; and compared the infection sequela of wild-type P. aeruginosa versus a QS mutant in mouse chronic wounds. Our data indicate that QS is active early in murine chronic wound infections, but quickly tapers off. We also observed that a QS mutant strain of P. aeruginosa was significantly less tolerant to gentamicin treatment in situ compared to a wild-type strain, and that the tolerance of the wild-type was reduced after early treatment with a QS inhibitor. Taken together, our data indicate that QS may be important in the formation of biofilms early in chronic wound infections, which results in increased antibiotic tolerance.
71. THE REMOVAL OF AN IMPE1 GENE BY IMPRECISE EXCISION OF A MINOS ELEMENT

Presenter(s): Dean, Ryan
Author(s): Dean, Ryan; Thomas, Jeffrey

Ecdysone-inducible gene E1 (ImpE1) is a gene with a role in the embryonic development of the cephalic furrow in Drosophila melanogaster. Located on the left arm of the 3rd chromosome, this large protein coding gene’s molecular function remains unknown. Research on the ImpE1 gene’s molecular function will help characterize the gene itself and lead to further understanding of Drosophila’s cephalic furrow formation. Transposon insertions in Drosophila are suitable for gene disruption, making it an appropriate medium for ImpE1’s investigation. With a Minos Element insertion in an intron we will create a deletion in the ImpE1 gene via imprecise transposon excision.

To do this, the transposon must be crossed with a transposase in order to be excised. Most of the excisions will be precise, and will not disrupt the gene. Others will be imprecise and create a deletion in the ImpE1 gene when part of the genome is removed along with the transposon. After excision, the ImpE1 gene will be amplified using PCR to determine whether the excision was imprecise and if so, to indicate the extent of the deletion of ImpE1 genomic DNA. After PCR, sequence data will be compared with that of the wild type to determine whether an exon has been deleted.

We have identified forty five excisions, five of which were imprecise. It is expected that the probability of the Minos transposon’s imprecise excision from the genome is low. Thus, this investigation requires several hundred replicates in hopes of yielding a fly with the desired mutant sequence.

72. SYNERGISTIC INTERACTIONS OF PSEUDOMONAS AERUGINOSA AND STAPHYLOCOCCUS AUREUS IN AN IN VITRO WOUND MODEL

Presenter(s): DeLeon, Stephanie
Author(s): DeLeon, Stephanie; Rumbaugh, Kendra; Clinton, Allie; Fowler, Haley; Everett, Jake

Microbes within polymicrobial infections often display synergistic interactions that can enhance their colonization, virulence or persistence. One of the most prevalent types of polymicrobial infection occurs in chronic wounds, where Pseudomonas aeruginosa (PA) and Staphylococcus aureus (SA) are the two most common causes of infection. Although they are the most commonly-associated microbial species in wound infections, very little is known about their interspecies relationship. Evidence suggests that PA and SA coinfections are worse than monoculture infection with either species; however, difficulties in growing these two pathogens together in vitro have hampered attempts to uncover the mechanisms involved. Here we used a simple and clinically relevant in vitro wound model, which supported concomitant growth of PA and SA. We observed that being together increased the ability of PA and SA to survive antibiotic treatment, as did the presence of ‘host-derived’ matrix components. Our data indicate that PA and SA may mutually benefit by coinfecting wounds.

73. IMMUNE PRIVILEGED SERTOLI CELLS INHIBIT THE COMPLEMENT CASCADE AFTER XENOTRANSPLANTATION

Presenter(s): Dziuk, Rachel
Author(s): Dziuk, Rachel; Kaur, Gurvinder; Wright, Kandis; Mital, Payal; Dufour, Jannette

Sertoli cells (SC) are immune-privileged testicular cells that survive and protect co-transplanted cells after allo- and xenotransplantation. To understand the survival mechanism of SC, eleven million neonatal pig SC (NPSC) were transplanted as xenografts underneath the kidney capsule of Lewis rats. Nonimmune-privileged neonatal pig islets (NPI) were used as the control. The graft (NPSC or NPI) bearing kidneys were collected between days 1-20 post transplantation and analyzed for cell survival. NPI grafts were completely rejected by day 6 while NPSC grafts had 100% survival. Activation of the humoral immune response, involving complement mediated cell lysis, influences the rejection of xeno-transplanted cells. We hypothesized that NPSC could be inhibiting this pathway for their survival. The grafts were analyzed by immunostaining for antibody deposition (IgM and IgG) and complement factors (C3 and membrane attack complex (MAC)). In NPSC grafts, no IgG response was detected, whereas IgG deposition was detected in NPI grafts at day 13 post-transplantation. Very little to no IgM deposition was detected in NPSC grafts at days 6 and 9 post-transplantation compared to NPI grafts. Additionally, very little to no C3 and MAC deposition was detected in NPSC and NPI grafts. NP1 graft rejection prior to antibody deposition suggests that the humoral immune response is not the key mechanism of islet graft rejection. Antibodies deposited in these grafts could be involved in cleaning the cell debris. The survival of NPSC grafts, with very little to no antibody and complement deposition, suggests NPSC actively inhibit the humoral immune response.
74. MECHANISM OF ACTION OF SALT ADAPTATION MUTATIONS IN ARTEMIA FRANCISCANA

Presenter(s): Eastman, Jessica
Author(s): Eastman, Jessica; Chebrolu, Sukanyalakshmi; Artigas, Pablo

Nearly all animals maintain a high electrochemical gradient for Na+ across the plasma membrane. This gradient is generated by the Na-K pump, which exports 3 Na ions and imports 2 K per ATP molecule hydrolyzed. The ion-coordinating residues in the alpha subunit are usually conserved, but the brine shrimp (Artemia franciscana) living in extreme saline conditions express a pump with two asparagine to lysine substitutions, within the ion binding site region (Jørgensen and Amat (2008) J. Memb Biol. 221:39-49). We used two-electrode voltage clamp electrophysiology to evaluate the effect of the equivalent substitutions (N333K and N785K), individually and concurrently, on the function of Xenopus Na/K pumps expressed in Xenopus oocytes. In particular, we studied the effect of these mutations on activation of pump currents by eternal K and on the voltage-dependent conformational changes related to external Na binding. Each individual substitution reduced external affinity (>10 fold), while only N785K reduced K affinity by ~3 fold. Western blotting showed that N333K/N785K was present in the oocyte surface but no current signals were observed, consistent with an additive effect of the mutations on Na binding. We will test this hypothesis with Patch clamp and enzymatic activity measurements.

75. MOLECULAR AND MESOSCALE PROPERTIES OF PORES

Presenter(s): Farley, Taylor
Author(s): Farley, Taylor; Vaughn, Mark

Understanding the mechanisms by which small particles move through pores in a thin substrate is important for rational design of filter and purification media. Controlling water quality is an important application of porous films designed to prevent certain molecules and particulates from passing through pores, while allowing water to pass freely. Improving the quality of highly contaminated water is a challenge.

A realistic model of the filtration process at the atomic scale could assist in designing filters that take advantage of the properties of modern exotic materials. While much is known about macroscale phenomenological models of filtration, these models typically are not predictive. We are developing a computational model that can take into account the molecular and mesoscale properties of the pores and the particles. The model allows study of diffusing particles in a pore. The particle is allow to interact with the walls of the pore where it may be absorbed. Finally, to gain insight into the process of diffusion in a pore and to verify assumptions of the model we use video microscopy to observe particles diffusing in narrow glass capillaries.

76. STUDY OF GALECTIN-3 BLOCKADE EFFECTS ON CELL VIABILITY, PACLITAXEL CHEMOSensitivity AND METASTATIC POTENTIAL IN THE MURINE LEWIS LUNG CANcer CELL LINE

Presenter(s): Figueroa, Alejandro
Author(s): Figueroa, Alejandro; Miranda, Leonardo; Trotter, Kaylee; Figueroa, Jose; Chiriva-Internati, Maurizio

Galectin-3 is a lectin involved in angiogenesis, metastasis, and apoptosis. Of note, galectin-3 is overexpressed in lung cancer (LC), where it is thought to contribute to cancer survival and metastasis. To evaluate inhibition of galectin-3 as a potential treatment for LC, we treated the murine Lewis Lung Cancer (LLC) cell line, with galectin-3C, a truncated form of galectin-3, thought to be a competitive inhibitor of galectin-3. LLC were also treated with paclitaxel, a standard chemotherapeutic agent for LC, alone and in combination with galectin-3C. We have previously demonstrated that compared to paclitaxel, galectin-3C has modest effects on LLC viability. However, we hypothesize that galectin-3C might increase LLC susceptibility to paclitaxel. LLC will be treated with varying concentrations of galectin-3C and paclitaxel to determine LD-50 for each drug, and their additive effects will then be examined. For this, we will evaluate LLC viability after treatment with a constant dose (LD-50) of either drug, while varying the other drug concentration. We also plan to determine the effects of galectin-3C, paclitaxel and their combination, on LLC invasion/migration ability, a hallmark of metastatic potential. We expect treatment with galectin-3C will decrease galectin-3 expression, cell viability and invasion capacity in LLC, and that combination treatment will result in additive effects. LLC viability will be determined by ATP release assays, invasion/migration ability with Matrigel chamber migration assays, and expression of galectin-3 by western blot, ELISA, RT-PCR and immunofluorescence. Experiments are currently underway.

77. THE EFFECT OF LACTIC ACID DIP TREATMENT TO CONTROL SALMONELLA IN BEEF SKIRT STEAK

Presenter(s): Garcia, Alvaro
Author(s): Garcia, Alvaro; Hanlon, Keelyn; Miller, Markus

The steady growth of the population demands more food each day. The increasing distance between producers and consumers requires products to be stored and travel over longer time. This problem is more severe in fresh meat products, with susceptibility to Salmonella contamination and growth in the products. The aim of this study was to validate the effectiveness of using a 4% lactic acid dip to reduce the presence of Salmonella on skirt steak. Skirt steak samples were surface-inoculated with a concentration between 106 and 107 of three strains of generic Salmonella: Salmonella Typhimurium (14028), Salmonella Heidelberg (3347-1) and Salmonella Enteriditis (31194). Half of the inoculated samples were dipped in 4% lactic acid solution for five seconds ensuring that the samples were completely dipped. Samples were swabbed prior to lactic acid treatment, at 1, 12, 24 and 48 hours. Samples were serially diluted, spread plated on Xylose lysine deoxycholate agar and plates were incubated at 35 °C for 48 hours. The raw data indicates that the lactic acid dip treatment is effective in Salmonella reduction on beef; however statistical analysis has not yet been done.
78. THE EFFECTS OF HUMAN LEPTIN ON FOOD INTAKE IN THE AFRICAN CLAWED FROG XENOPUS LAEVIS

**Presenter(s): Garcia, Carlos**

**Author(s): Garcia, Carlos, Carr, James**

Leptin is a polypeptide secreted by adipose and other tissues that has a dramatic inhibitory effect on appetite in mammals. Recently, the structure of non-mammalian leptin peptides has been elucidated. Despite having very little similarity based upon primary amino acid sequences, vertebrates leptins are surprisingly conserved based upon tertiary structure. There is some evidence to suggest that human leptin may act on leptin receptors in other vertebrate species, but the data are based upon in-vitro heterologous expression assays. In the present study we examined the ability of human recombinant leptin (hrLeptin) to modulate food intake in a model amphibian species, the South African clawed frog Xenopus laevis. We hypothesized that hrLeptin will be effective in suppressing food intake in an amphibian species. In our initial experiments juvenile frogs were injected via the dorsal lymph sac with one of five doses (0, 0.02, 0.2, 2, 20 ug) of leptin and food intake assessed. hrLeptin had no effect on food intake in X. laevis after peripheral administration in two independent trials. Likewise, hrLeptin was ineffective in altering food intake when administered icv. We conclude that while hrLeptin may interact with the Xenopus leptin receptor in vitro (Crespi and Denver, 2006) in vivo administration of hrLeptin does not alter food intake in Xenopus laevis.

79. GERMINATION TECHNIQUES IN IPOMOPSIS RUBRA AND MELAMPODIUM LEUCANTHUM

**Presenter(s): Gunter, Amanda**

**Author(s): Gunter, Amanda; McKenney, Cynthia; Montague, Thayne**

Wildflowers are generally more difficult to germinate, without having a definite step-by-step germination strategy. This experiment was conducted in order to find effective germination techniques for two Texas native wildflowers. Various pre-treatments were performed for germination in standing cypress (Ipomopsis rubra) and blackfoot daisy (Melampodium leucanthum).

80. QUALITY AND STABILITY OF PEANUT OILS IN RAW NUTS TREATED WITH ULTRAVIOLET LIGHT TO REDUCE BACTERIAL LOADS

**Presenter(s): Hettick, Bryan**

**Author(s): Hettick, Bryan; Porter, Lucy; Marshall, Julie**

Foodborne illness from peanut products has been on the rise in recent years. Contamination by pathogens such as salmonella has been the cause of illness and even death, leading to a number of product recalls. This study determined that Ultraviolet Light (UV) can lower bacterial loads on in-shell peanuts and raw kernels without adversely affecting oil quality. Escherichia coli was used as a contaminant, and protocols were established using standard plate count methods to measure CFU’s. Peanut oil was pressed from kernels irradiated at 365 nm UV rays for variable durations and was subsequently assayed for peroxide value and free fatty acid percentage to determine any adverse effect on oil quality. Results demonstrate that both kernels and in-shell peanuts can be exposed to UV for prolonged periods of time without compromising the oil quality and ultimately the product taste. The study suggests that UV treatment might possibly be used to control bacterial loads on peanuts in a commercial facility.

81. DEVELOPMENT OF TRANSGENIC ARABIDOPSIS PLANTS THAT CAN TOLERATE MULTIPLE STRESSES SUCH AS DROUGHT, HEAT, AND SALT

**Presenter(s): Jarrett, Philip**

**Author(s): Jarrett, Philip; Pehlivan, Necla; Sun, Li**

As global population rises and agricultural demands climb, the need for greater and more efficient crop production has become clear. Therefore, genetically optimized crops (GOC) that more effectively combat abiotic stresses such as heat, drought and salt will be needed to address growing agricultural requirements. Genes that improve plant performance under various stress conditions have been identified and these genes could be used to engineer GOC. For examples, OsSIZ1, a gene encoding an E3 ligase in rice that acts as a molecular regulator in various pathways associated with plant response to adverse environmental conditions, was shown to confer improved heat and drought tolerance when overexpressed in creeping bentgrass. Additionally, AtNHX1, a gene encoding a vacuolar membrane Na+/H+ antiporter in Arabidopsis that plays a role in sequestering sodium ion in plant vacuoles, has been shown to confer increased salt resistance when overexpressed in transgenic plants. In this study, wild-type Arabidopsis is transformed with both OsSIZ1 and AtNHX1 in an effort to demonstrate the proof-of-concept that it is possible to simultaneously increase tolerance to drought, heat, and salt by co-overexpressing two genes. As a consequence, this model of multi-gene overexpression for additive abiotic stress tolerances may help design future crops that can tolerate harsh environmental conditions, yet still maintain high yields.
82. EXCLUSION OF WILD HERBIVORES THROUGH AN ALTERNATIVE FENCING DESIGN

**Presenter(s):** Jewett, Chris  
**Author(s):** Jewett, Chris; Sorensen, Grant

Deterrence of large herbivores from tracts of land is accomplished by various methods of wire fencing. Domesticated species are usually deterred by a standard 5-strand barbed wire fence, while wild herbivores require other designs. Game managers typically use very expensive, 8-feet high fences. Alternative designs have been suggested in the literature that can be a more cost effective way to deter large herbivores. One alternative design consists of a standard barbed wire fence built at a 45 degree angle. This angle faces toward the oncoming animal which, in theory, alters the animal’s depth perception and convinces it not to cross. The study was conducted on the National Rifle Association Whittington Center located near Raton, New Mexico. Thirteen 5 meter x 5 meter exclosures were established at random in areas known for high herbivore use. Five exclosures followed the angle design, five control plots followed the standard 5-strand barbed wire fence design, and three plots were constructed of 8-feet high fence. Exclosure construction was slightly modified to suit the available fencing supplies. Exclosures were baited twice a month from December 2013 to February 2014. All plots were monitored for large herbivore use with motion triggered cameras capable of 24 hour surveillance. Preliminary results indicated that 51 individuals breached the control plots while, 44 individuals breached the experimental design. These data suggest that our alternative design was inefficient at deterring wild large herbivores. Therefore, when game managers need to deter wild herbivores from tracts of land, the high fence method is recommended.

83. THE IMPACTS OF WATER TEMPERATURE ON MACRO-PARASITE INFECTION IN AN ESTUARINE FISH

**Presenter(s):** Jiang, Shengjian  
**Author(s):** Jiang, Shengjian; Willms, Josh; Hedrick-Hopper, Tiffany; Diamond, Sandra

Stressors, such as increasing water temperature and macro-parasite infection, can impact the health of marine animals. The Atlantic croaker (Micropogonias undulatus) is an estuarine fish which adapts to a variety of environmental conditions. They are important members of marine food webs and are not currently subject to over-fishing, making them an excellent indicator of climate change effects on bony fish. Along with climate change, fish experience other stressors like parasite infection. Although Cymothoa excisa is a common macro-parasite of croaker, its effects on croaker have not been well studied. We investigated the impacts of water temperature on C. excisa infection in Atlantic croaker. Thirty fish were assigned to one of four treatment groups: 1) non-parasitized, 22 °C (n=5), 2) non-parasitized, 29 °C (n=5), 3) parasitized, 22 °C (n=9), 4) parasitized, 29 °C (n=9). Fish were housed individually and exposed to their experimental temperatures for 14 days. Prior to the experimental period and immediately following, we measured the total length, weight, and girth of the fish as indicators of body condition as well as the width of the parasite. Additionally we determined the length and weight of the parasite after the exposure period. These results provide insights into the virulence of C. excisa and similar macro-parasites under changing climate conditions. Since croaker is a common prey species for larger marine animals, negative effects due to parasite infection can also have repercussions at higher trophic levels.

84. ASSESSING THE LOCAL FOOD ENVIRONMENT IN THE EAST LUBBOCK AREA

**Presenter(s):** Jun, Julie  
**Author(s):** Jun, Julie; Park, Oak-Hee; Hoover, Linda

The growing prevalence of obesity is a major problem in the United States. Low-income and ethnic minority communities have a greater difficulty meeting dietary guidelines established by the U.S. Department of Agriculture, setting them at a greater risk for health problems. The East Lubbock community in particular has low-socioeconomic residents who have potential problems of health and healthy food consumption. Therefore, the food environment of the East Lubbock community is a critical area to be investigated to put forward an initiative for vital policy to increase the health of residents in the area for the long term. The objective of this study is to assess the local food environment of East Lubbock area in order to provide documentation of the area’s food environment and of disparities in access to healthy foods so as to inform the strategies of health leaders to implement policies that will foster healthy lifestyles in the area. The center for Geospatial Technology of Texas Tech University will create the maps using the GIS mapping system. Trained field workers will investigate the availability, accessibility, and quality of healthy food items using the NEMS-S and NEMS-R field survey questionnaires for evaluating stores and restaurants, respectively. Data will be collected for all food stores and restaurants in context of the East Lubbock residential areas in order to fully depict the current condition of the local food environment. Expected outcome is the East Lubbock community to be an unsupportive environment for living a healthy lifestyle.
85. GALECTIN-3C INHIBITS TUMOR GROWTH AND INCREASES THE ANTICANCER ACTIVITY OF TAXOL IN VITRO AND IN VIVO MURINE MODEL OF OVARIAN CANCER
 Presenter(s): Littlefield, Lauren
 Author(s): Littlefield, Lauren; Chiriva-Internati, Maurizio; Figueroa, Jose; Cobos, Everardo; Mirandola, Leonardo

Presently, there is no effective cure for ovarian cancer. Its inability to be detected at early stages and its high resistance to chemotherapy make this cancer the seventh leading cause of cancer death in women. Targeting and destroying molecules that enhance cancer cells’ survival ability could potentially increase the anticancer effect of cytotoxic drugs. Galectin-3 is a human lectin present in cancer cells that is involved in the cellular processes of angiogenesis, metastasis, apoptosis, and differentiation. Galectin-3C is an N-terminally truncated form of galectin-3 thought to act as a dominant negative inhibitor of galectin-3 and has previously been shown to inhibit the growth of multiple myeloma. In this study, we evaluated the significance of galectin-3 inhibition in the murine ID8 OC cell line in vitro and in vivo. Proteins derived from ID8 cell culture were analyzed through Western Blot and ELISA for expression of galectin-3. ID8 cells were treated with galectin-3C, the chemotherapy drug paclitaxel, and the combination. The results of viability testing after treatment show that galectin-3C alone decreased the viability of cells. Doses over 5ug/mL of galectin-3C in combination with paclitaxel (0.01uM, 0.1uM, and 1uM) also reduced viability in vitro. In vivo, twelve mice were injected intraperitoneum with ID8 cells. After tumor growth, the mice were treated with galectin-3, paclitaxel, galectin-3 and paclitaxel, and no treatment with three mice in each group. Results from this treatment will be analyzed through Immunohistochemistry. This data demonstrates that continued testing of galectin-3C should be performed to further examine its anticancer activity.

86. PEDF INDUCES THE MIGRATION, DIFFERENTIATION AND PHAGOCYTIC ACTIVITY OF MACROPHAGES
 Presenter(s): Martinez-Marin, Dalia
 Author(s): Martinez-Marin, Dalia; Nelius, Thomas; Filleur, Stephanie

Macrophages have been described as one of the main inflammatory components involved in prostate cancer (PCa) initiation, progression, and metastases formation. PEDF (Pigment Epithelium-Derived Factor) is an anti-angiogenic factor with differentiation activities and was recently suggested as an immune-modulating factor. PEDF expression has been shown to be down-regulated in PCa compared to normal tissues. In previous studies we have demonstrated that PEDF re-expression in PCa cells curbs tumor growth in vivo and significantly prolongs the survival of tumor-bearing mice. Precise modes of action of PEDF on macrophages still remain unknown and necessitate therefore further investigation. Our preliminary data have shown that PEDF stimulates the migration of monocytes/macrophages. We have also demonstrated that PEDF directly induces the differentiation of macrophages towards a M1/tumor-cytotoxic phenotype. As a result of their differentiation, we’ve found that PEDF stimulates the phagocytosis of tumor cells, which suggest another mechanism by which PCa growth is halted. We’re currently investigating the molecular pathways by which PEDF induces the migration, differentiation and phagocytic activity in macrophages. We are also investigating the PEDF-derivative synthetic 18-mer peptide (AA39-57) and its mechanism of action on macrophages. Finally, we will assess PEDF gene therapy using bone marrow-derived macrophages (BMDMs) as a novel therapeutic modality for advanced PCa. Our central hypothesis is that PEDF expression will induce the migration and differentiation of BMDMs into a tumor-cytotoxic phenotype and will block tumor growth and metastases formation, and prolong survival. This project may lead to development of improved therapeutic approaches to treat PCa.

87. LINEAR PROGRESSION FOR INCREASED EXTERNAL LOADS DURING STRENGTH TRAINING
 Presenter(s): Mota, Jacob
 Author(s): Mota, Jacob; Stock, Matt; Thompson, Brennan

Improvements in muscular strength require an individual to train with progressively increased external loads over time. The purpose of this study was to examine the ability to add 2.27 kg to the barbell for 20 consecutive training sessions, and to compare these responses between the sexes. Thirty-four subjects ([mean ± SD age = 23 ± 3 years] men, n = 17; women, n = 17) participated in this study. The subjects visited the laboratory twice per week for ten weeks. The external loads used corresponded to the maximum weight that each subject could use to perform five sets of five repetitions. The data were analyzed with bivariate regression and repeated measures analyses of variance (ANOVAs). The mean ± SD external loads used in this study increased from 66.2 ± 22.3 to 123.1 ± 21.8 kg for the men and 37.8 ± 7.0 to 70.7 ± 12.2 for the women. The results from the repeated measures ANOVAs indicated that men were able to add 2.27 kg to the barbell for 17 consecutive training sessions. For the women, however, the progress stalled at roughly week six. As a result, the coefficient of determination for the external load versus training session number relationship was r² = .960 for the men and r² = .881 for the women. These findings demonstrated that adding 2.27 kg to the barbell for each training session was an effective method for progressively increasing the external load over a ten week period.
88. ELUCIDATING THE RESPONSE OF A TOXIC DINOFLAGELLATE TO CO2-INDUCED PH VARIATIONS

Presenter(s): Nunez, Maria
Author(s): Nunez, Maria

Harmful algal blooms (HABs) result from the rapid growth of phytoplankton that can be harmful to human or environmental health. Alexandrium catenella is a marine HAB dinoflagellate that produces saxitoxin, a powerful neurotoxin responsible for paralytic shellfish poisoning. Ocean acidification (OA) is the lowering of ocean pH due to the absorption of excess anthropogenic CO2. It is known that OA has a negative effect on calcifying organisms, though its effect on HABs specifically dinoflagellates is unknown. Previous studies show that a decrease in pH has a negative effect on dinoflagellate growth. It is also known that a variety of stressors increase dinoflagellate toxin production. However, no studies have investigated if pH stress will have the same effect. The main focus of this study is to determine the effect of pH on toxin production. For this study we grew batch cultures of A. catenella at seven different pH levels between 7.0 and 9.0. A continuous culture/chemostat system was used to keep the cultures at a constant pH and pCO2 concentrations. Growth was determined using fluorometry and cell counts, and efficiency of photosystem II was measured using Pulse-Amplitude Modulated (PAM) fluorometry. Cell stress and saxitoxin production will be measured using reactive oxygen species (ROS) assays and enzyme-linked immunosorbent assays (ELISA), respectively. Our preliminary results show that, compared to controls, at both high (9.0) and low (7.0) pHs, A. catenella showed a lower growth rate. Also, significant variations from optimal pH have a negative effect on efficiency of photosystem II (PSII).

89. THE EFFECTS OF CYMOTHOA EXCISE ON THE METABOLIC RATE OF ATLANTIC CROAKER

Presenter(s): Phillips, Mike
Author(s): Phillips, Mike; Willms, Josh; Hopper, Tiffany; Diamond, Sandra

Atlantic croaker (Micropogonias undulatus) is a species of bony fish which is commonly infested by (Cymothoa excise, a marine macro-parasite). Female C. excisa attach to the tongue of the fish while males attach to the gills. The purpose of this study was to test the effects of temperature and parasites on the metabolic function of Atlantic croaker. To do this, we examined differences in oxygen consumption in non-parasitized versus parasitized Atlantic croaker at two temperatures 22 and 28 degrees Celsius. We hypothesized that parasite infestation will increase the metabolic rate, leading to an increase in O2 consumption with increased temperature also increasing metabolic rate. Our planned sample size is two cycles of 15 fish at two weeks apart. (N=30) with 5 and 5 non-parasite fish and 15 and 15 parasite fish. We used a CTD (Conductivity, Temperature, Depth) device to measure oxygen levels in the tanks of parasitic versus non-parasitic fish. We measured to see if there is a difference in levels and rate of oxygen consumption over a set time 30 min period and at different time points spaced 5 minutes apart. DO levels were recorded in mg/l. We gave the fish one minute to acclimate to the CTD prior to logging the data, and rated fish reaction to the presence of CTD from 1-3 to account for any difference in initial O2 consumption. The relevance of this study is to analyze the parasites effect on croaker.

90. THE HEMATOCHRIT AND IMMUNE RESPONSE OF ATLANTIC CROAKER TO PARASITE INFECTION AND TEMPERATURE INCREASE

Presenter(s): Quincy, Tyler
Author(s): Quincy, Tyler; Willms, Joshua; Hopper, Tiffany; Diamond, Sandra

Parasite infection and ocean temperature increase can have significant impacts on Atlantic croaker populations. Cymothoa excisa, a common macro-parasite found in the Gulf of Mexico, feed on the blood of croaker by attaching themselves to the oral cavity. Because fish parasitized by C. excisa regularly become anemic, we analyze the number of red blood cell counts in parasitized and non-parasitized fish. Temperature may also have an impact on the blood cell numbers, due to the effects of temperature on metabolism. We also observe the immune response of fish with and without parasites utilizing white blood cell counts by drawing blood from the peripheral or caudal vascular systems. Both red and white blood cell counts are predictors of croaker survival. Of the five major types of white blood cells, Eosinophil is of most interest due to their function in defending against parasites. Our data will tie projected changes in the environment to the wellbeing of bony fish populations throughout the Gulf of Mexico.

91. THE REGRESSION OF PREGNANCY-INDUCED CARDIAC HYPERTROPHY IN C57BL/6 MICE

Presenter(s): Robertson, Taylor
Author(s): Robertson (Eunhee Chung), Taylor D

Cardiac hypertrophy is the increase in size of the heart for either physiological or pathological reasons. Physiological inducers include exercise or pregnancy. For instance, athletes experience cardiac hypertrophy during their seasons of workouts. However, when they stop working out consistently, their hearts undergo cardiac regression, the decrease of heart size back to normal. This regression also happens after a woman delivers a baby. However, some studies have shown that hypertrophy may still continue throughout breastfeeding, therefore regression would occur after lactation has ended. Although cardiac hypertrophy has been extensively researched, regression of hypertrophy has been significantly less investigated. The object of this study is to evaluate changes in the heart mass and specifically the left ventricle after pregnancy-induced cardiac hypertrophy. In order to develop these assessments, we will weigh the hearts of mice in various groups including: control (non-pregnant), 17 days of gestation (late stage of pregnancy), 7 days of postpartum, 21 days of postpartum (time of weaning), 7 days after weaning, and 21 days after weaning. We will also measure the body weight and food intake of each mouse throughout pregnancy. We hypothesize that the heart size will increase throughout pregnancy and even more so during the first half of lactation, and then it will decrease in size after weaning. In addition, future studies will include signaling pathways analysis of the regression of pregnancy-induced cardiac hypertrophy in order to examine whether the same pathways are used for both cardiac hypertrophy and regression.
92. A SOLAR POWERED LIGHT TRAP FOR COLLECTING INSECTS

Author(s): Scott, Justin

In the Monahans sand dune system of western Texas, many environmental factors make insect collecting difficult to conduct, especially with passive devices over extended periods. The remote nature and lack of electrical sources make light trapping especially difficult to undertake. Our research team designed a system for continuous day-charging of batteries that operate standard five-gallon, liquid (propylene glycol or alcohol) based UV light traps with solar panels. There are other designs for solar powered UV light traps available, however, the majority of these products are for selected insects (i.e., mosquitoes) or would not withstand the harsh environment while allowing the benefits of low maintenance. The ability and potential of a solar powered UV light trap that is operational in unforgiving and/or remote landscapes as well as long term setup with minor upkeep in labor or investment is appealing. Information about this design is being shared to improve or inspire other ecological studies, particularly those of the more extreme conditions over extended periods.

93. THE ROLE OF CLOSTRIDIUM PERFRINGENS IN MULTI-SPECIES WOUND BIOFILMS

Author(s): Sparks, Hayley

A common problem in bacterial wound infection is the formation of multi-species biofilms. Current research has mainly focused on the roles of aerobic bacteria in these biofilms. However, recent investigations have shown that anaerobic bacterial species actually make up the majority of the population of wound infections. One of the most common anaerobic species found in wound infections is Clostridium perfringens, which can thrive in the oxygenated wound environment even though it is an obligate anaerobe. In this study we utilized an in vitro wound model to investigate the requirements for C. perfringens growth alone and in the presence of aerobes. Our data showed that C. perfringens was not able to grow in the oxygenated wound environment alone; however, when co-cultured with Pseudomonas aeruginosa and/or Staphylococcus aureus (two common aerobic wound pathogens), C. perfringens grew aerobically. We also sought to determine whether the presence of C. perfringens in the multi-species wound infection environment would alter tolerance of P. aeruginosa or S. aureus to tetracycline or gentamicin. Our results indicate that while the presence of C. perfringens does not appear to alter gentamicin tolerance, it may increase tetracycline tolerance, especially that of P. aeruginosa. Currently our research is focused on determining the physical location of C. perfringens in wound biofilms, as this may be an important factor in its ability to grow in an aerobic environment. For example, there may regions within the biofilm that are particularly hypoxic once aerobes have exhausted the oxygen.

94. TYRE: AN IN SILICO ANALYSIS OF CELL GROWTH AND PROLIFERATION

Author(s): Stilwell, Jessica

The coordination of growth and proliferation is essential to survival and prevention of disease in all organisms. However, little is known about the biochemical pathways that couple proliferation with cell growth. Numerous cell size mutants and/or environmental conditions have been identified in the yeast S. cerevisiae and used to study the close relationship between these two parameters. Two models – the timer model and the sizer model - have been proposed to describe how yeast proliferate. The former describes a scenario in which cell growth is time dependent while the sizer model describes a size dependent method of growth. In order to examine each model, a Theoretical Yeast Replicator Emulator (TYRE) has been developed to generate population cell size distribution curves. TYRE uses multiple linear and exponential mathematical models to grow theoretical yeast populations in MATLAB. Each mutant and/or environmental condition(s) produces a characteristic population cell size distribution curve in vitro which can be reproduced within TYRE. By examining the statistical relevance of the timer and sizer models for both linear and exponential modes of growth, it may be possible to predict which model best describes cell growth and proliferation in yeast. Through testing, it has been observed that sizer exponential models are more reliable than sizer linear models at modeling in vitro results. Similarly, timer exponential models, while not as accurate as sizer models, are a better depiction of yeast growth and proliferation than timer linear models. In silico simulation is a novel approach which aids the scientist in viewing both individual cells and entire populations in a way that is nearly impossible with traditional bench procedures.
95. SEARCH FOR DOMINANT TOLC MUTATIONS ON PLASMIDS
Presenter(s): Threatt, Tabitha
Author(s): Threatt, Tabitha; Kay, Matt; Fralick, Joe

TolC forms a trimeric outer membrane channel that is a component of all of the multiple drug resistant tripartite (MDR) efflux pumps found in Escherichia coli. The purpose of this project was to find and map dominant TolC mutations that affect the functionality of TolC. To do this we employed an E. coli strain, containing a chromosomal tolC deletion, that carried two copies of the wild-type TolC gene (one in a pBR322, ampicillin-resistant plasmid and one in a compatible pACYC, chloramphenicol-resistant plasmid) and selected for tolC mutants. We employed a double selection for TolC dominant mutants: Colicin E1, which requires TolC for sensitivity and U3 phage, a phage that utilizes TolC as a component of its receptor for infection. Hence we selected for E. coli mutants that were resistant to Colicin E1 and U3 phage simultaneously. To determine whether or not the mutations were on the plasmids, surviving colonies underwent plasmid extraction. These plasmids were then transformed into a wild-type TolC strain (MG1655) in order to test whether or not TolC function was affected by the presence of the plasmid. Plasmids with desirable characteristics were purified and sequenced for verification of a tolC mutation. Identification of dominant domains for TolC function may provide important insights into the assembly and specificity of this important component of MDR efflux pumps and eventually to a therapeutically relevant drug target for pathogenic E. coli.

96. DROUGHT TOLERANCE IN ADULT VERSUS POST FIRE RESPROUT OAKS IN A CHIHUAHUAN DESERT SKY-ISLAND
Presenter(s): Willms, Joshua; Brown, Tailor
Author(s): Brown, Tailor; Willms, Joshua; Rodriguez, Chris; Schwilk, Dylan

Water availability is a deciding factor of tree distribution. Past work has demonstrated that oaks inhabiting “sky island” forests of the northern Sierra Madre Oriental have differing susceptibilities to drought-induced xylem failure (cavitation). Embolism occurs in xylem due to the increasing tension from inadequate water availability. This results in death of the stem, and ultimately the plant. These oak species however are all post-fire resprouters: they can basally resprout from underground storage organs when fire kills above ground tissue. Post-fire resprouts should have increased root:shoot ratios relative to adults and therefore have access to increased water relative to leaf demand. Therefore, we expected that if resprouts exhibit plasticity, they should favor water transport efficiency over safety and show higher maximum xylem conductances but greater susceptibility to drought-induced cavitation indicated by higher PLC50 values (the water potential at which conductance is reduced to 50 of maximum). We examined five species of oaks common in the Davis Mountains in west Texas. We measured the xylem hydraulic conductivity of adult trees and first-year post-fire resprouts before and after spinning stems in a centrifuge to generate negative xylem pressure, mimicking drought. Our results will provide insight on xylem vulnerability and maximum rates conductances between adult and resprout oaks across five species.
BUSINESS EMPHASIS (Business)

Abstract 97
This study examines frontal lobe activity (the area of the brain responsible for planning & executive functioning) in the context of buyer-supplier negotiations. Previous research on buyer-seller negotiations has found that when negotiators use a win-lose negotiation strategy, future intentions toward information exchange, communication quality, and operational knowledge transfer decrease. The current study expands the previous work to investigate which areas of the frontal lobe (i.e., areas of executive functioning in the brain) are active when win-lose versus win-win negotiation strategies are being used. Forty (N = 40) junior and senior level Global Supply Chain students will participate because these students have been trained in negotiations in these contexts. Participants will read scenarios describing negotiations between buyers and sellers. This study is a 2 (high vs. low interdependence) X 2 (win-lose vs. win-win strategy) factorial design. While participants read the scenarios, functional near infrared spectroscopy will be used to examine frontal lobe activity. Participants will also complete questionnaires measuring interdependence, negotiation strategy, communication quality, operational knowledge, and information exchange to measure the manipulation and the other variables of interest. We expect to find areas of the frontal lobe associated with logical decision making more active when participants use a win-win negotiation strategy and areas associated with emotional responses to be active when participants use a win-lose negotiation strategy.
LAW, PUBLIC POLICY, & EDUCATION
(Education, Legal Studies, History, Philosophy, and Political Science)

Abstracts 98-99
98. CURRENT POLITICAL JAPANESE PARTY SYSTEM EXPLANATIONS
Presenter(s): Bezucha, Robert
Author(s): Bezucha, Robert

What explains the current Japanese political party system? Why has the Liberal Democratic Party (LDP) of Japan controlled the national legislature since 1955? Why have the left parties had trouble finding electoral success? There are a variety of explanations of the hegemonic control of the Liberal Democrats in Japan. The Japanese political institutions can potentially provide contribute to the LDP electoral success. This party was successful in using the Single non-transferable vote electoral system for its advantage. While its main competitor the Socialist Democratic Party of Japan (SDPJ) was unable to properly calculate the number of candidates for each district (Patterson and Robbins 2012) There are other explanations (political culture, economic downturns, etc.) which are examined in this case study analysis.

99. VIETNAM AND NORTH KOREA: SIMILAR BEGINNINGS, DIFFERENT OUTCOMES
Presenter(s): Geddes, Thomas
Author(s): Geddes, Thomas

Both Vietnam and North Korea were the Communist countries which were opposed to the United States in two regional wars. Both of these nations share a similar Oriental culture, rural society, strong influence of Oriental culture. They chose the Soviet model in their political and economic systems. But after the breakup of the sponsoring state - Soviet Union - in the 1990s their preferences diverged - North Korea became an internationally isolated, highly repressive and belligerent. Vietnam, on the contrary, moved to a more free market based economy while establishing close links with its regional neighbors and the United States. What can explain such different outcomes? The examination of multiple factors is offered in this work: geographical locations (geopolitics), these countries' relations with other countries, political culture, nationalism, political and economic institutions. The application of Bueno de Mesquita selectorate model helps determine the main factor. I find that the leadership role is crucial in explaining this divergence of two country paths. The Vietnamese leaders relying on a much larger selectorate group - those who actually select a leader than in North Korea. Therefore, the Vietnamese could make crucial decisions liberalizing economic sphere following the China's success story. North Korean leaders preoccupied with their own security and control over the state did not need to address different popular demands and pursued the policies of oppression.
PHYSICAL SCIENCES (Computer Science, Engineering, Geosciences, Mathematics, and Physics/Astronomy)

Abstracts 100-109
100. OUTREACH WEBSITE DESIGN FOR THE LAZARUS PROGRAM
Presenter(s): Davenport, Jianna
Author(s): Davenport, Jianna; Calhoun, John; Williams, Brock

Outreach is important for any research to have an impact on the community. As part of the Lazarus outreach program, I will be explaining how to make an interesting and effective outreach website for a research program. Considering the theme of the research and the audience you are targeting are major components of any outreach program, and finding the balance between the two is the key to making an effective web presence. We hope to show that if you keep it educational, but at the same time fun and interesting, you can attract many people to your research and your university.

101. EFFECT OF HAIL DAMAGE ON CORROSION RESISTANCE OF GALVANIZED STEEL ROOFING MATERIAL
Presenter(s): Fritsch, Jacob
Author(s): Rasty, Jahan; Fritsch, Jacob

Galvanized steel panels are widely used in the construction industry as roofing material due to their low weight, relatively low cost, and most importantly, their excellent corrosion resistance and long useful life (30-50 years). However, in regions of the country where hailstorms are common, such as south and southwest including West Texas, galvanized steel panels are susceptible to hail impact damage resulting in significant indentation of the material. The main objective of this research is to determine if hail impact damage has any adverse effect on mechanical properties of the material at hail impact locations, such as decreased fracture toughness and diminished corrosion resistance due to impact damage sustained by the protective zinc coating at the surface of the material. To this end, hail damaged and undamaged galvanized steel samples are prepared and subjected to accelerated corrosion testing for varying periods of time. The hail impact regions are then examined utilizing stereomicroscopy and scanning electron microscopy in order to identify any signs of damage to the protective galvanized layer manifested by the presence of micro-cracks or pitting corrosion at the surface of material. Following accelerated corrosion tests, the damaged and undamaged samples are subjected to standard tensile tests in order to evaluate the effect of hail damage on the mechanical properties of the material.

102. TECHNOLOGICAL AND AESTHETIC INVESTIGATION OF THE PHYSICAL MOVEMENT OF PIANISTS
Presenter(s): Latimer, Jesse
Author(s): Latimer, Jesse; Cloutier, Aimee; Yang, James; Westney, William; O'Boyle, Michael

An analysis of physical movements of pianists provides a unique application of biomechanical engineering to piano pedagogy. The aesthetic quality of piano playing is viewed as directly related to the pianist’s freedom and fluidity of movement. This research presents a method of analyzing and comparing joint-center movements when pianists are playing in each of two modes: “correct” and “enjoyment.” Each subject plays two pieces in correct mode (i.e., invited to play them “as correctly as you can”) and then plays the same two pieces in the enjoyment mode (i.e., “this time, just think about enjoying yourself – whatever that means to you”). Three-dimensional motion capture was used to record the movement of the upper body (i.e., the hands, wrists, elbows, shoulders, neck, head, vision, and spine) in the two modes. Data for each subject and mode was then normalized based on the individual’s height so that comparisons across subjects were possible. The difference in forward/backward, vertical up/vertical down, and lateral right/lateral left movement for each joint center, as well as the right- and left-hand arcs, was graphed and analyzed. Results suggest more movement and more prominent hand arcs in the enjoyment mode than in the correct mode. Future work involves a comparison of joint angles for each mode.

103. BIOMECHANICAL MODEL FOR ASSESSING INJURY RISKS IN MINING
Presenter(s): Lewis, Kate
Author(s): Lewis, Kate; Haddas, Ram; Yang, James

Manual materials handling is a major activity in the mining industry, in surface and underground mining environments. Musculoskeletal disorders can result from sudden or improper handling of heavy loads, which can cause excessive stress and strain in parts of the musculoskeletal systems. Utilizing human subjects for quantifying injury risks offers only limited advantages for assessing problems unique to materials handling in underground coal mining. In contrast, biomechanical models provide relatively new alternative technologies to such direct testing. In addition, existing approaches to injury prevention are derived from the average person, whereas the proposed method is specific to an individual and thereby provides greater precision and effectiveness. The objective of this project is to develop a mechanical model to assess injury risks in mining. The first step of this project is to collect experiment data for validating the simulation model. In this study, twenty-three healthy males performed lifting a box with their maximum acceptable weights determined psychophysically to a 1m height table. Twenty-seven trials were performed. Three-dimensional kinematics, kinetic, and electromyographic data were collected. The current assumption is that all kinematic parameters and a portion of the kinetics applied to the body are given through experiment and the generalized moments of all joints which cause the body movement will be calculated through the inverse dynamics in joint space in OpenSim. Using all net reaction forces acting at the trunk, the spinal compressive and shear forces between L5/S1 will be calculated and compared with results from previously developed trunk models.
104. AN ANALYSIS OF THE EFFECTS OF DIRECTIONAL ILLUMINATION ON IMAGE FORMATION

Presenter(s): O’Loughlin, Trevor  
Author(s): O’Loughlin, Trevor; Dominguez, Daniel; Desai, Darshan; Grave-de-Peralta, Luis  
New research on how to improve the resolution of a microscope is always of interest to a variety of areas, especially the medical field, where optically advantageous configurations are sometimes impossible due to the possibility of biological contamination. With directional illumination however, it becomes possible to improve the resolution quite easily. Different chromium structures were patterned on glass slides. They were then illuminated with a planar LED array as well as a digital optical condenser (a hemispherical LED array), with control over the LEDs. Both the image plane and the Fourier plane were observed. The research presented here shows how different lighting configurations impact the image.

105. DESIGNING AND DEVELOPING A MOBILE MOON OBSERVATION APP

Presenter(s): Sinha, Ashok  
Author(s): Sinha, Ashok; Lim, Sunho; Cheon, Jongpil; Smith, Walter  
This research is to design and develop a mobile Moon observation app running on smart phones, as a part of World MOON (The More Observations Of Nature) project. The World MOON project is to teach students how the Moon works from both their local point of view and also a global perspective. The project has been executed more than 12 years for more than 6,000 students from 10 different countries. Unlike prior paper- or Web-based observation approach, a smart phone is used to observe the Moon using a rich set of sensors (i.e., camera, GPS, or gyroscope) for accurate and portable data collection. We are implementing the app with the Google software development kit based on Android operating system. We envision that this mobile Moon observation app will have anyone easily collect lunar data anytime and anywhere, and improve the global understanding of the Moon.

106. HYDRODYNAMIC RESISTANCE OF A TRAIN OF CONFINED MICROFLUIDIC DROPLETS

Presenter(s): Suteria, Naureen  
Author(s): Suteria, Naureen  
Microfluidic devices have become increasingly popular in the fields of science and engineering due to their ease of fabrication. These devices have significant potential for a wide range of applications including biomedical diagnostics and biosensing. Many of these applications involve the transportation, sorting and storage of droplets. When a single-phase fluid flows in a confined channel, there is a resistance to flow. Two-phase fluid flow, which includes droplets, introduces even more resistance to flow, known as hydrodynamic resistance of the droplets. The hydrodynamic resistance of droplet is the main key factor that controls the behavior of the droplets in a channel. Researchers have tried to determine the parameters that may affect the hydrodynamic resistance of droplets in a microfluidic channel. However, their studies have limited domain of parameters. The purpose of this study is to measure the hydrodynamics resistance of droplet over a wider range of parameters, which include capillary number, drop size, intra-drop spacing, viscosity ratio and surface tension between the inner and outer phase. We measure the resistance of the droplet using a microfluidic comparator; it directly compares a reference channel with known resistance to a parallel test channel containing droplets of unknown resistance. These water-in-oil droplets are generated upstream from the comparator using a cross-junction where droplet size and spacing can be easily controlled. Quantifying the resistance of droplet can help researchers better design their microfluidic devices for droplet trafficking, sorting or trapping.

107. SURFACE CHARGE DEVELOPMENT AT THE BARITE–WATER INTERFACE IN NaCl MEDIA, FROM 15 TO 50C

Presenter(s): Williams, Heather  
Author(s): Williams, Heather; Ridley, Moira K.  
Barite is found in a variety of geologic environments, including marine environments and hydrothermally mineralized veins. Barite is used in drilling fluids for oil and gas exploration and is present as scales in industrial pipes. Numerous studies have evaluated crystal growth and dissolution of barite. The solubility of barite has been shown to increase when present in an aqueous system containing calcite or gypsum. Similarly, sulfate-reducing bacteria have been shown to increase the solubility of barite in sewage sludge and treatment plants. These processes take place at the mineral–water interfaces, and are controlled by proton induced surface charge. Consequently, the surface charging behavior of barite is being investigated by potentiometric titration.

A commercial barite sample is being used in this study and has been characterized extensively by SEM and TEM imaging, XRD, and BET surface area measurements. The particles are euhedral, approximately 50 nm in diameter, and have a surface area of 23 m²/g. The titrations are being performed in NaCl media, at ionic strengths from 0.03 to 0.3 m, as a function of temperature from 15 to 50 C, and a pH range of 3 to 10. The background-corrected titration curves show common features. At all temperatures, these curves are shallow between pH 3 and 8, then steepen. The proton induced surface charge of the barite shows strong temperature dependence. The barite surface becomes more positive with increasing temperature. At 0.03 m, the surface is positively charged at all pH suggesting a high pH for the pHzpc value.
108. THE EFFECTS OF VISCOSITY ON DROPLET ELECTRODEFORMATION
Presenter(s): Wurmstein, Michael
Author(s): Wurmstein, Michael; Mohan, Siddharth; Bhattacharjee, Bidud; Vanapalli, Siva

With the development of smaller scale processes, mankind increasingly has the need to take measurements on microscopic amounts of fluids. The goal of this project is to produce a device to measure the viscosity of a fluid with less than 1 milliliter of fluid. This is accomplished by determining the effects of viscosity on the deformation of a surfactant loaded droplet suspended in an immiscible fluid when exposed to an AC electric field. Electro-deformation of droplets of varying viscosities will be investigated. This will allow the development of a reliable system to characterize a droplet’s viscosity from electric deformation. Deformation of droplets will be characterized by image analysis. The pertinent control parameters are size, velocity, conductivity, surface tension, and electric field voltage and frequency. Experiments are conducted within this space to account for their relative influence.

109. COMPARISON OF DIFFERENT METHODS OF DRUG INTAKE
Presenter(s): Yu, Arnold
Author(s): Yu, Arnold

Pharmacokinetics is the study of drug absorption within the body. This study is vital for pharmaceutical companies to produce the most cost-effective drugs. Companies not only compare different drugs, but also the different methods that drugs are consumed. Drugs are commonly taken by injection into the muscle (intramuscularly), injection straight into the bloodstream (intravenously), and through the GI tract (orally). In our study, we determined the best method for drug consumption. In order to get a better understanding of these methods, we made compartment models to represent them. The very basic model was a two-compartment model, including only bloodstream and body tissue. As the methods became more intricate, the models became more complex. Using MATLAB, a programming language with many capabilities, the rate of drug absorption in the blood was graphed three different times to represent the models. We used the drug, Lidocaine, a heartbeat stabilizer, as our model. The graphs measured the amount of drugs in the bloodstream versus time. Each graph was compared with each other to measure the most efficient method of drug consumption. We found that when the drug is injected directly into the bloodstream, there is a constant flow of the drug, making it the most efficient method.
SOCIAL SCIENCES (Anthropology / Archaeology, Economics, Psychology, Social Work, and Sociology)

Abstracts 110-114
110. A TALE OF TWO (OR THREE, MAYBE?) SPECIES: PHYLOGENETIC DIVERSITY IN THE SOUTH AFRICAN HOMINID FOSSIL RECORD

Presenter(s): Mayer, Caitlin
Author(s): Mayer, Caitlin; Durband, Arthur

For nearly 80 years examples of an ancient species of hominid known as Australopithecus africanus have been discovered in South Africa, beginning with Raymond Dart’s discovery of the Taung Child in 1925. The Taung Child, the type specimen for A. africanus, and numerous adult fossils discovered subsequently, comprise a portion of a large sample of fossil hominids recovered in South Africa. A. africanus remains first appear approximately 3.3 million years ago. Australopithecus robustus, a species with large teeth and jaws adapted to eating foods that are difficult to process, represents another early species found in South African sites between 2 to 1.5 million years ago. The South African fossil sample exhibits significant variability in a number of anatomical characteristics. This variation has give rise to a hypothesis that multiple species of early hominids were living in South Africa prior to the appearance of A. robustus. The present study focuses on StW 252 as a potential example of a third species of hominid living in South Africa. The features of StW 252 do not fit in with A. africanus and the later A. robustus. Could StW 252 possibly be a transition between earlier A. africanus and the later A. robustus? This project will detail the various scenarios that have been proposed to make sense of this complex set of fossil evidence.

111. ASSESSING FOOD SECURITY IN BOLIVIA

Presenter(s): Paz Portal, Ximena A.
Author(s): Paz, Ximena A.; Carpio, Carlos

Food security (defined as the physical and economic access to sufficient, safe and nutritious food that meets individuals’ dietary needs at all times) is nowadays a global concern. Food insecurity is a problem because it has negative effects on the academic performance of children and adults’ work ability, which in turn can affect the prospects of economic grow of a country. The objective of this study is to assess the situation of food security in Bolivia. My review of literature indicates that there is a very limited number of studies regarding food security in this country. The research will follow a three step approach. First, I will calculate each household daily calorie intake using data collected as part of Bolivia’s Household Expenditure Survey from 2011. The daily calorie intake will be then compared with the dietary need recommended by the World Health Organization to determine the food security situation of each household. In the third step, I will use statistical regression analysis to study the effect of several factors (e.g., household characteristics and region) on food security. The software SAS will be used for data management and analyses. Results of this research can inform policy makers and institutions on their efforts to improve food security in Bolivia.

112. BECOMING A BIG SIB

Presenter(s): Sacco, Cynthia
Author(s): Sacco, Cynthia; Howard, Jennifer; Heart, Sybil

The overarching goal of this project is to identify toddlers who are at greater risk for adjustment problems upon a sibling’s arrival so that interventions can be implemented prior to the arrival in hopes that such problems can be prevented. Although numerous studies reported adjustment problems in children during this transition, none so far have included a situation that mimics what a child might actually experience in real-life. The present study explored whether it is possible to create such a scenario with face validity, suggesting that it serves as a valid representation of a child’s future reaction. Pregnant mothers and their toddler-aged children visited a video laboratory before and after the newborn’s birth. Each time, mother and child were placed in a simulated baby’s room and interacted under researchers’ directions during a sequence of episodes. During the most crucial episode, the mother was asked to hold a crying lifelike baby doll while keeping her attention off her toddler for one minute. At the second visit, mothers reported on their perception of the extent to which their child’s behavior in the lab corresponded with the child’s actual reaction to the new baby. Toddlers’ behaviors during the “mother-doll” episode were coded and analyzed for evidence that they correspond with reactions that have been reported in the literature on difficulties upon a sibling’s arrival. Maternal reports were analyzed to determine whether the previous lab had yielded an accurate picture of the child’s actual reaction.
113. AN EVALUATION OF EMPLOYEES’ PERCEPTIONS OF FOOD SAFETY AND TRAINING SESSIONS EFFECT ON THE BEHAVIOR OF EMPLOYEES IN A MEAT PROCESSING FACILITY IN MERIDA, MEXICO

Presenter(s): Ventura, Cindy
Author(s): Ventura, Cindy

Food borne illness caused by pathogens such as Salmonella continues to be a major concern for beef processors both in the U.S. and international locations. For this reason, many systems have been created to reduce the occurrence of these surging outbreaks, including Hazard Analysis and Critical Control Points (HACCP) (Ball, Wilcock, & Aung, 2009). Employees’ behavior towards these models’ implementation influences Salmonella prevalence in products (Vela & Fernandez, 2003). The objective of this study was to evaluate and analyze the outcomes of training workshops in food safety regarding employees’ behavioral change and Salmonella prevalence in a meat processing plant in Merida, Mexico.

Researchers observed employees’ behaviors and recorded their results using an employee behavioral checklist following Russell, et al. (2009) model and Ajzen’s (1991) theory. Biological samples were gathered during animal harvest by swabs of carcasses at three different work stations: exterior hide, pre-evisceration and post-evisceration in order to determine Salmonella prevalence. At the conclusion of the processing day, researchers performed a training session with the employees regarding food safety and its importance. Four repetitions of this process took place between 2011 and 2012 to analyze differences in Salmonella prevalence according to seasonality. Finally, data collected from the behavioral checklist and changes in Salmonella prevalence were compared in order to determine the impact of the training. Results shows improvement on employees’ behaviors toward food safety however changes or reduction of Salmonella prevalence throughout the harvesting process was negligible. Further study is recommended to determine impacts of trainings on food safety.

114. WHAT PREDICTS HOW ACCURATELY SPOUSES PERCEIVE ONE ANOTHER’S PERSONALITY? A TEST OF THE REALISTIC ACCURACY MODEL

Presenter(s): Wood, Wendy
Author(s): Wood, Wendy; Oldham, Rebecca; Niehuis, Sylvia

Perceiving a relationship partner’s personality accurately predicts greater relationship satisfaction. According to the Realistic Accuracy Model (RAM), accurate judgment of another person’s personality can occur provided that relevant information is available to and detected by an individual, who then uses the information correctly. We sought to identify factors that predict accurate partner perception, using a sample of 113 newlywed couples. We hypothesized that the more opportunity spouses had to know one another well prior to marriage (i.e., longer acquaintance, courtship, and cohabitation duration/courtship length), the better they would be able to predict one another’s personality. Five regression analyses were carried out (per spouse) predicting partners’ accurate perception of spouses’ personality on each Big Five personality trait based on the difference between the individual’s perception of the partner’s personality on a given trait and partners’ perception of their own personality on that trait. In addition, based on previous literature and RAM, we included the following predictors: couple’s prior acquaintance (i.e., how well the couple knew each other prior to dating), cohabitation length (i.e., how long the couple lived together prior to marriage, given the overall courtship length), courtship duration, as well as both partners’ average scores on each personality trait used to predict partners’ accuracy of their spouse’s personality. The findings largely supported our hypotheses. For example, husbands were better able to accurately predict wives’ extraversion the better the couple knew each other prior to dating. The findings are discussed in light of the RAM and future areas of research.
Tuesday April 15, 2014

Oral Presentations

Abstracts 115-133
ARTS
(Art History, Dance, Music, Theater, Visual Arts)

Abstract 115
Performance artist Marina Abramovic’s work, The Artist is Present, influenced pop music by emphasizing the connection between the audience and the performer. In this piece, Abramovic silently sat in a chair for three months essentially hosting a forum for one on one connections with her audience. Over the past year, major pop culture icons like Lady Gaga and Jay Z have cited ‘The Artist is Present’ as the key influence for their new works. After studying Abramovic’s work, Lady Gaga and Jay Z introduced a new level of showmanship and interactivity heretofore unseen in pop music, celebrating not only modern art, but also the possibilities of intense connections with the audience. For instance, Jay Z performed his song Picasso Baby for six consecutive hours, allowing audience members to come in one at a time to perform with him. Lady Gaga created an album called “ARTPOP” which deals with the celebration of taking art to the masses, made possible with album collaborators Marina Abramovic and Jeff Koons. As a result of making such deep connections with their audience, the listeners cling to Jay Z and Lady Gaga’s words, words that, as of late, are often about modern art and its power. By listening so intently to the lyrics, the fans not only become versed in modern art but also begin to see art as the new status symbol. Drawing primarily from interviews and primary sourcing, this presentation argues in favor of the creative reciprocity between performance art, pop music and audience.
HUMANITIES (Cultural Studies, Gender Studies, Literature, and Media and Communications)

Abstracts 116-125
116. HOW WE’VE MET OUR FATHER: THE SITCOM OF SPIRITUALITY
Presenter(s): Cockrell, Taylor
Author(s): Cockrell, Taylor

Research suggests that culture has become more consumeristic over the past several decades. Technology and entertainment are constantly changing, virtually pushing culture towards increased consumerism. This need to consume tends to leak into every aspect of life; spiritual life is no exception. Those who minister to youth and families play a specific role in this situation. How do youth and family ministers help the emerging generation understand that God is an end in himself, not a product consumed for spiritual growth? To answer these questions, this study will examine the practical issues at the root of adolescent culture's obsession with consumption, technology, and entertainment. Along with a practical theology approach to these issues, an inductive theory will be formulated that is grounded in documents, articles, and journals in order to present a responsible solution.

117. THE EFFECTIVENESS OF SHORT-TERM INTENSIVE YOUTH & FAMILY MINISTRY INTERNSHIPS
Presenter(s): Masterson, James
Author(s): Masterson, James

Short-Term Youth and Family Ministry Internships have served the purpose of helping the intern develop skills for the future discerning their own individual call to ministry. Internships offer the student intern practical experience which completes their academic program requirements, but what happens to the relationships created and fostered during the summer with the youth? Over the course of my summer internships, as well as through informal discussion with other interns, the general consensus was that in most cases teens in the youth group were more willing to open up to the intern rather than the youth minister. Due to the limited time spent with a youth group, the current summer internship practice seems to offer little time for authentic relationships to develop between the intern and the youth group. The purpose of this research is to determine the effectiveness of short-term intensive internships and provide a more practical understanding of how academic intensive ministry internships can be better handled in churches. Utilizing phenomenological methods, I have conducted semi-structured interviews with those who have completed intensive internships and with internship supervisors who have supervised multiple internship experiences. As a result of the semi-structured interviews, some common themes drawn from the data analysis that depict intern experiences are: benefits of a shared workload, lack of relationship development, and a more nuanced understanding of full-time ministry.

118. RESPECTABLE, WELL-TO-DO ROBBERS: OUTLAWS AND MASCULINITY IN ROGER POCOCK'S WRITINGS ABOUT HIS LONG RIDE
Presenter(s): Mayo, James
Author(s): Mayo, James

Masculinity as a concept in the early twentieth century was not based on simply a rugged or rough life, but had much to do about loyalty to your fellow man. Roger Pocock, a Canadian adventurer of his time, set a record by traveling from Fort Macleod in Canada to Mexico City by horseback 1899-1900, which he wrote about in a series of articles in Lloyd’s Weekly newspaper. On his way, he encountered settlers, herders, cowboys, and outlaws. Pocock described these outlaws as murderers and train robbers, who lived out in secluded settlements together to avoid law officers. Surprisingly, my research on the Pocock Scrapbook from the University of Alberta archive reveals Pocock found outlaws as generous and caring folk. Pocock encountered several outlaw camps and dwellings where he was treated as if he were an old friend and extended every courtesy an adventuring Canadian cowboy could ask for. But why would American outlaws in hiding trust a stranger from Canada? They trust him because of the cowboy code of loyalty. For a night’s rest and a hot meal, Pocock swore their identities would be safe as well as their locations. In this paper I will explore how Pocock constructs the outlaws as an ideal western masculinity.

119. NAGPRA: ITS IMPACT ON THE SCIENTIFIC COMMUNITY AND NATIVE AMERICANS
Presenter(s): Mitchell, Samantha
Author(s): Mitchell, Samantha

This research project examines the impact of the 1990 Native American Graves Protection and Repatriation Act (NAGPRA), which initiated the repatriation of skeletal remains to, affiliated Native American tribes. In part, this research addresses how the passage of NAGPRA has impacted relationships between scientists and Native American communities. Conclusions suggest an increased effort to develop rapport among Native American communities, as well as strengthening relationships between scientific communities. Despite these positive developments, it is evident that continued scientific research on skeletal remains can significantly contribute to paleodemographic, paleopathological and paleogenetic knowledge. The study also examines how representatives of Native American communities and the scientific community have come to view the law. This project documents a conspicuous lack of Native American perspectives in discussions concerning scientific research. A review of the literature reveals a tendency to attribute perspectives to Native Americans without any supporting evidence, as well as a tendency to treat individuals' statements as if they are representative of the broader Native American population. Research methodologies included discourse analysis of current scientific arguments, regarding the positive and negative impacts of scientific study on Native American communities. Research conclusions point towards a need for extensive ethnographic research to document Native American perspectives regarding scientific research on indigenous human remains. Additional research is currently underway and includes conducting ethnographic interviews with Native American community leaders and NAGPRA representatives.
120. ORAL HISTORIES OF MEDIA IN MILITARY CULTURE
Presenter(s): Parks, Amanda
Authors: Parks, Amanda

For this research project I will be focusing on the place of media technology in military life and culture. I will be conducting oral history interviews with veterans from the Vietnam War and the recent conflict in Afghanistan, asking them about their experiences of media coverage, films accessible on the front line, electronic communication methods, video games with war themes, films portraying war, and photography in combat zones. Through this research I hope to investigate how media technology has changed military culture, and to assess whether the presence and uses of these technologies have improved or degraded combat experiences. I have chosen to compare the experiences of Vietnam and Afghanistan veterans because both conflicts are associated with media scrutiny of combat zone practices, and in both cases, new technologies such as home-movie equipment (8mm and 16mm in Vietnam, video and online media in Afghanistan) had a significant impact on military practice and life in the military. I have already conducted four interviews, and my goal is to interview at least 10 veterans from each conflict. In some cases, I will also interview veterans’ spouses in order to better understand the uses of media technologies to communicate with family during deployments.

121. AMERICANS IN SAM STEELE’S FORTY YEARS IN CANADA (1915)
Presenter(s): Robinson, Rebecca
Authors: Robinson, Rebecca

Using the memoir and manuscripts of Sir Samuel Steele, I will research Steele’s views and various interactions with the American people, analyzing his feelings toward the Americans based on these interactions. I will explore Steele’s memoir, including the manuscript drafts and revisions that are housed at the University of Alberta Bruce Peel Special Collections Library in Edmonton, Canada. I am working with the digital copies of the archival materials in the English department Digital Humanities Lab as well as with the memoir itself. Through transcribing the drafts of the memoir, handwritten and typed, to searching keywords in the final memoir, as well as reading his diaries, I plan to gather evidence of Steele’s interactions and implied or explicitly stated feelings towards Americans. So far, my research is showing evidence of Steele’s hostility towards the American people.

122. TEARS - IDLE, FERTILE, AND MEMORABLE TEARS: A STUDY ON THE NARRATIVE IMPACT OF UNREQUITED LOVE
Presenter(s): Skipworth, Macy D.
Authors: Skipworth, Macy D.

Unrequited love permeates many literary narratives, ranging from classic examples like Petrarch’s woeful ballads and Shakespeare’s Twelfth Night to more recent literary works, such as William Dean Howells’ The Rise of Silas Lapham and J.K. Rowling’s Harry Potter series. In Silas Lapham, Irene’s despair is suffered with regard for the “economy of pain” that limits the cost to a single heart. Hers are no “Tears, Idle Tears.” In Harry Potter, Snape’s dying secret about Lily reveals how he has agonized alone, choosing to expose through a teardropped memory the depth of his love for Harry’s mother. His unrequited love is a sacrifice that, like Lily’s, saves Harry, and the world entire. Unrequited love works as a narrative in many different forms; Shakespeare is satirically comedic, Howells focuses on this “economy of pain,” and Rowling evokes deeper empathy from readers with poignant narrative and deep characterization.

This study on unrequited love, through analysis of both text and film, will examine the different narrative functions of this theme of unfulfilled affection and consider how it accomplishes various tragic, comic, and epic purposes.

123. BITING CONVENTION: ANALYZING NEW SOCIAL AND POLITICAL TRENDS IN VAMPIRE NOVELS
Presenter(s): Summerlin, Rachel
Authors: Summerlin, Rachel

Over several centuries, vampire novels have become a staple in popular literature. Traditionally, vampire literature utilizes white adult women to convey patriarchal subordination to a white male adult vampire through erotic horror themes. However, current vampire literature uses vampire children to represent these horror themes. These themes are centered around acceptance of different sexual relationships, mixed racial groups, and alternative familial structures. My research is devoted to an analysis of this literary shift. In this study, I analyze three modern vampire novels and their historical contexts. In Octavia Butler’s The Fledging, Stephanie Meyer’s Twilight Saga, and Anne Rice’s Interview with a Vampire, the young vampires, who are generally between eight and eleven years old, play key roles in transmitting new ideas about race, sexuality, and family. I argue that these representations of vampire characters have the potential to strongly influence and broaden the social views of their readership. Past vampire novels reflected a more conservative approach to social norms. Through this representational, generational shift, modern vampire novels reflect new sociopolitical norms, including the widespread acceptance of biraciality, bisexual and homosexual relationships that challenge heteronormativity, and complex family structures that do not conform to the patriarchal, nuclear-family norms of the past. In modern vampire texts, these new norms are made acceptable to their young audience through the characters of vampire children. These vampire children in modern fiction can thus serve as a case study analysis of how these kinds of major sociocultural changes are transmitted to younger generations through popular culture.
124. FUNERAL TRADITIONS, PROTESTANTISM, AND THE WOMEN OF THE KU KLUX KLAN, AN EXAMINATION OF NEWSPAPER COVERAGE AND ORGANIZATIONAL DOCUMENTS FROM THE 1920s
Presenter(s): Taylor, Bailee
Author(s): Taylor, Bailee

In this paper we present the results of research on the women’s Ku Klux Klan (WKKK) movement of the 1920s. Although the group has been known for their controversial cult-like ways, they also believed that they were associated with the Protestant faith. Our research focuses on one of these intersections between Klan traditions and Protestantism, namely the funerals that the WKKK held for their members. By conducting rhetorical history analyses, our study examined newspaper articles covering WKKK funerals and scripts that Klanswomen wrote for funeral services themselves. This study asks the question: How did the newspapers depict the ceremonies and did it reflect how Klanswomen’s way in which they performed them? Our preliminary findings are that Protestantism masked Klanswomen’s discriminatory beliefs and that newspaper coverage of these funerals emphasized the Protestant elements that were overlaid with Klan traditions. We argue that since these ceremonies were not fully open to the general public, it left them ignorant as to what really went on behind closed doors. The findings of this research are relevant for further understanding how the Klan used Protestantism to justify their acts and, more generally, how religious faiths are used to mislead the public about the activities of clandestine organizations.

125. SOLVING AN ANCIENT COMBAT MYSTERY BY BRAZILIAN JIU JITSU: THE DEATH OF ARRICHION THE PANKRATIAST
Presenter(s): Willms, Joshua
Author(s): Willms, Joshua; Larmour, David

Arrichion was an ancient Greek pankratiast (no-holds-barred fighter), who according to the accounts of Philostratus and Pausanias won the victory-crown at the 54th Olympiad. His victory was anything but normal, however, because he was declared the winner posthumously, after submitting his opponent via ankle-lock. Scholars have debated the order of events and the mechanism of Arrichion’s death, with theories ranging from strangulation, to exhaustion, to heat stroke. However, if we remain true to the texts of Philostratus and Pausanias, taking into consideration the positioning of the athletes and the possible ways Arrichion could have performed an ankle lock, and then try to explain the death of Arrichion within the required time-frame, none of the existing explanations are viable. Utilizing knowledge from Brazilian Jiu Jitsu, modern medicine, and an analysis of ancient Greek art depicting pankratiasts, I propose a new explanation of the events that took place at the 54th Olympiad and how Arrichion died.
PHYSICAL SCIENCES (Computer Science, Engineering, Geosciences, Mathematics, and Physics/Astronomy)

Abstracts 126-129
126. CHARACTERIZATION OF THIN FILM THERMITES FOR VARYING BINDER/SOLVENT SYSTEMS  
Presenter(s): Cano, Jesus  
Author(s): Cano, Jesus; Meeks, Kelsey; Pantoya, Michelle

A new approach for depositing thin energetic films is introduced using blade casting. The energetic composite composed of magnesium (Mg) and manganese dioxide (MnO2) is mixed with a binder and is blade cast onto a stainless steel foil substrate. This study investigated the effect of binder chemistry and concentration on combustion behavior. The Mg-MnO2 system was studied in the following binder-solvent systems: Polyvinylidene Fluoride (PVDF) - Methyl Pyrrolidone (NMP); Viton™ fluoroelastomer (Viton A) - acetone; and paraffin-xylene. Films were prepared by mixing Mg-MnO2 with the binder and solvent in a suspension at a solid to liquid ratio of 0.4 then cast onto substrates using blade casting to 200 microns wet-film thickness. Calorific output and open flame speed were measured for varying binder weight percentages. It was found that calorific output increased with increasing binder concentration, to a maximum of 4.0 kJ/g, suggesting participation of the binder in the exothermic reaction. Flame speed decreased with increasing binder concentration, with a maximum recorded value of 0.14 m/s for unconfined tests. Binders are less conductive than metals and metal oxides thereby hindering the energy propagation with increasing binder content. Confined flame propagation tests were also conducted for the NMP/Mg-MnO2-PVDF system, with a maximum recorded flame speed of 3.46 m/s. High speed imaging shows considerable differences in flame front, which may suggest a transition in propagation mechanism from conduction for unconfined tests to hot particle advection for confined flame speed tests, accounting for the observed increase in flame speed.

127. DEVELOPMENT OF REAL TIME DIGITAL HOLOGRAPHIC MICROSCOPE FOR CELL FLOW INTERACTIONS USING HIGH PERFORMANCE COMPUTING (HPC) CLUSTER  
Presenter(s): Hojjati, Avesta; Molaei, Mehdi  
Author(s): Hojjati, Avesta; Molaei, Mehdi; Sheng, Jian

Real-time imaging and analysis of 3D cell migration and locomotion is crucial to understand the underlying physics of cell environment interactions. In addition, such a microscopy would provide vital diagnostic capability in cell detection, particle sorting and drug screening with large throughput. However, 3D holographic imaging and subsequent analysis are computational intensive and up-to-date prohibitive for real-time applications. With the advances in high performance computing, we are developing a real-time digital holographic microscope (DHM) that includes an in-line DHM, a large format CCD camera, and a 24-node windows-based HPC cluster. The cluster is organized as the master-slave parallel computing paradigm with Message Passing Interface (MPI) as its communication protocol. The holograms are recorded, streamed and analyzed by the HPC cluster in real time, the 3D distributions and in focus images are rendered back on the data acquisition computer. The system will be applied to study marine protest interacting with oil droplets.

128. EFFECT OF VARIOUS SURFACE TREATMENTS ON SLIP RESISTANCE OF DIFFERENT WALKWAY SURFACES  
Presenter(s): Mughal, Naved  
Author(s): Rasty, Jahan; Wells, Travis; Mughal, Naved

Slip resistance of various walkway surfaces can be characterized in terms of Dynamic Coefficient of Friction (DCOF) measurements between the subject surface and a typical leather shoe sole. In an attempt to reduce the slip-and-fall incidents worldwide, a number of industrial products have been developed and currently available in the market, all claiming to increase the slip resistance of typical tiles used in construction of walkway surfaces. In this study, it was postulated that the effectiveness of any surface treatment would be dependent on the interaction between the surface treatment and the inherent physical and topographical properties of the tile surface being treated. The purpose of this study was therefore to conduct a parametric study to characterize the effectiveness of several commercially available surface treatments, on different tile surfaces, through direct measurement of increase in DCOF post treatment. To this end, four tiles (ceramic, unglazed porcelain, rettificato, and quarry) were treated with five treatments (slinomor, SaDac 03, Invisible Anti Slip, Anti-Slip Solution, and Industrial Anti Slip). DCOF measurements were performed utilizing a BOT-3000 industrial tribometer on each tile treated by various surface treatments. Results indicate that, as anticipated, not all surface treatments work equally well on all types of tile surfaces, while some treatments can actually create a more slippery surface on some tiles. The results can be used for selection of most effective traction-enhancing surface treatment for a given tile surface.
129. THE EXTRAORDINARY FEATURES AND CAPABILITIES OF METAMATERIALS

Presenter(s): Woods, Dewan

Author(s): Woods, Dewan

The experimental realization of unnatural phenomena such as invisibility cloaking, perfect lensing, negative refractive index, and many others all function to ignite the field of Condensed Matter Physics and the application and demonstration of devices becomes essential for the continued growth of this field. Metamaterials and other novel electromagnetic media, while being quite intriguing, also promise a great number of technological advances in the future to come. These advances are very exotic and applicable toward devices in a generation that sees much growth and prosper in these areas. In this paper, we explore the exotic properties of Metamaterials, tunable, artificially composite structures capable of many useful applications. Metamaterials have been shown to exhibit foreign properties not seen in nature. Utilizing these unique materials, one can demonstrate features such as the Metamaterials perfect absorber, emitter, negative-index material, and wave guiding, namely invisibility cloaking. I discuss our achievement of a Metamaterial invisibility cloak in the laboratory, the creation of a Metamaterial sample possessing a negative index of refraction, and our fabrication and characterization of a Metamaterial perfect absorber yielding near-unity absorption of 98% at a wavelength of 6 microns. The applications of these results will be the focus of this paper.
SOCIAL SCIENCES (Anthropology / Archaeology, Economics, Psychology, Social Work, and Sociology)

Abstracts 130-133
130. CONTEMPORARY EUCHARIST
Presenter(s): Hall, Scott

Author(s): Hall, Scott

Historically, the Eucharist has been the central act within a worship gathering. Today, Eucharist seems to serve other functions of a worship gathering that are not as central to its original practice. Has Eucharist lost its historically central importance within contemporary worship gatherings? My methodology in exploring this question will analyze the development of Eucharistic theology by researching the thoughts and documents of ancient and contemporary theologians. I will then bring this information into conversation with contemporary case studies where this phenomenon seems to exist. Through this qualitative research, it is my goal to revive a view of Eucharist in which its importance within a worship gathering is re-examined.

131. THE PRESENCE OF SPORT PSYCHOLOGISTS AND FACTORS AFFECTING THE WILLINGNESS TO SEEK PROFESSIONAL PSYCHOLOGICAL HELP
Presenter(s): Piper, Margaret

Author(s): Piper, Margaret; Parent, Michael; Bradstreet, Tyler

Student athletes have been found to report greater negative attitudes toward seeking professional psychological help compared to non-athlete students (Watson, 2005), despite facing similar challenges transitioning to college, and additional stresses (Pinkerton, Hinz, & Barrow, 1989). A gap in literature exists surrounding the presence and use of sport psychology services within universities, and a dearth of research on variables that may influence psychological help seeking among athletes. Athletes and coaches not using mental health services may be linked to negative attitudes associated with help seeking (Zakrajsek, Martin, & Zizzi, 2011). This study focuses on sport psychologists’ presence among collegiate teams and the influence of coach-psychologist relationships on athletes’ attitudes toward seeking professional psychological help. After controlling for levels of distress and athletic burnout, we predict the presence of a sport psychologist, their level of involvement, and the perceived coach-psychologist relationship, as being predictors of athletes’ attitudes toward, and seeking of, counseling. This will provide greater insight into athletes’ needs and barriers seeking psychological help, and will elucidate the need for sport psychology consultants in universities, as well as improved coach-psychologist relationships. Subjects will be 300 varsity athletes from Division 1, 2, and 3 schools. Participants will complete a series of questionnaires. Results will help address the need to increase the use of sport psychologists in university athletics, as well as suggest that student-athletes would be willing to utilize professional psychological services if a positive relationship between coaches and psychologists is perceived. Ongoing data collection will be completed by presentation.

132. EXAMINATION OF (RE)INTEGRATION PROCESS OF (SEX) TRAFFICKED WOMEN
Presenter(s): Rodriguez, Rocio

Author(s): Rodriguez, Rocio

Human trafficking is a direct violation of human rights, and as an international problem, has many actors involved. The actors work throughout the trafficking process from prevention, coercion, to rescue, and eventual (re)integration. (Re)integration is identified as the process of recovery with economic and social inclusion after a trafficking experience. This is accomplished by the empowerment of trafficked women, developed from skills taught to the women to allow them to gain independence and self-sufficiency. This study examines (re)integration programs of women through various studies in Europe by exploring the variety of methods used by three different countries.

Data collected was based on a variety of interviews and previous studies examining social questions about sex work, prostitution and sex trafficking. Subsequent information about (re)integration was taken from interviews and previous research. Data used was recovered from women by examining their pre-trafficking conditions, migration/trafficking experiences, support needs, concerns, and future aspirations. By mapping out post-sex trafficking experiences, a greater understanding of (re)integration experiences and challenges can be reviewed and improved for future aid.

It has been established through these interviews and literature reviews, when a (re)integration program was successful, women were able to reestablish positive relationships with their families, find employment, improve overall psychological health, and develop lifelong skills. Important to this (re)integration process is community activity. By taking an interdisciplinary approach, different entities involved with the recovery of a woman would be able to help her establish a place back in her society.
133. DETERMINING THE NUMBER OF IMPACT EVENTS TO A PIG SKULL: A MEANS FOR ASSESSING BLUNT FORCE TRAUMA

Presenter(s): Yoakum, Caitlin

Author(s): Yoakum, Caitlin

Blunt Force trauma to the cranium is often the result of an extreme violent event, which can produce multiple fracture patterns. As a result, small fragments can be produced and they can make it difficult to place them in their proper anatomical context, hence impeding attempts to interpret the violent event. Determining the number of blows received by a victim is a critical but often difficult process. Such information is important in figuring out the context by which the trauma took place. To-date, there is very little published work on how anthropologists determine the number of blunt force impact events to the cranium. This project focuses on how cranial fracture patterns can indicate the number and placement of blows to the skull. In order to accomplish this research a double blind study was implemented, using six pig heads to create a field of variables. A volunteer struck the pig heads and the numbers of blows were recorded without our knowledge of them. Analysis of fractures patterns took place after the pig heads were defleshed. The analysis consisted of determining the number of blows for each pig head by tracing fracture patterns from grey-scaled photos. Assumptions about how force is transmitted through bone material guided us as we found specific impact events to the skull. Our observations were then tested on recent human forensic cases to determine if the method is transferable from the pig skull to the human skull.
Wednesday April 16, 2014

Oral Presentations

Abstracts 134-151
ARTS
(Art History, Dance, Music, Theater, Visual Arts)
Abstract 134-135
134. AN ANALYSIS OF THE WORKING POSSIBILITIES OF THE MODERN COSTUMER
Presenter(s): Ferrell, Scott
Author(s): Ferrell, Jr., Scott

In many competitive artistic industries, many contemporary artisans find themselves working in an industry outside of what they initially thought possible, yet still utilizing their artistic skills. This study, using interviews from individuals in varying fields as well as first hand research, explores the possibilities of utilizing the skillset of the modern costume design/technology student within the current business world.

135. PROGRESSION OF FORM OF THE KOUROI AND KORAI STATUES OF ARCHAIC GREECE
Presenter(s): Hudson, Sarah
Author(s): Hudson, Sarah

The Kouroi, ‘young men’ in Greek, are nude male statues in Archaic Greece. Korai, ‘young girls,’ are clothed female statues. These statues were used as funerary markers or dedications in temples. They have a very strong likeness to statuary found in Egypt, however, the Greek Kouroi and Korai progress to a more naturalistic style in the 6th century B.C.E. The sculptures share a common facial expression, a smile, and stiff posture with their left foot forward, similar to the Egyptian statues. Males are always depicted in the nude while females are fully covered in Greek style dress. As time progresses, these statues begin to take on a more realistic form. My paper will discuss how the style and naturalism of Kouroi and Korai change from the sixth century B.C.E., as well as why sculptors began depicting the human form in a more realistic way. In terms of methodology, I will use various books and articles describing Kouroi and Korai figures, and compare the photographs of early statues with later ones. I intend to pay particular attention to rendering of anatomy, musculature, and pose between 8th century 5th century B.C.E. I aim to demonstrate how Greek sculptors were able to achieve naturalistic depictions of the human body at the end of the Archaic period, as their experience and technique improved.
BIOLOGICAL AND CHEMICAL SCIENCES
(Biology/Biochemistry, Chemistry/Biochemistry, Environmental Studies, and Health Professions)

Abstracts 136-142
136. NEURAL CORRELATES OF STIMULANT USE DURING CRITICAL THINKING: A PRELIMINARY FMRI INVESTIGATION
Presenter(s): Dobbe, Logan
Author(s): Dobbe, Logan; O'Boyle, Michael

Clinical stimulant usage is a cornerstone in treating a suite of neurological conditions. As a collateral, the use of stimulants for nonclinical purposes has increased among university students nationwide in part with the hope of improving academic performance. Adderall is such a stimulant, sometimes taken by students who claim to get “tunnel vision” which allows them to study for hours at a time, and is thought to enhance their focus during exams. Known pharmacology and past research on stimulants suggests its use may alter brain activity in the frontal lobes and emotion centers, which may actually make it harder for them to think critically, by altering information processing and controlling emotional responses. In the present study, potential neural correlates of Adderall use on critical thinking will be assessed. Two prescription stimulant users will take a specially designed reasoning exam while concomitant fMRI brain activation measures are taken. They will take the exam twice, once using the stimulant and another time without it. It is anticipated that when using the stimulant, the users will perform worse and that there will be a corresponding decrease in prefrontal cortex activity (reasoning) and in the amygdala (emotion processing). The results of this experiment may raise questions regarding the effectiveness of stimulants to enhance academic performance.

137. CHARACTERIZING DIFFERENCES IN NITROGEN-USE STRATEGIES BETWEEN NATIVE AND INVASIVE WETLAND SPECIES
Presenter(s): Griffin, Chelsea
Author(s): Griffin, Chelsea; Waring, Elizabeth; Holaday, Scott

An increase in the nitrogen load moving through hydrologic systems has left wetlands vulnerable to invasion by non-native species whose nitrogen-use strategies are favored by high nitrogen. We examined how nitrogen availability affects photosynthesis and potential forms of nitrogen storage for an invasive grass, Phalaris arundinacea, and the native sedges, Carex stricta and C. lacustris. Our findings will improve the understanding of physiological bases for the success or vulnerability of each species under variable nitrogen supply. We supplied five plants/species for 7 weeks with a complete nutrient solution containing 15 mM nitrogen and then supplied the plants with 0.15 mM nitrogen for 7 weeks. After each treatment, we measured photosynthetic parameters and determined the soluble protein (storage and metabolic), nitrate, and total nitrogen content of leaves. Phalaris arundinacea had the highest photosynthetic rate and soluble protein with high nitrogen. With low nitrogen, the Carex species maintained photosynthesis for 7 weeks, whereas P. arundinacea did not. The potential contribution of nitrogen storage to leaf physiology with nitrogen deprivation will be addressed. We hypothesize that low nitrogen storage and a strategy of allocating nitrogen to photosynthetic enzymes at high, but not low, nitrogen, would constrain the competitive advantage of P. arundinacea at low nitrogen. The short-term maintenance of leaf physiology by the Carex species at low nitrogen may result from a high nitrogen storage capacity and/or a preferential allocation to photosynthesis to maintain carbon gain under abiotic stress.

138. THE DYNAMICS OF ENTANGLED LINEAR AND CYCLIC DNA: NATURE’S “IDEAL” MOLECULES
Presenter(s): Guo, Xiaoran
Author(s): Guo, Xiaoran; Li, Yanfei; Yates, Daniel; Sanfrancisco, Michael; McKenna, Greg

DNA has been studied not only as genetic material, but also as a model polymer to study the dynamics of synthetic polymers. Different states of DNA, linear, supercoiled and cyclic, have different dynamic behaviors, which have implications in biology, biotechnology and polymer science. The current paradigm for describing the dynamics of linear polymers is the reptation theory/tube model, some aspects of which are still under debate. On the other hand, ring-like polymers differ from their linear counterparts because they lack chain ends so they cannot reptate. As a result, a new theory needs to be developed to describe circular polymers. DNA that is monodisperse and potentially free of linear contamination could be used to verify existing theories. In order to gain a more comprehensive understanding of the dynamic models of polymers, we use rheology and microfluidic stagnation point elongation methods to measure the viscosities of linear and cyclic DNA of the same molecular weight. In addition, we study the molecular weight dependence of viscosities for both linear and cyclic DNA to evaluate the theories. By studying DNA dynamics, we expect to inspire biological research of the origin of DNA formation and the actual DNA movement mechanism during cell division or protein synthesis. Also, this study of DNA will provide profound information needed to understand the dynamics of polymers, and therefore provide improved information for industrial application of polymer materials.
139. AN ANALYSIS ON SELENIUM CONCENTRATIONS IN THE SNOWY PLOVER ENVIRONMENT

Presenter(s): Jackson, Benjamin
Author(s): Ashbaugh, Hanna; Jackson, Ben

The snowy plover (Charadrius nivosus) is a small member of the plover bird family typically only found in Ecuador, Chili, Peru, and the Southwest and Western United States. Once considered locally common, their population has fallen and is listed as endangered or threatened in several states. From California to Texas, these birds are decreasing in numbers as their fragile saline lake environments are suspected of being tainted with runoff from agricultural production and urban pollution. Although the sources of this runoff will not be discussed in this research, we will investigate if certain elements known to harm plover reproductive success are present in the soil and water of the surrounding lake, as well as in the feathers of the birds themselves.

Numerous .4 gram samples of dirt, water, and feathers were digested in groups of 16 (15 samples along with 1 acid/peroxide blank) for 12 hours in a 20 mL 1:1 mixture of concentrated nitric acid and 35% hydrogen peroxide in 50 mL beakers. This was then put on a hot plate at 110 degrees Celsius and boiled down to 5 mL. This 5 mL solution was then analyzed by Graphite Furnace Atomic Absorbance Spectrophotometer to determine the concentrations of Selenium. Both of these elements are known to interfere with snowy plover reproductive health.

140. EFFECTS OF SWEETENED MOUTH RINSES AS AN ERGOGENIC AID TO EXERCISE PERFORMANCE

Presenter(s): Nguyen, Tiffany
Author(s): Hawkins, Keely; Nguyen, Tiffany; Ringos, Laura; Cooper, Jamie

Purpose: To investigate if nutritive or nonnutritive sweetened mouth rinses (MR) have an ergogenic effect on exercise performance, and to assess the influence of sweetness intensity on endurance performance during a time-trial (TT). Methods: This randomized, single blinded study had 4 treatment conditions (4 study visits). Sixteen subjects (11 males, 5 females) completed a 12.8 km TT on four different occasions. During each TT, subjects MR and expectorated a different sweet tasting solution at the beginning and every 12.5% of the TT completed. The four different MR solutions were: sucrose (S) (4 kilocalories per gram), a lower intensity sucralose (S1:1) providing sweet taste but no energy, a higher intensity sucralose (S100:1), and water for control (C). Completion times for each TT, heart rate (HR) and ratings of perceived exertion (RPE) were also recorded as each solution was given.

Results: Completion time for S1:1 was significantly faster than C (1:01:45±00:02:01 vs. 1:04:07±00:03:02; p=0.05, respectively), whereas S showed a trend for a faster time compared to C (01:02:42 ± 00:02:56 vs. 1:04:07±00:03:02; p=0.245, respectively). No other treatment differences were found for completion time. There were no significant differences in RPE and HR for each solution (NS). Conclusion: These results suggest that a sweet tasting MR does improve exercise performance compared to water. There may also be an intensity threshold for the ergogenic effects of sweet taste for exercise performance since the higher sweet intensity solution (S100:1) resulted in the slowest average completion time.

141. THE EFFECTS OF PARASITE INFECTION AND TEMPERATURE INCREASE ON ATLANTIC CROAKER IN THE GULF OF MEXICO

Presenter(s): Willms, Joshua
Author(s): Willms, Joshua; Phillips, Michael; Hopper, Tiffany; Diamond, Sandra

Infection with parasites can strongly influence metabolism, growth, and survival of host organisms. Cymothoa excisa, a marine isopod, is a macro-parasite on Atlantic croaker (Micropogonia undulatus), a species of bony fish commonly found throughout the Gulf of Mexico. Female parasites attach to the tongue of the fish while males attach to the gills. The incidence of parasite infestation appears to be increasing, possibly in response to warming ocean temperatures. Our objectives are to examine the effects of parasite infestation on Atlantic croaker, as well as the growth of the parasite, at two different temperatures. We will measure food and oxygen consumption to examine fish growth and metabolism, and use Reflex Action Mortality Predictors (RAMP) to provide a measure of fish condition and behavior. We will also measure changes in the sizes of the parasites. The results from this experiment will provide useful information for projecting the health of populations of croaker in the Gulf of Mexico under future climate scenarios.

142. A STUDY ON THE MECHANISM BY WHICH THE NATURAL PRODUCT NI-07 KILLS CANCER CELLS

Presenter(s): Zheng, Ning
Author(s): Zheng, Ning

Previously, we demonstrated that a natural product, NI-07, derived from Arctiumlappa was effective in killing cancer cells in vitro and attenuating melanoma progression in vivo. Since NI-07 is 100% water-soluble and shows no cytotoxicity to normal cells, its potential for application overcomes two major shortcomings of most current chemotherapy drugs. In this study, we attempt to dissect the mechanism by which NI-07 preferentially targets cancer cells. Based on prior morphological changes observed from these studies, we hypothesize that autophagy is one of the methods of cell death initiated by NI-07 and heat shock proteins play important roles in this process. To that end, NI-07-treated and untreated MCF-7 and HCC1419 breast cancer cells were analyzed. Modulations in levels of the stress response proteins, Hsp60 and Hsp90 were analyzed by Western blot. Distribution and localization within the cells were determined by immunocytochemistry. Meanwhile, we tested for autophagy-induced cell death at different time points<24h. This study parallels a sister study in which apoptosis was investigated. Additionally, mammary tumor tissues and organs (lung and liver) from NI-07 treated and control untreated mice were analyzed by immunohistochemistry were analyzed for the metastasis marker CA15-3 or CEA to identify whether NI-07 also attenuated tumor metastasis.
BUSINESS EMPHASIS (Business)

Abstract 143
This study investigates influences on the attractiveness of package labels, the subsequent perceptions of product quality and the price that the consumers are willing to pay for the product. The study employs three major themes of label designs: symmetry, naturalness, and elaborateness (Orth, 2008). It also employs two dimensions of colors: hue and brightness (Labrecque and Milne, 2010; Labrecque et al., 2013). Eight wine labels were selected to represent different combinations of the design themes and color dimensions. An online survey was used to collect data from the respondents. The preliminary results indicated that elaborateness and naturalness consistently influence attractiveness across all labels, while symmetry and color characteristics do so in only some cases. Label attractiveness consistently and strongly influences perceived product quality, which in turn consistently and strongly influences willingness to pay. Further data collection is underway for additional analysis regarding the influence of color dimensions and the color contrast on label attractiveness.
HUMANITIES (Cultural Studies, Gender Studies, Literature, and Media and Communications)

Abstracts 144-146
144. SOCIOECONOMIC AND GEOGRAPHIC DIALECT IN MAX CRAWFORD'S CAN'T DANCE
Presenter(s): Davis, Sloan
Author(s): Davis, Sloan

In Max Crawford’s Can’t Dance, the dialogs of the characters are rigid, offensive, and at times can be misinterpreted. But the use of language Crawford allows these characters to possess can be considered typical of not only a Texan dialect, but more specifically that of a West Texan. I look at two separate dialects, socioeconomic and geographic, that are not only meaningful to the residents of the West Texas region, but are easily recognizable and stereotypically hold negative connotations to those not of the area. While a socioeconomic dialect can represent social class, race, and the like, a geographic dialect leans more directly to the area the speaker grew up in. I take a closer look at the devices Crawford uses to convey these vernaculars to his readers. These, amongst others, are colloquial diction, subcultures and registers, and the language variations of a Texas English dialect.

145. AND THERE IS NO END TO THEIR CHARIOTS: THE AUTO ARRIVES IN RURAL TEXAS
Presenter(s): Foss, Kaitlin
Author(s): Foss, Kaitlin; Baake, Ken

Rural people in the late 19th and early 20th centuries witnessed the arrival of self-propelled wheeled transportation machines. These “wheels” - first the bicycle as a novelty, then the auto and tractor for real work - could move without a draught animal pulling them. Urban and rural life would never be the same. As these bicycles and automobiles rolled in, what effects did they have, both immediately and in the long run, on the culture and lifestyles of the people who encountered them? Was the overall reaction of the people in these rural areas positive, negative, or an even mix of the two? In order to properly gauge this, we compiled various firsthand accounts from the time, such as newspaper articles and interviews (both recorded and printed). However, we also considered folklore (such as stories and songs of the time) because these would give us a better comprehensive view of the long-term societal impact of wheeled vehicles. We are finding that although people ultimately widely accepted the automobile and tractor as a boon to society, initial responses revealed some doubts about both the safety and practicality of wheeled vehicles. This duality suggests that in the long run, the effects of the automobile on culture and lifestyles were both positive and negative in nature.

146. ORAL HISTORIES OF DRIVE-IN MOVIES IN WEST TEXAS
Presenter(s): Thee, Amy
Author(s): Thee, Amy

The invention of the drive-in movie theater in the 1930's introduced a unique spin on the intrinsic practice of movie-going. Patrons now paraded their vehicles into large, open lots boasting grand screens against backdrops of clear night skies. Over the course of this project, I will explore the culture of drive-in theater-going in West Texas. I will collect this information through a series of oral history interviews, in which West Texans will reminisce about their drive-in experiences. Our interviews will examine changes and consistencies since the drive-in's early years and the ways in which historical events and the changing social climates dictate drive-in movie-going trends. Further, my interview subjects and I will discuss how the introduction of the automobile into film-viewing practices influenced the atmosphere of the theater experience.
LAW, PUBLIC POLICY, & EDUCATION
(Education, Legal Studies, History, Philosophy, and Political Science)

Abstracts 147-148
147. THE ROCKINGHAM WHIGS AND THE AMERICAN REVOLUTION, 1763-1783
Presenter(s): Eddy, Ashley
Author(s): Eddy, Ashley

Was there British support for the American Revolution? Actually, yes. My thesis investigates the rise and fall of the Rockingham Whigs, a British political faction that publicly supported the American cause. Using a combination of secondary sources and a variety of primary sources from both political figures and the general populace, this project primarily focuses on the most influential Rockingham Whigs, i.e. Edmund Burke, Charles James Fox and the Marquis of Rockingham, and their opposition, King George III and Lord Frederick North. With this, a deeper, more complex understanding of late eighteenth century British politics can be explored, particularly during a time when the early modern British Empire first began to deteriorate. By reevaluating the aftermath of the Seven Years’ War, the American Revolution and the statements of the Rockingham Whigs, an image of a more conflicted Britain can be depicted, contrary to the homogenous stance widely held. Despite the Rockingham Whigs’ disapproval of the colonies’ conclusion to declare independence, their vehement support of colonists’ rights garnered a wide range of political support, culminating in the success of Rockingham’s second ministry in 1782. This thesis concludes that the Rockingham Whigs were intrinsically intertwined with the American Revolution, as the colonists’ concerns were a primary domestic issue to them. Thus, the fall of British control in North America corresponded with the collapse of the Rockingham Whigs’ influence.

148. SYRIA—THE MODERN SOVIET WAR IN AFGHANISTAN
Presenter(s): Subhani, Muhammad
Author(s): Subhani, Muhammad

Although the Cold War is formally over, political relations between Russia and the United States remain frigid. The arbitrary alignment of the United States and Russia with non-jihadist rebels and the Al-Assad regime in Syria, respectively, point to a developing proxy war resembling that of the Soviet War in Afghanistan in 1980 with similar consequences. Unlike the Iraq War where America deployed more than 150,000 troops, the Syrian conflict has not prompted the United States to mobilize troops. The resemblance between the Soviet War in Afghanistan and Syria is uncanny in that both Russia and the United States engage in covert warfare, and that the United States wishes to overthrow the Al-Assad regime because it is adamantly anti-Western establishments. Furthermore, Russia stands to gain a geopolitical advantage if Communism can spread in the politically volatile Middle East. The reason the United States cannot justify an invasion of Syria with a large military force is that the Al-Assad regime is notably secular for the Middle East. With the lack of conventional military forces, the United States must utilize its intelligence operatives, and with constantly shifting allegiances, it is impossible that the light arms delivered by the CIA to southern Syrian non-jihadist rebels will not eventually land in the arms of jihadists. Russia is currently providing drone technology and arms to the Al-Assad regime. For the purpose of containment, the United States must delegate its military forces from the modern war taking place in Afghanistan and Iran when downsizing, to Syria.
PHYSICAL SCIENCES (Computer Science, Engineering, Geosciences, Mathematics, and Physics/Astronomy)

Abstract 149
The purpose of the research is to model the newly discovered variable star GSC05206:1013. This variable star is an eclipsing binary and we aimed to characterize various properties of the star involved. The research is based on eight weeks of observations conducted at the Texas Tech University’s Preston Gott Observatory. Subsequent data analysis was conducted using various computer programs. The system is far more complex than anyone has ever anticipated and that it is clearly not a simple eclipsing binary. Many more observation required to fully characterize this peculiar variable star.
SOCIAL SCIENCES (Anthropology / Archaeology, Economics, Psychology, Social Work, and Sociology)

Abstracts 150-151
150. "I LOOK GOOD IN A DRESS" VERSUS "I'M AN EXPERT DEBATER:" THE PERCEIVED CAREER ASPIRATIONS AND PLANS OF MIDDLE SCHOOL CHILDREN OF HIGH- AND LOW-STATUS PARENTS
Presenter(s): Adkison, Hannah

There is a great deal of research concerning the career goals of secondary students, yet an important time period often gets left behind: middle school. The middle school years are instrumental in determining the child’s interest in and perceived confidence in future career goals. While previous research has determined there is a correlation between parental and child occupation, middle schoolers still almost universally report high-status career goals. This study looks at that disconnect: at this important point in their academic careers, are there differences in how high- and low-status children plan for their futures? Is that one of the reasons that career status is reproduced generationally? To answer those questions, we studied the perceived career plans of less and more affluent middle schoolers. The more affluent group (N=54) is clustered at a school that is predominantly white with parent/guardians in high-status professions (as measured by the Bureau of Labor Statistics). The less affluent group (data collection is on-going) is clustered at a school that is predominantly Hispanic with parent/guardians in lower status fields like service-oriented jobs. Through this comparison, our preliminary findings show that middle schoolers tend to universally have high-status career aspirations. However, the children of higher status parents had a clearer plan for achieving those goals and a more realistic rationale for why they would be suited for those careers. Specifically, the status of mother’s occupation tended to be highly correlated with the child’s ability to have a more specific goal (e.g., “radiologist” as opposed to “doctor”).

151. IS IT THE ECONOMY OR THE INSTITUTIONS THEMSELVES? A CASE STUDY FOR DETERMINING THE FACTORS THAT CONTRIBUTE TO RISING TUITION RATES AT PRIVATE COLLEGES AND UNIVERSITIES IN TEXAS
Presenter(s): Ijeh, Michael; Neel, Joshua

For the past couple of years, tuition rates have increased at a rapid rate compared to the rates of inflation and the growth of the United States economy as a whole. Economists, academic professionals, and government officials alike seem to understand that rising tuition rates for public colleges and universities are primarily due to the steady decreases in state government funding over the years. However, there seems to be very little understanding as to why tuition rates at private colleges and universities have increased at a constant rate of 6-9% for the past decade. In this paper, I will analyze the different factors that contribute to the tuition levels at both public and private universities in the state of Texas. Furthermore, I will determine whether economic or institution-based factors are more influential in determining the tuition rates. If economic factors are more statistically significant, then universities will have less control over tuition rates and will likely need to continue to increase prices in order to keep up with the economy. If institution-based factors are more statistically significant, however, then universities have more control over rates than they purport and these universities may need to examine whether or not the annual increases are necessary.
## 2014 TTU Undergraduate Research Conference Oral Presentation Schedule
### TUESDAY, APRIL 15 CONCURRENT SESSIONS, 2:00-3:40 PM

<table>
<thead>
<tr>
<th>Panel 1: Spirituality &amp; Christianity, Traditions, Technologies, and Practices</th>
<th>Location: Playa Room</th>
<th>Moderator: Dr. Mark Webb</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:05 - 2:25 PM</td>
<td>Bailee Taylor</td>
<td>FUNERAL TRADITIONS, PROTESTANTISM, AND THE WOMEN OF THE KU KLUX KLAN, AN EXAMINATION OF NEWSPAPER COVERAGE AND ORGANIZATIONAL DOCUMENTS FROM THE 1920s</td>
</tr>
<tr>
<td>2:30 - 2:50 PM</td>
<td>Scott Hall</td>
<td>CONTEMPORARY EUCHARIST</td>
</tr>
<tr>
<td>2:55 - 3:15 PM</td>
<td>Taylor Cockrell</td>
<td>HOW WE'VE MET OUR FATHER: THE SITCOM OF SPIRITUALITY</td>
</tr>
<tr>
<td>3:20 - 3:40 PM</td>
<td>James Masterson</td>
<td>THE EFFECTIVENESS OF SHORT-TERM INTENSIVE YOUTH &amp; FAMILY MINISTRY INTERNSHIPS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel 2: Popular Culture: Media and the Military, Performance and Pop Culture, Memoirs and Manuscripts</th>
<th>Location: Canyon Room</th>
<th>Moderator: Mr. Rob Weiner</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:05 - 2:25 PM</td>
<td>Amanda Parks</td>
<td>ORAL HISTORIES OF MEDIA IN MILITARY CULTURE</td>
</tr>
<tr>
<td>2:30 - 2:50 PM</td>
<td>Madison Manning</td>
<td>MARINA ABRAMOVIC AND MODERN DAY POP CULTURE</td>
</tr>
<tr>
<td>2:55 - 3:15 PM</td>
<td>Rebecca Robinson</td>
<td>AMERICANS IN SAM STEELE'S FORTY YEARS IN CANADA (1915)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel 3: Tradition, Narratives, &amp; Literature: Love Bitten Masculinity</th>
<th>Location: Bell Tower Room</th>
<th>Moderator: Dr. Ryan Hackenbracht</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:05 - 2:25 PM</td>
<td>James Mayo</td>
<td>RESPECTABLE, WELL-TO-DO ROBBERS: OUTLAWS AND MASCULINITY IN ROGER POCOCK'S WRITINGS ABOUT HIS LONG RIDE</td>
</tr>
<tr>
<td>2:30 - 2:50 PM</td>
<td>Joshua Willms</td>
<td>SOLVING AN ANCIENT COMBAT MYSTERY BY BRAZILIAN JIU JITSU: THE DEATH OF ARRICHION THE PANKRATIAD</td>
</tr>
<tr>
<td>2:55 - 3:15 PM</td>
<td>Rachel Summerlin</td>
<td>BITING CONVENTION: ANALYZING NEW SOCIAL AND POLITICAL TRENDS IN VAMPIRE NOVELS</td>
</tr>
<tr>
<td>3:20 - 3:40 PM</td>
<td>Macy D. Skipworth</td>
<td>TEARS - IDLE, FERTILE, AND MEMORABLE TEARS: A STUDY ON THE NARRATIVE IMPACT OF UNREQUITED LOVE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel 4: Science &amp; Technology: Materials and Engineering</th>
<th>Location: Mesa Room</th>
<th>Moderator: Dr. Micah Green</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:05 - 2:25 PM</td>
<td>Jesus Cano</td>
<td>CHARACTERIZATION OF THIN FILM THERMITES FOR VARYING BINDER/SOLVENT SYSTEMS</td>
</tr>
<tr>
<td>2:30 - 2:50 PM</td>
<td>Naveed Mughal</td>
<td>EFFECT OF VARIOUS SURFACE TREATMENTS ON SLIP RESISTANCE OF DIFFERENT WALKWAY SURFACES</td>
</tr>
<tr>
<td>2:55 - 3:15 PM</td>
<td>Avesta Hojjati, Mehdi Molaei</td>
<td>DEVELOPMENT OF REAL TIME DIGITAL HOLOGRAPHIC MICROSCOPE FOR CELL FLOW INTERACTIONS USING HIGH PERFORMANCE COMPUTING (HPC) CLUSTER</td>
</tr>
<tr>
<td>3:20 - 3:40 PM</td>
<td>Dewan Woods</td>
<td>THE EXTRAORDINARY FEATURES AND CAPABILITIES OF METAMATERIALS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel 5: Anthropology &amp; Psychology: The Relationship between Social Science and Those Whom It Serves</th>
<th>Location: Soap Suds Room</th>
<th>Moderator: Dr. Lynne Fallwell</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:05 - 2:25 PM</td>
<td>Samantha Mitchell</td>
<td>NAGPRA: ITS IMPACT ON THE SCIENTIFIC COMMUNITY AND NATIVE AMERICANS</td>
</tr>
<tr>
<td>2:30 - 2:50 PM</td>
<td>Rocio Rodriguez</td>
<td>EXAMINATION OF (RE)INTEGRATION PROCESS OF (SEX) TRAFFICKED WOMEN</td>
</tr>
<tr>
<td>2:55 - 3:15 PM</td>
<td>Caitlin Yoakum</td>
<td>DETERMINING THE NUMBER OF IMPACT EVENTS TO A PIG SKULL: A MEANS FOR ASSESSING BLUNT FORCE TRAUMA</td>
</tr>
<tr>
<td>3:20 - 3:40 PM</td>
<td>Margaret Piper</td>
<td>THE PRESENCE OF SPORT PSYCHOLOGISTS AND FACTORS AFFECTING THE WILLINGNESS TO SEEK PROFESSIONAL PSYCHOLOGICAL HELP</td>
</tr>
</tbody>
</table>
# 2014 TTU Undergraduate Research Conference Oral Presentation Schedule

## Wednesday, April 16 Concurrent Sessions, 9:30-11:10 AM

### Panel 6: Texas Culture: Drive-Ins, Dialects, Cars, and College Costs

- **9:35 - 9:55 AM**
  - **Kaitlin Foss**
  - **AND THERE IS NO END TO THEIR CHARIOTS: THE AUTO ARRIVES IN RURAL TEXAS**

- **10:00 - 10:20 AM**
  - **Amy Thee**
  - **ORAL HISTORIES OF DRIVE-IN MOVIES IN WEST TEXAS**

- **10:25 - 10:45 AM**
  - **Sloan Davis**
  - **SOCIOECONOMIC AND GEOGRAPHIC DIALECT IN MAX CRAWFORD'S CAN'T DANCE**

- **10:50 - 11:10 AM**
  - **Michael Ijith Joshua Neel**
  - **IS IT THE ECONOMY OR THE INSTITUTIONS THEMSELVES? A CASE STUDY FOR DETERMINING THE FACTORS THAT CONTRIBUTE TO RISING TUITION RATES AT PRIVATE COLLEGES AND UNIVERSITIES IN TEXAS**

### Panel 7: Biology and Astronomy: Man's Impact on Aquatic Environments

- **9:35 - 9:55 AM**
  - **Chelsea Griffin**
  - **CHARACTERIZING DIFFERENCES IN NITROGEN-USE STRATEGIES BETWEEN NATIVE AND INVASIVE WETLAND SPECIES**

- **10:00 - 10:20 AM**
  - **Joshua Willms**
  - **THE EFFECTS OF PARASITE INFECTION AND TEMPERATURE INCREASE ON ATLANTIC CROAKER IN THE GULF OF MEXICO**

- **10:25 - 10:45 AM**
  - **Benjamin Jackson**
  - **AN ANALYSIS ON SELENIUM CONCENTRATIONS IN THE SNOWY PLOVER ENVIRONMENT**

- **10:50 - 11:10 AM**
  - **Mahfuz Krueng**
  - **THE STRANGE CASE OF GSC05206:1013**

### Panel 8: Class & Consumption: Career Aspirations, Marketing Labels, and Working Possibilities

- **9:35 - 9:55 AM**
  - **Hannah Adkison**
  - **"I LOOK GOOD IN A DRESS" VERSUS "I'M AN EXPERT DEBATER:" THE PERCEIVED CAREER ASPIRATIONS AND PLANS OF MIDDLE SCHOOL CHILDREN OF HIGH- AND LOW-STATUS PARENTS**

- **10:00 - 10:20 AM**
  - **Kaitlyn Jones**
  - **SEDUCTIVE LABELS: A STUDY OF LABEL CHARACTERISTICS, ATTRACTIVENESS, AND CONSUMER WILLINGNESS TO PAY**

- **10:25 - 10:45 AM**
  - **Scott Ferrell**
  - **AN ANALYSIS OF THE WORKING POSSIBILITIES OF THE MODERN COSTUMER**

### Panel 9: Biomedical Sciences: Natural Defenses and External "Enhancements"

- **9:35 - 9:55 AM**
  - **Logan Dobbe**
  - **NEURAL CORRELATES OF STIMULANT USE DURING CRITICAL THINKING: A PRELIMINARY FMRI INVESTIGATION**

- **10:00 - 10:20 AM**
  - **Ning Zheng**
  - **A STUDY ON THE MECHANISM BY WHICH THE NATURAL PRODUCT NI-07 KILLS CANCER CELLS**

- **10:25 - 10:45 AM**
  - **Xiaoran Guo**
  - **THE DYNAMICS OF ENTANGLED LINEAR AND CYCLIC DNA: NATURE'S "IDEAL" MOLECULES**

- **10:50 - 11:10 AM**
  - **Tiffany Nguyen**
  - **EFFECTS OF SWEETENED MOUTH RINSES AS AN ERGOGNOCIC AID TO EXERCISE PERFORMANCE**

### Panel 10: Art & History: From Archaic Greece to Wartorn Syria

- **9:35 - 9:55 AM**
  - **Sarah Hudson**
  - **PROGRESSION OF FORM OF THE KOURIOI AND KORAI STATUES OF ARCHAIC GREECE**

- **10:00 - 10:20 AM**
  - **Ashley Eddy**
  - **THE ROCKINGHAM WHIGS AND THE AMERICAN REVOLUTION, 1763-1783**

- **10:25 - 10:45 AM**
  - **Muhammad Subhani**
  - **SYRIA-THE MODERN SOVIET WAR IN AFGHANISTAN**
Visual Art Exhibition 1

April 15, 2014

9:00 a.m. – 4:00 p.m.

Traditions Room

Synopsis:
This is a selection of artworks from Interpretaciónes Gráficas, an exhibition of Dia de los Muertos inspired posters designed by students in the Communication Design fall 2013 classes, 3383 Type and Image, taught by Carla Tedeschi and Dirk Fowler. The posters are graphic and typographic explorations of Day of the Dead themes, but expanding far beyond the traditional cultural imagery. These were exhibited in the School of Art in October 2013.

<table>
<thead>
<tr>
<th>Artist Name</th>
<th>Title of Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adrianna Robertson</td>
<td>Death’s Perfect Punctuation Mark</td>
</tr>
<tr>
<td>Allison Priddy</td>
<td>Prepare to Follow Me</td>
</tr>
<tr>
<td>Cally Parham</td>
<td>Memoria</td>
</tr>
<tr>
<td>Carson Bahr</td>
<td>Cruel Sea</td>
</tr>
<tr>
<td>Chandler McPherson</td>
<td>Earth Life</td>
</tr>
<tr>
<td>Chasya Lynch</td>
<td>Una Vida Temporal</td>
</tr>
<tr>
<td>David Austin Gutierrez</td>
<td>Life In Cycles</td>
</tr>
<tr>
<td>Harriette Harrison</td>
<td>Connect</td>
</tr>
<tr>
<td>Joseph Navarez</td>
<td>Untitled</td>
</tr>
<tr>
<td>Kayci Murphy</td>
<td>Lived For A Day</td>
</tr>
<tr>
<td>Keisha Flores</td>
<td>Who Can Stand Before Thy Cold?</td>
</tr>
<tr>
<td>Kristi Tardy</td>
<td>Never Left Behind or Forgotten</td>
</tr>
<tr>
<td>Kristin Ivey</td>
<td>The Human Form</td>
</tr>
<tr>
<td>Laura Harris</td>
<td>Through the Looking Glass</td>
</tr>
<tr>
<td>Luis Sahagun</td>
<td>Lost</td>
</tr>
<tr>
<td>Whitney Whitt</td>
<td></td>
</tr>
</tbody>
</table>
Visual Art Exhibition 2

April 16, 2014
9:00 a.m. – 4:00 p.m.
Traditions Room

Synopsis:
This is a selection of artworks from various undergraduates from the TTU School of Art.

<table>
<thead>
<tr>
<th>Artist Name</th>
<th>Title of Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alex Osborn</td>
<td>Psychedelic</td>
</tr>
<tr>
<td>Amy Olivarez</td>
<td>Beach Oddities</td>
</tr>
<tr>
<td>Brian Thuebaud</td>
<td>Yogi-Bear</td>
</tr>
<tr>
<td>Bristen Phillips</td>
<td>Hambone</td>
</tr>
<tr>
<td>Emily Carlton</td>
<td>Reflective Still Life</td>
</tr>
<tr>
<td>Emily Sills</td>
<td>Cup</td>
</tr>
<tr>
<td>Hayley Crowder</td>
<td>Rop'em</td>
</tr>
<tr>
<td>Heather Lusk</td>
<td>Squidie in a Bottle</td>
</tr>
<tr>
<td>Kim Lasserre</td>
<td>Things that shine</td>
</tr>
<tr>
<td>Lee Madrid</td>
<td>Bear Witness</td>
</tr>
<tr>
<td>Melissa O'Connell</td>
<td>Blue Tarp</td>
</tr>
<tr>
<td>Michael Diaz</td>
<td>Pig and Bones</td>
</tr>
<tr>
<td>Rebekah Holmes</td>
<td>Shakers and Movers</td>
</tr>
<tr>
<td>Ryan Edwards</td>
<td>Lots of Warm Colors</td>
</tr>
<tr>
<td>Sierra Forester</td>
<td>Imprimatura</td>
</tr>
<tr>
<td>Will Watson</td>
<td>Man-Bear-Pig</td>
</tr>
</tbody>
</table>
From personal financial planning to alternative energy resources, from research geared to help to ensure the safety of our nation’s food supply to nationally known laser fingerprint detection studies, the Texas Tech Graduate School offers unlimited opportunity for the aspiring scholar.

Texas Tech University offers more than 160 Master’s and Doctoral programs and tremendous opportunities for wide ranging research.

http://www.gradschool.ttu.edu
https://www.facebook.com/ttugradschool
https://twitter.com/TTUGradSchool

STEM Center for Outreach, Research & Education

www.stem.ttu.edu
➤ Gain admission to prestigious academic programs
➤ Become a certified or licensed professional
➤ Take advantage of testing opportunities that help you achieve your goals!

Academic Testing Services can help YOU open new doors to success!

214 West Hall / 806.742.3671 / www.depts.ttu.edu/testing
Texas Tech University
Center for Active Learning & Undergraduate Engagement

- Undergraduate Research
- Service Learning
- Study Abroad
- Professional Internship

Take your degree to the NEXT LEVEL

233 Administration     806-742-1095     www.calue.ttu.edu
Abstract titles are displayed in alphabetical order by presenter’s last name.

<table>
<thead>
<tr>
<th>Name (Abstract #)</th>
<th>Project Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adkison, Hannah (150)</td>
<td>&quot;I LOOK GOOD IN A DRESS&quot; VERSUS &quot;I'M AN EXPERT DEBATER:&quot; THE PERCEIVED CAREER ASPIRATIONS AND PLANS OF MIDDLE SCHOOL CHILDREN OF HIGH- AND LOW-STATUS PARENTS</td>
</tr>
<tr>
<td>Alcoreza, Narah (40)</td>
<td>WHY IS OBESITY LINKED TO LOWER INCOME HOUSEHOLDS AND WHAT CAN BE DONE ABOUT IT?</td>
</tr>
<tr>
<td>Alleman, Andrew (59)</td>
<td>DETERMINATION OF STABLE CARBON ISOTOPE RATIOS IN NAPHTHALENE TO DIFFERENTIATE SOURCES OF CONTAMINATION</td>
</tr>
<tr>
<td>Amin, Adeet (60)</td>
<td>THE EXPRESSION OF P. AERUGINOSA GENE PA4633 IS DIFFERENTIALLY REGULATED IN THE PRESENCE OF MUCIN</td>
</tr>
<tr>
<td>Anderson, Luke (61)</td>
<td>MODELING TUMOR-CD4+-CYTOKINE INTERACTIONS WITH TREATMENT</td>
</tr>
<tr>
<td>Andrade, Susana (62)</td>
<td>CONSUMER PREFERENCE OF BEEF FROM HONDURAS AND THE UNITED STATES</td>
</tr>
<tr>
<td>Atore, Francis (42)</td>
<td>FISHNET EFFECT IN GRAPHENE DISPERSIONS</td>
</tr>
<tr>
<td>Aybar, Zachary (60)</td>
<td>THE EXPRESSION OF P. AERUGINOSA GENE PA4633 IS DIFFERENTIALLY REGULATED IN THE PRESENCE OF MUCIN</td>
</tr>
<tr>
<td>Banegas, Coranyi (63)</td>
<td>REDUCTION OF SALMONELLA AND ESCHERICHIA COLI O157:H7 IN DRINKING WATER USING MICROWAVE TECHNOLOGY</td>
</tr>
<tr>
<td>Bezucha, Robert (98)</td>
<td>CURRENT POLITICAL JAPANESE PARTY SYSTEM EXPLANATIONS</td>
</tr>
<tr>
<td>Birze, Nikolajs (64)</td>
<td>A MICROFLUIDIC DEVICE FOR LIFESPAN STUDIES OF CAENORHABDITIS ELEGANS</td>
</tr>
<tr>
<td>Bland, Garret (65)</td>
<td>A REACTIVE COAGULATION PROCESS FOR OPTIMAL REMOVAL OF ARSENIC IN WATER</td>
</tr>
<tr>
<td>Breaux, Jared (66)</td>
<td>FEEDING ECOLOGY AND NICHE OVERLAP OF CO-OCCURRING KILLIFISH SPECIES IN THE PECOS RIVER</td>
</tr>
</tbody>
</table>
Abstract titles are displayed in alphabetical order by presenter’s last name.

Brown, Ariel (39)  VIEWER RESPONSES TO '16 AND PREGNANT'

Brown, Tailor (96)  DROUGHT TOLERANCE IN ADULT VERSUS POST FIRE RESPROUT OAKS IN A CHIHUAHUAN DESERT SKY-ISLAND

Bunting, Kari (67)  A NUTRITION INTERVENTION FOR COMMUNITY-FAMILY COOKING PROGRAM: LET’S COOK, EAT, AND TALK

Bunting, Kari (68)  ASSESSING THE EFFECT OF GOAT MEAT CONSUMPTION AND NUTRITION EDUCATION ON MATERNAL FUNCTIONING IN MALAWI AFRICA

Caldwell, Joseph (1)  IMPLICATIONS OF VARIANTS IN ESTROGEN RECEPTOR GENES IN THE PATHOGENESIS OF ALZHEIMER’S DISEASE IN WOMEN

Camacho, Cecilia (53)  TRAUMA TRAINING FOR FOSTER PARENTS IN TEXAS

Campanili, Pedro (2)  AGRONOMIC EVALUATION OF GRAIN SORGHUM HYBRIDS FOR CATTLE FEEDING PURPOSE

Cano, Jesus (126)  CHARACTERIZATION OF THIN FILM THERMITES FOR VARYING BINDER/SOLVENT SYSTEMS

Carrillo, Elias (69)  ISOKINETIC FATIGUE CHARACTERISTICS FOR THE LEG EXTENSORS VERSUS FLEXORS

Castelli, Erin (3)  INHIBITION OF LISTERIA MONOCYTOGENES WITH A LACTIC ACID BACTERIA TREATMENT FOR FRESH STRAWBERRIES

Chatrath, Amritpaul (54)  VOLUNTARY PHYSICAL ACTIVITY LEVELS ARE NEGATIVELY ASSOCIATED WITH THE SEVERITY OF SYMPTOMS IN WOMEN WITH FIBROMYALGIA

Chica, Andrea (4)  ANTIBIOTIC RESISTANCE OF SALMONELLA ISOLATES RECOVERED BEEF CATTLE FROM THE UNITED STATES, MEXICO AND HONDURAS

Ciavaglia, Addison (55)  IS PERSONAL GROWTH INTIATIVE A PROTECTIVE FACTOR FOR SUICIDAL THOUGHTS AND BEHAVIORS?
Abstract titles are displayed in alphabetical order by presenter’s last name.

Cockrell, Taylor (116)  HOW WE’VE MET OUR FATHER: THE SITCOM OF SPIRITUALITY

Cotton, Sarah (5)  NATURAL KILLER CELL CYTOTOXICITY DRAMATICALLY REDUCED WITH HDIA1 KNOCKDOWN

Crabtree, Jacob (43)  INTEL GALILEO DEVELOPMENT BOARD BASED EMBEDDED APPLICATIONS

Cueva, Angel (70)  PSEUDOMONAS AERUGINOSA QUORUM SENSING IN CHRONIC WOUND INFECTIONS

Davenport, Jianna (100)  OUTREACH WEBSITE DESIGN FOR THE LAZARUS PROGRAM

Davis, Sloan (144)  SOCIOECONOMIC AND GEOGRAPHIC DIALECT IN MAX CRAWFORD’S CAN’T DANCE

Dean, Ryan (71)  THE REMOVAL OF AN IMPE1 GENE BY IMPRECISE EXCISION OF A MINOS ELEMENT

Deleon, Sabrina (6)  UPTAKE, TRANSLOCATION, AND STRESS EFFECTS OF CARBON NANOTUBES IN DROUGHT-INDUCED CORN

DeLeon, Stephanie (72)  SYNERGISTIC INTERACTIONS OF PSEUDOMONAS AERUGINOSA AND STAPHYLOCOCCUS AUREUS IN AN IN VITRO WOUND MODEL

Diordieva, Cristina (41)  SEARCH ENGINES AND SCIENCE INTEGRATION (SESi): SURF ON THE WEB

Dobbe, Logan (136)  NEURAL CORRELATES OF STIMULANT USE DURING CRITICAL THINKING: A PRELIMINARY FMRI INVESTIGATION

Dong, Huy (7)  THE CONCENTRATIONS OF ANIONS AND CATIONS IN MIDDLE EAR FLUID OBTAINED FROM PEDIATRIC PATIENTS WITH CHRONIC EAR INFECTIONS VARY

Dziuk, Rachel (73)  IMMUNE PRIVILEGED SERTOLI CELLS INHIBIT THE COMPLEMENT CASCADE AFTER XENOTRANSPLANTATION

Eastman, Jessica (74)  MECHANISM OF ACTION OF SALT ADAPTATION MUTATIONS IN ARTEMIA FRANCISCANA
Abstract titles are displayed in alphabetical order by presenter’s last name.

Eddy, Ashley (147)  THE ROCKINGHAM WHIGS AND THE AMERICAN REVOLUTION, 1763-1783

Ehnis, Kate (25)  LISTENING TO THE HUMAN BRAIN

Farley, Taylor (75)  MOLECULAR AND MESOSCALE PROPERTIES OF PORES

Fell, Cody (31)  DOES LIMB LENGTH INFLUENCE THERMAL TOLERANCE IN HARVESTER ANTS?

Ferrell, Scott (134)  AN ANALYSIS OF THE WORKING POSSIBILITIES OF THE MODERN COSTUMER

Figueroa, Alejandro (76)  STUDY OF GALECTIN-3 BLOCKADE EFFECTS ON CELL VIABILITY, PACLITAXEL CHEMOSENSITIVITY AND METASTATIC POTENTIAL IN THE MURINE LEWIS LUNG CANCER CELL LINE

Foss, Kaitlin (145)  AND THERE IS NO END TO THEIR CHARIOTS: THE AUTO ARRIVES IN RURAL TEXAS

Fritsch, Jacob (101)  EFFECT OF HAIL DAMAGE ON CORROSION RESISTANCE OF GALVANIZED STEEL ROOFING MATERIAL

Fullerton, Robert (44)  MAGNETIC IRON NANOPARTICLES TETHERED TO GRAPHENE

Garcia, Alvaro (77)  THE EFFECT OF LACTIC ACID DIP TREATMENT TO CONTROL SALMONELLA IN BEEF SKIRT STEAK

García, Carlos (78)  THE EFFECTS OF HUMAN LEPTIN ON FOOD INTAKE IN THE AFRICAN CLAWED FROG XENOPUS LAEVIS

Geddes, Thomas (99)  VIETNAM AND NORTH KOREA: SIMILAR BEGINNINGS, DIFFERENT OUTCOMES

Gray, Amanda (8)  ATTACHMENT AND BIOFILM FORMATION OF SHIGA-TOXIN PRODUCING ESCHERICHIA COLI (STEC) TO STAINLESS STEEL AT VARYING TEMPERATURES

Gresham, Jacob (9)  EFFECTS OF CRYSTALLOIDS AND COLLOIDS ON RBC VASODILATORY SIGNALING AND OXYGEN AFFINITY
Abstract titles are displayed in alphabetical order by presenter’s last name.

<table>
<thead>
<tr>
<th>Presenter</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Griffin, Chelsea (137)</td>
<td>CHARACTERIZING DIFFERENCES IN NITROGEN-USE STRATEGIES BETWEEN NATIVE AND INVASIVE WETLAND SPECIES</td>
</tr>
<tr>
<td>Gulick, Chris (10)</td>
<td>OCCUPANCY ESTIMATES OF FERRUGINOUS HAWKS IN THE SNAKE RIVER BIRDS OF PREY AREA</td>
</tr>
<tr>
<td>Gunter, Amanda (79)</td>
<td>GERMINATION TECHNIQUES IN IPOMOPSIS RUBRA AND MELAMPodium LEUCANTHUM</td>
</tr>
<tr>
<td>Guo, Xiaoran (138)</td>
<td>THE DYNAMICS OF ENTANGLED LINEAR AND CYCLIC DNA: NATURE’S “IDEAL” MOLECULES</td>
</tr>
<tr>
<td>Guthikonda, Amini (11)</td>
<td>TENSILE PROPERTIES OF THE Iliotibial Band</td>
</tr>
<tr>
<td>Hall, Scott (130)</td>
<td>CONTEMPORARY EUCHARIST</td>
</tr>
<tr>
<td>Hansen, Matthew (45)</td>
<td>OPTIMIZATION OF GRAPHENE DISPERSIONS VIA PHOTODEGRADATION OF POLYVINYLPYRROLIDONE</td>
</tr>
<tr>
<td>Harold, Michelle (12)</td>
<td>THE ACUTE METABOLIC RESPONSES TO HIGH SATURATED FAT MEALS BEFORE AND AFTER A 7-DAY HIGH POLY-UNSATURATED FAT DIET</td>
</tr>
<tr>
<td>Hettick, Bryan (80)</td>
<td>QUALITY AND STABILITY OF PEANUT OILS IN RAW NUTS TREATED WITH ULTRAVIOLET LIGHT TO REDUCE BACTERIAL LOADS</td>
</tr>
<tr>
<td>Hojjati, Avesta (127)</td>
<td>DEVELOPMENT OF REAL TIME DIGITAL HOLOGRAPHIC MICROSCOPE FOR CELL FLOW INTERACTIONS USING HIGH PERFORMANCE COMPUTING (HPC) CLUSTER</td>
</tr>
<tr>
<td>Huang, Yiheng (13)</td>
<td>CYCLOPROPANE FATTY ACID SYNTHASE IN LEISHMANIA PARASITES</td>
</tr>
<tr>
<td>Hudson, Sarah (135)</td>
<td>PROGRESSION OF FORM OF THE KOUROI AND KORAI STATUES OF ARCHAIC GREECE</td>
</tr>
<tr>
<td>Ijeh, Michael (151)</td>
<td>IS IT THE ECONOMY OR THE INSTITUTIONS THEMSELVES? A CASE STUDY FOR DETERMINING THE FACTORS THAT CONTRIBUTE TO RISING TUITION RATES AT PRIVATE COLLEGES AND UNIVERSITIES IN TEXAS</td>
</tr>
</tbody>
</table>
Abstract titles are displayed in alphabetical order by presenter’s last name.

Jackson, Benjamin (139) AN ANALYSIS ON SELENIUM CONCENTRATIONS IN THE SNOWY PLOVER ENVIRONMENT

Jarrett, Philip (81) DEVELOPMENT OF TRANSGENIC ARABIDOPSIS PLANTS THAT CAN TOLERATE MULTIPLE STRESSES SUCH AS DROUGHT, HEAT, AND SALT

Jean, Michaelle (27) A PRELIMINARY ASSESSMENT OF FATIGUE AND BURNOUT AMONG MEDICAL RESIDENTS IN AN ACADEMIC ENVIRONMENT

Jeong, Kim (67) A NUTRITION INTERVENTION FOR COMMUNITY-FAMILY COOKING PROGRAM: LETS’ COOK, EAT, AND TALK

Jewett, Chris (82) EXCLUSION OF WILD HERBIVORES THROUGH AN ALTERNATIVE FENCING DESIGN

Jiang, Shengjian (83) THE IMPACTS OF WATER TEMPERATURE ON MACRO-PARASITE INFECTION IN AN ESTUARINE FISH

Jones, Kaitlyn (143) SEDUCTIVE LABELS: A STUDY OF LABEL CHARACTERISTICS, ATTRACTIVENESS, AND CONSUMER WILLINGNESS TO PAY

Jun, Julie (84) ASSESSING THE LOCAL FOOD ENVIRONMENT IN THE EAST LUBBOCK AREA

Kim, Eunjee (14) GALECTIN-3C INHIBITS MURINE BREAST CANCER CELL GROWTH AND MAY INCREASE THE ANTICANCER ACTIVITY OF PACLITAXEL

Kim, DK (46) THE SIGNIFICANCE OF DEBRIEFING IN HRO THROUGH CONCEPTUAL RECURRENCE PLOTS

Klaassen, Christopher (45) OPTIMIZATION OF GRAPHENE DISPERSIONS VIA PHOTODEGRADATION OF POLYVINYLPYRROLIDONE

Krueng, Mahfuz (149) THE STRANGE CASE OF GSC05206:1013

Lancaster, Brittany (56) VALIDATION OF THE CHILD AND ADOLESCENT SCALES OF HOPE

Latimer, Jesse (102) TECHNOLOGICAL AND AESTHETIC INVESTIGATION OF THE PHYSICAL MOVEMENT OF PIANISTS
Abstract titles are displayed in alphabetical order by presenter’s last name.

Leachman, Kaitlin (47)  EXAMINING AIR QUALITY AND SYNOPTIC METEOROLOGY FROM 2002-2012, IN HOUSTON, TEXAS

LeFors, Jessica A. (15)  USE OF GENERALIST CHRYSOPERIA RUFLABRIS IN A TUNNEL HOUSE FOR SUSTAINABLE BIOLOGICAL CONTROL

Lewis, Kate (103)  BIOMECHANICAL MODEL FOR ASSESSING INJURY RISKS IN MINING

Littlefield, Lauren (85)  GALECTIN-3C INHIBITS TUMOR GROWTH AND INCREASES THE ANTICANCER ACTIVITY OF TAXOL IN VITRO AND IN VIVO MURINE MODEL OF OVARIAN CANCER

Looten, Kalli (16)  CARDIAC ADAPTATION TO EXERCISE DURING PREGNANCY

Lynch, Nathan (57)  THE INFORMATIONAL CONTENT OF THE DIVISIA MONETARY AGGREGATE FOR INFLATION EXPECTATIONS

Manning, Madison (115)  MARINA ABRAMOVIC AND MODERN DAY POP CULTURE

Martinez-Marin, Dalia (86)  PEDF INDUCES THE MIGRATION, DIFFERENTIATION AND PHAGOCYTIC ACTIVITY OF MACROPHAGES

Masterson, James (117)  THE EFFECTIVENESS OF SHORT-TERM INTENSIVE YOUTH & FAMILY MINISTRY INTERNSHIPS

Mayer, Caitlin (110)  A TALE OF TWO (OR THREE, MAYBE?) SPECIES: PHYLOGENETIC DIVERSITY IN THE SOUTH AFRICAN HOMINID FOSSIL RECORD

Mayo, James (118)  RESPECTABLE, WELL-TO-DO ROBBERS: OUTLAWS AND MASCULINITY IN ROGER POCOCK’S WRITINGS ABOUT HIS LONG RIDE

Messier, Aujehl (17)  GLUCOSE AND INSULIN RESPONSE TO CEPHALIC STIMULATION OF SWEETENED MOUTH RINSES

Mitchell, Natasia (18)  EVALUATION OF CAPTURE TECHNIQUES ON LESSER PRAIRIE CHICKEN TRAP INJURY
Abstract titles are displayed in alphabetical order by presenter's last name.

Mitchell, Samantha (119)  NAGPRA: ITS IMPACT ON THE SCIENTIFIC COMMUNITY AND NATIVE AMERICANS

Mohan, Siddharth (48)  DESIGN AND ANALYSIS OF A NOVEL CAPACITANCE-BASED DROP SENSOR

Molaei, Mehdi (127)  DEVELOPMENT OF REAL TIME DIGITAL HOLOGRAPHIC MICROSCOPE FOR CELL FLOW INTERACTIONS USING HIGH PERFORMANCE COMPUTING (HPC) CLUSTER

Moses, Andrew (19)  MYCORRHIZAE INFLUENCE DROUGHT TOLERANCE IN OLEA CULTIVARS

Mota, Jacob (87)  LINEAR PROGRESSION FOR INCREASED EXTERNAL LOADS DURING STRENGTH TRAINING

Mughal, Naveed (128)  EFFECT OF VARIOUS SURFACE TREATMENTS ON SLIP RESISTANCE OF DIFFERENT WALKWAY SURFACES

Naser, Danna (49)  ANALYTIC AND GEOMETRIC PROPERTIES OF THE HYPERGEOMETRIC FUNCTION

Navarrete , Ana (20)  THE EFFECTS OF MEDIA ON PUBLIC PERCEPTION OF WILDLAND FIRE

Neel, Joshua (151)  IS IT THE ECONOMY OR THE INSTITUTIONS THEMSELVES? A CASE STUDY FOR DETERMINING THE FACTORS THAT CONTRIBUTE TO RISING TUITION RATES AT PRIVATE COLLEGES AND UNIVERSITIES IN TEXAS

Nguyen, Tiffany (140)  EFFECTS OF SWEETENED MOUTH RINSES AS AN ERGOGENIC AID TO EXERCISE PERFORMANCE

Nunez, Maria (88)  ELUCIDATING THE RESPONSE OF A TOXIC DINOFLAGELLATE TO CO2-INDUCED PH VARIATIONS

O'Loughlin, Trevor (104)  AN ANALYSIS OF THE EFFECTS OF DIRECTIONAL ILLUMINATION ON IMAGE FORMATION

Obianyor, Chiamaka (50)  IN-SITU DECARBONIZATION OF FOSSIL FUEL

Owens, Rebecca R. (21)  CHANGES IN TEXAS PLAYAS OVER THE PAST THREE DECADES
Abstract titles are displayed in alphabetical order by presenter’s last name.

Pacheco, Belinda (22)  
AN ANALYSIS OF VARIATION IN PIGMENTATION PATTERNS OF THE GENUS CORYDORAS

Parks, Amanda (120)  
ORAL HISTORIES OF MEDIA IN MILITARY CULTURE

Paz Portal, Ximena A. (111)  
ASSESSING FOOD SECURITY IN BOLIVIA

Perez, Olga (23)  
REDUCTION OF LISTERIA MONOCYTOGENES ON CURED AND UNCURED HOTDOGS USING 5% LACTIC ACID

Pham, Hannah (24)  
INVESTIGATING APOPTOSIS INDUCTION IN BREAST CANCER CELLS BY THE NATURAL PRODUCT NI-07

Philip, Stacy (25)  
LISTENING TO THE HUMAN BRAIN

Phillips, Mike (89)  
THE EFFECTS OF CYMOTHOA EXCISE ON THE METABOLIC RATE OF ATLANTIC CROAKER

Piper, Margaret (131)  
THE PRESENCE OF SPORT PSYCHOLOGISTS AND FACTORS AFFECTING THE WILLINGNESS TO SEEK PROFESSIONAL PSYCHOLOGICAL HELP

Polackal, Sharon (26)  
A NOVEL ANTIMICROBIAL AGENT INHIBITS BIOFILM DEVELOPMENT BY STAPHYLOCOCCUS AUREUS AND PSEUDOMONAS AERUGINOSA

Quezada, Karina (27)  
A PRELIMINARY ASSESSMENT OF FATIGUE AND BURNOUT AMONG MEDICAL RESIDENTS IN AN ACADEMIC ENVIRONMENT

Quincy, Tyler (90)  
THE HEMATOCRIT AND IMMUNE RESPONSE OF ATLANTIC CROAKER TO PARASITE INFECTION AND TEMPERATURE INCREASE

Rivas, Dany (38)  
EFFECTIVENESS OF CENTRAL AMERICAN FREE TRADE AGREEMENT IN THE AGRICULTURAL SECTOR

Robertson, Meghan (28)  
MASS LOADING OF FE(III) ON DIFFERENT MINERAL PARTICLES

Robertson, Taylor (91)  
THE REGRESSION OF PREGNANCY-INDUCED CARDIAC HYPERTROPHY IN C57BL/6 MICE
Abstract titles are displayed in alphabetical order by presenter’s last name.

Robinson, Rebecca (121) AMERICANS IN SAM STEELE’S FORTY YEARS IN CANADA (1915)

Rodriguez, Rocio (132) EXAMINATION OF (RE)INTEGRATION PROCESS OF (SEX) TRAFFICKED WOMEN

Rowen, Michael (Todd) (97) EXAMINING NEUROSCIENCE EVIDENCE IN KNOWLEDGE SHARING AND NEGOTIATION STRATEGY IN BUYER-SELLER RELATIONSHIPS

Sacco, Cynthia (112) BECOMING A BIG SIB

Sams, Tyler (29) SURVIVAL OF ESCHERICHIA COLI IN RELATION TO THE DISACCHARIDE TREHALOSE

Schumacher, Sara (46) THE SIGNIFICANCE OF DEBRIEFING IN HRO THROUGH CONCEPTUAL RECURRENCE PLOTS

Scott, Justin (92) A SOLAR POWERED LIGHT TRAP FOR COLLECTING INSECTS

Sinha, Ashok (105) DESIGNING AND DEVELOPING A MOBILE MOON OBSERVATION APP

Skipworth, Macy D. (122) TEARS - IDLE, FERTILE, AND MEMORABLE TEARS: A STUDY ON THE NARRATIVE IMPACT OF UNREQUITED LOVE

Smith, Ashleigh (30) CATALYTIC HYDROSILYLATION OF CARBONYL COMPOUNDS USING FE- AND CO-COMPLEXES

Sohini, Vidhur (31) DOES LIMB LENGTH INFLUENCE THERMAL TOLERANCE IN HARVESTER ANTS?

Sparks, Hayley (93) THE ROLE OF CLOSTRIDIUM PERFRINGENS IN MULTI-SPECIES WOUND BIOFILMS

Stanopiewicz, Jenna (32) EXPRESSION OF CD35 MRNA IN HUMAN PERIPHERAL CD4+ T CELLS

Stilwell, Jessica (94) TYRE: AN IN SILICO ANALYSIS OF CELL GROWTH AND PROLIFERATION

Subhani, Muhammad (148) SYRIA-THE MODERN SOVIET WAR IN AFGHANISTAN
Abstract titles are displayed in alphabetical order by presenter’s last name.

Summerlin, Rachel (123) BITING CONVENTION: ANALYZING NEW SOCIAL AND POLITICAL TRENDS IN VAMPIRE NOVELS

Suteria, Naureen (106) HYDRODYNAMIC RESISTANCE OF A TRAIN OF CONFINED MICROFLUIDIC DROPLETS

Taylor, Bailee (124) FUNERAL TRADITIONS, PROTESTANTISM, AND THE WOMEN OF THE KU KLUX KLANS, AN EXAMINATION OF NEWSPAPER COVERAGE AND ORGANIZATIONAL DOCUMENTS FROM THE 1920s

Tello, Nadia (33) LC-MS GLYCOMIC ANALYSIS OF BREAST CANCER CELLS

Thee, Amy (146) ORAL HISTORIES OF DRIVE-IN MOVIES IN WEST TEXAS

Threatt, Tabitha (95) SEARCH FOR DOMINANT TOLC MUTATIONS ON PLASMIDS

Tokar, Theresa (34) CHANGES IN BODY WEIGHT AND HEALTH MARKERS FROM A SHORT-TERM VACATION

Toops, Anthony (51) EFFECT OF IONIC LIQUIDS ON THE THERMAL DENATURATION OF RIBONUCLEASE A

Torres, Vanessa (35) AN ANALYSIS ON RED HARVESTER ANTS AND THEIR EFFECT ON SOIL TEXTURE

Tran, Hung (58) EVOLUTION MODELING LAZARUS PROJECT

Vargas, Fernando (36) IN SITU RUMINAL DEGRADATION PROPERTIES OF THE RESIDUE OF TWO GRAIN SORGHUM VARIETIES

Vaughn, Ty (97) EXAMINING NEUROSCIENCE EVIDENCE IN KNOWLEDGE SHARING AND NEGOTIATION STRATEGY IN BUYER-SELLER RELATIONSHIPS

Ventura, Cindy (113) AN EVALUATION OF EMPLOYEES’ PERCEPTIONS OF FOOD SAFETY AND TRAINING SESSIONS EFFECT ON THE BEHAVIOR OF EMPLOYEES IN A MEAT PROCESSING FACILITY IN MERIDA, MEXICO

Williams, Joshua (43) INTEL GALILEO DEVELOPMENT BOARD BASED EMBEDDED APPLICATIONS
Abstract titles are displayed in alphabetical order by presenter’s last name.

<table>
<thead>
<tr>
<th>Presenter</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Williams, Heather (107)</td>
<td>SURFACE CHARGE DEVELOPMENT AT THE BARITE–WATER INTERFACE IN NAACL MEDIA, FROM 15 TO 50°C</td>
</tr>
<tr>
<td>Willms, Joshua (52)</td>
<td>A BIOLOGISTS PERSPECTIVE ON THE FINE TUNING OF OUR UNIVERSE FOR LIFE</td>
</tr>
<tr>
<td>Willms, Joshua (96)</td>
<td>DROUGHT TOLERANCE IN ADULT VERSUS POST FIRE RESPROUT OAKS IN A CHIHUAHUAN DESERT SKY-ISLAND</td>
</tr>
<tr>
<td>Willms, Joshua (125)</td>
<td>SOLVING AN ANCIENT COMBAT MYSTERY BY BRAZILIAN JIU JITSU: THE DEATH OF ARRICHION THE PANKRATIAST</td>
</tr>
<tr>
<td>Willms, Joshua (141)</td>
<td>THE EFFECTS OF PARASITE INFECTION AND TEMPERATURE INCREASE ON ATLANTIC CROAKER IN THE GULF OF MEXICO</td>
</tr>
<tr>
<td>Wood, Wendy (114)</td>
<td>WHAT PREDICTS HOW ACCURATELY SPOUSES PERCEIVE ONE ANOTHER’S PERSONALITY? A TEST OF THE REALISTIC ACCURACY MODEL</td>
</tr>
<tr>
<td>Woods, Dewan (129)</td>
<td>THE EXTRAORDINARY FEATURES AND CAPABILITIES OF METAMATERIALS</td>
</tr>
<tr>
<td>Wright, Bradley (37)</td>
<td>DEVELOPMENT OF A MECHANICAL CONTROLLED RATE FREEZER FOR CRYOPRESERVATION OF EXOTIC SPECIES</td>
</tr>
<tr>
<td>Wurmstein, Michael (108)</td>
<td>THE EFFECTS OF VISCOSITY ON DROPLET ELECTRODEFORMATION</td>
</tr>
<tr>
<td>Yoakum, Caitlin (133)</td>
<td>DETERMINING THE NUMBER OF IMPACT EVENTS TO A PIG SKULL: A MEANS FOR ASSESSING BLUNT FORCE TRAUMA</td>
</tr>
<tr>
<td>Yu, Arnold (109)</td>
<td>COMPARISON OF DIFFERENT METHODS OF DRUG INTAKE</td>
</tr>
<tr>
<td>Zheng, Ning (142)</td>
<td>A STUDY ON THE MECHANISM BY WHICH THE NATURAL PRODUCT NI-07 KILLS CANCER CELLS</td>
</tr>
</tbody>
</table>