



TEXAS TECH UNIVERSITY
UNDERGRADUATE
RESEARCH
CONFERENCE

March 31 - April 2, 2015

CONFERENCE SCHEDULE

TUESDAY, MARCH 31, 2015

8:00 AM - 2:00 PM	REGISTRATION OPEN	SOUTH BALLROOM
8:00 AM - 9:20 AM	BREAKFAST	RED RAIDER LOUNGE
8:00 AM - 9:20 AM	DAY 1 POSTER SET-UP	NORTH BALLROOM
9:30 AM - 9:50 AM	CONFERENCE WELCOME	SOUTH BALLROOM
10:00 AM - 11:30 AM	POSTER SESSION #1	NORTH BALLROOM
10:00 AM - 4:00 PM	VISUAL ARTS EXHIBITION: DÍA DE LOS MUERTOS	SOUTH BALLROOM
11:00 AM - 12:30 PM	LUNCH (COME & GO)	RED RAIDER LOUNGE
12:40 PM - 1:50 PM	<i>Plenary Session:</i> LAZARUS PANEL "ZOMBIE RESEARCH: COMPUTING THE UNDEAD"	TRADITIONS ROOM
2:00 PM - 3:40 PM	ORAL/PAPER SESSION #1	VARIOUS SECOND FLOOR ROOMS
4:00 PM - 5:00 PM	POSTER TAKE-DOWN	NORTH BALLROOM
5:30 PM - 7:00 PM	<i>Networking Social Event:</i> DR. WILLIAM WESTNEY "INQUIRY IS GREATER THAN RESEARCH"	SOUTH BALLROOM

WEDNESDAY, APRIL 1, 2015

8:00 AM - 11:00 AM	REGISTRATION OPEN	SOUTH BALLROOM
8:00 AM - 9:00 AM	BREAKFAST	RED RAIDER LOUNGE
8:00 AM - 11:00 AM	DAY 2 POSTER SET-UP	NORTH BALLROOM
9:00 AM - 3:00 PM	VISUAL ARTS EXHIBITION: DÍA DE LOS MUERTOS	SOUTH BALLROOM
9:30 AM - 11:10 AM	ORAL PRESENTATIONS SESSION #2	VARIOUS SECOND FLOOR ROOMS
11:30 AM - 1:00 PM	<i>Luncheon (Invitation Only)</i> TTU CHAPTER PHI ALPHA DELTA MOCK TRIAL PRESENTATION	MATADOR ROOM
1:30 PM - 3:00 PM	POSTER SESSION #2	NORTH BALLROOM
3:00 PM - 4:00 PM	POSTER & VISUAL ART TAKE-DOWN	BALLROOM
4:00 PM - 6:00 PM	PERFORMING ARTS SESSION	ESCONDIDO THEATRE

THURSDAY, APRIL 2, 2015

6:30 PM - 8:00 PM	<i>TTU Undergraduate Research Banquet (Invitation Only)</i> DR. JILL PATTERSON "SHAKE UP THE WORLD"	MCKENZIE-MERKET ALUMNI CENTER
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CONFERENCE RESOURCES

The Texas Tech University Undergraduate Research Conference is going green!
We invite you to take advantage of our many online resources. You can find the full
Conference Abstract eBook at: <http://bit.ly/TTURC15abstract>



<http://bit.ly/TTURC15>



<http://bit.ly/CALUE>



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guidebook



<http://bit.ly/TTURC15guidebook>

LETTER FROM THE ASSOCIATE VICE PROVOST



TEXAS TECH UNIVERSITY
Office of the Provost

Division of Undergraduate Education & Student Affairs™

Welcome Conference Attendees:

Thank you for joining us for the 7th Annual Texas Tech University Undergraduate Research Conference. The Texas Tech University Undergraduate Research Conference is one of the largest undergraduate research conferences in Texas. 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 180 student presenters representing a broad range of fields in the humanities, performing arts, biological and chemical sciences, social sciences, and physical sciences. Additionally, we are welcoming more than 100 registered reviewers and visiting student presenters from as far away as Zamorano University, Honduras.

The 2015 Undergraduate Research Conference will offer a variety of activities including poster and oral presentations, a mock trial presentation, a networking event featuring the work of Dr. William Westney, and this year's keynote presentation entitled, "Shake Up the World!" by Dr. Jill Patterson, Professor of English and Texas Tech University Integrated Scholar. We are also excited to include performances and exhibits showcasing undergraduate scholarship from the College of Visual and Performing Arts.

Thank you for attending the 2015 Texas Tech University Undergraduate Research Conference.

Sincerely,

A handwritten signature in black ink that reads "Patrick C. Hughes".

PATRICK C. HUGHES, PH.D.

Associate Professor & Associate Vice Provost, Undergraduate Education



TEXAS TECH UNIVERSITY

Center for Active Learning & Undergraduate Engagement™

The Center for Active Learning & Undergraduate Engagement (CALUE) works with a variety of campus partners to promote and support the four key areas of active learning: Service Learning, Internships, Study Abroad, and Undergraduate Research. In regard to undergraduate research, CALUE host's 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 based 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 2014-2015 academic year, CALUE provided over \$28,000 in funding to over 30 undergraduate researchers in support of their travel to present research at regional, national, and international conferences. Furthermore, CALUE provided close to \$20,000 in undergraduate student project funding. This funding enabled undergraduate students the opportunity to work on a number of research projects across campus.

CALUE looks forward to concluding the 2015 URC by awarding the 2015 Dr. Sarah Kulkofsky Scholarship recipient, recognizing outstanding undergraduate researchers, and honoring exceptional faculty mentors during the annual TTU Undergraduate Research Spring Banquet on April 2nd. Thank you for joining us during this campus wide celebration, and we hope you enjoy all of the conference activities hosted this week.

CENTER FOR ACTIVE LEARNING
& UNDERGRADUATE ENGAGEMENT

Administration Building #233

calue@ttu.edu / 806.742.1095

www.calue.ttu.edu

CONFERENCE PARTNERS

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. A special thanks to the following:

- The Center for Active Learning and Undergraduate Engagement, STEM Center for Outreach Research and Education, University Honors College for providing administrative assistance, planning, and support for the conference
- Presenters, Faculty Mentors, Session Presenters, Moderators, and Poster Reviewers
- Office of the President, Provost and the Vice President for Research

TOP SCHOLAR SPONSOR

- STEM Center for Outreach, Research & Education (STEM-CORE)

INSPIRE SPONSOR

- Phi Beta Kappa, Lambda of Texas Chapter

DISCOVER SPONSORS

- TTU Graduate School
- University Student Housing
- Kaplan Test Prep

CAMPUS & COMMUNITY PARTNERS:

- | | |
|---|---------------------------------------|
| • Animal and Food Sciences | • School of Music |
| • Center for Active Learning & Undergraduate Engagement | • Student Union & Activities |
| • Center for the Integration of STEM Education & Research | • Top Tier Catering |
| • Department of Theatre and Dance | • Undergraduate Research Organization |
| • Division of Undergraduate Education and Student Affairs | • University Honors College |
| • Office of the Vice President for Research | • Women's Studies Program |
| • School of Art | |



ZOMBIE RESEARCH: COMPUTING THE UNDEAD

MARCH 31 | 12:40 PM – 1:50 PM | TRADITIONS ROOM

SYNOPSIS:

Undergraduate research opportunities do not all look alike. One project might require researchers to diligently search through dusty manuscripts while another could rely on chemical reagents, test tubes, and microscopes. So, what would you need if you wanted to research humanity's chances of surviving a cataclysmic zombie outbreak? We recommend you start with a really big computer - preferably one that is eight feet tall and glows in the dark.

Join the leaders of the Lab for the Analysis of Zombie Activity and Research into Undead Simulations (LAZARUS) for an interactive discussion of how they are leveraging supercomputers, biomathematics, engineering, and some creativity to tackle this question!

ABOUT LAZARUS:

The Lab for the Analysis of Zombie Activity and Research into Undead Simulations (LAZARUS) was founded at Texas Tech University in 2014 as the result of the synergistic efforts of the Department of Mathematics & Statistics, the Science, Technology, Engineering, and Mathematics Center for Outreach, Research & Education (STEM-CORE), and a number of independent initiatives funded by the National Science Foundation. The lab is designed to serve two purposes: (1) support research opportunities for undergraduate and graduate students, and (2) support K12 outreach efforts designed to increase awareness and interest in STEM academic and career pathways.

While the lab hosts a number of resources designed to support these objectives, a supercomputer branded as the Schoenberg Cluster is featured as the lab's centerpiece. The Schoenberg Cluster is the largest and most powerful graphics processing unit (GPU) cluster on campus, and it was designed and assembled by undergraduate and graduate students. The cluster features a collection of computing nodes (motherboards with two GPUs and memory but no hard drives), storage nodes (motherboards with less processing power but with plenty of memory and hard drive capacity), and a single head node which manages operations across the cluster.



WWW.LAZARUS.TTU.EDU

PRESENTERS:



JESSICA SPOTT
Panel Moderator



DR. BROCK WILLIAMS
Co-Director, Research



DR. JOHN CARRELL
Faculty Partner



JOHN CALHOUN
Lead Graduate Researcher



WHITNEY GREEN
Creative & Social Media

INQUIRY IS GREATER THAN RESEARCH

MARCH 31 | 5:30 PM – 7:00 PM | BALLROOM

Networking Social Event

SYNOPSIS:

The great value of research comes from its rigorous and disciplined methodology. The underlying impetus, though, stems from a broader sense of inquiry, simply being avidly curious, wanting to know “How is it with the world around us?” or “How could things be different?” Classical pianist and Paul Whitfield Horn Professor William Westney relates his own inquisitive journey from restless graduate student to concert stages, experimental workshops, engineering labs, fMRI scanners and other unforeseen pathways.

WILLIAM WESTNEY, DMA:

William Westney was the top piano prizewinner in the Geneva International Competition and holds the Doctor of Musical Arts degree from Yale University School of Music. He has soloed with such major orchestras as Houston Symphony and L'Orchestre de la Suisse Romande, and his recording of music by Leo Ornstein made Newsweek Magazine's "Top 10" list.

Currently a Paul Whitfield Horn Professor and the Browning Artist-in-Residence at Texas Tech University, he has held guest professorships in Taiwan and Denmark, taught in Korea as a Fulbright Senior Scholar (U.S. State Department), and won many teaching awards including the highest Texas Tech can bestow (Chancellor's Council Distinguished Teaching Award). TTU named him a 2014 “Integrated Scholar.” Among the venues for the hundreds of workshops he has given internationally are Central Conservatory (Beijing), Sibelius Academy (Helsinki), Royal College of Music (London), University of Music and the Performing Arts (Vienna), Victorian College for the Arts (Melbourne), Kennedy Center for the Performing Arts, Juilliard School, and many more. He is most noted for his unique “Un-Master Class” workshop, described as “fascinating” in a N.Y.Times feature article, and is the author of the best-selling and critically acclaimed book *The Perfect Wrong Note* (2003), now in its second printing, and described by reviewers as “refreshing,” “open-hearted” and “an absolute joy to read.”

www.WILLIAMWESTNEY.com



PHOTO BY ROBERT SUDDARTH

Sponsored in part by:



The PHI BETA KAPPA *Society*
LAMBDA of TEXAS CHAPTER

LUNCH & MOCK TRIAL PRESENTATION

APRIL 1 | 11:30 AM - 1:00 PM | MATADOR ROOM

Invitation Only - RSVP Required

MOCK TRIAL PRESENTATION

TTU Phi Alpha Delta Law Fraternity, International

SYNOPSIS:

On May 19, 2013, Kiran Taufique, then a senior at the Norman School, was kidnapped and held for ransom. In the months leading up to the kidnapping, Kiran had become intensely involved with an after-school club called LEX, which stood for Learning Eternally Extolled. The club was funded by the defendant, Jaden Sinclair...

Enjoy lunch as we take an intriguing look into the trial that led eight Texas Tech University students to win the second and third place awards at the 2014 National Phi Alpha Delta Pre-Law Mock Trial Competition.

2014-15 TTU PHI ALPHA DELTA *Mock Trial Competition Teams*



Seth Rappe · Jacob Parsons · Sarah-Grace French · Sha'Kera Trimble



Alexis Yelvington · Omar Roman · John White · Brandi Smith

2015 TTU UNDERGRADUATE RESEARCH BANQUET

APRIL 2 | 6:30 PM – 8:00 PM | MCKENZIE-MERKET ALUMNI CENTER

Invitation Only - RSVP Required

SHAKE UP THE WORLD

Dr. Jill Patterson

SYNOPSIS:

Dr. Patterson's keynote speech will address the ways in which young minds are making crucial differences in the toughest, most complicated fields of social change: race relations, gender equity advances, criminal justice reform, environmental activism, healthcare, and privacy concerns. The coming scholars of this generation will bring fresh perspectives to these fields, breaking through some of the most stubborn logjams. Research and knowledge married to the gifts of youth--the willingness to take risks, a firm grasp of social media, and, yes, tireless energy--can shake up the world!

JILL PATTERSON, PHD:

Leslie Jill Patterson's prose has recently appeared in Texas Monthly, Grist, Gulf Coast, Baltimore Review, as well as several anthologies, including Literature: A Pocket Anthology (7th edition) and Bring the Noise: the best pop culture essays from Barrelhouse. Her recent awards include the 2012 Embrey Human Rights Fellowship; the 2013 Everett Southwest Literary Award; the 2014 Time and Place Prize in Brittany, France; and a 2014 Soros Justice Fellowship, funded by the Open Society Foundations in New York. In 1999, she founded Iron Horse Literary Review, and she serves as copy editor for Creative Nonfiction.

Today, she has a growing interest in social justice literature and works as the case storyteller for attorneys representing indigent men and women charged with capital murder and facing the death penalty in the state of Texas. Since the fall of 2009, she has been teaching workshops on the use of narrative law in criminal defense trials and habeas appeals, including seminars at The Center for International and American Law; the Federal Capital Habeas Office in Las Vegas, Nevada; and the NAACP Capital Trial College hosted by the Legal Defense Fund in Airlie, Virginia.



AFFILIATED PROGRAMS

HONORS URS

*Chibuzo Akalonu
Olzhas Alexandrov
Adeet Amin
Joshua Ballard
Kristin Boyd
Lauren Clements
Sarah Cotton
Jennifer Cox
Mai Dao
Sabrina Deleon
Nikita Dhir
Michael Doerfert
Dallas Drane
Paul Duggan
Daniel Dunning
Jessica Eastman
Hunter Edwards
Hridoy Haq
AnnMarie Endsley
Mohamed-Gani Gullied
Matthew Hansen
Jennifer Harris
Jennah Hernandez
Michael Ijeh
Joshua John
Nayane Kennerly
Eunjee Kim
Yungjee Kim
Kourtney Kouth
April Logan
Sydney Loy
Ana Navarrete
Victoria Oakes
Priscilla Ortiz
Meghan Robertson
Brian Rodriguez
Simran Singh
Asbleigh Smith
Jenna Stanopiewicz
Justin Sudduth
Nadia Tello
Kaitlin Thogmartin
Vanessa Torres
Marisa Elise Wagley
Alison Wagner
Amy Weatherby
Sheridan White
Ethan Zepper*

HONORS COLLEGE

*Keegan Gossett
Camden Hoeffner
Ricky Huitema
Sarah Jackson
Philip Jarrett
Sarah Jones
Matthew Jordan
Alexander Norton
Tyler Quincy
Joshua Williams*

MENTOR TECH

*Marisol Alonso
Samantha Mitchell
Brian Rodriguez
Susan Sherali
Theresa Tokar
Hector Valencia
Marisa Elise Wagley
Nicole Weber*

PRISM

*Jianna Davenport
Brandon Finney
Aicha Fokar
Keegan Gossett
Christian Harkins
Neil Klein
Annabel Offer
Olivia Orrantia-Kotowski
Cody Tucker
Graham Waters*

SACNAS

*Marisol Alonso
Jesus Cano
Dalia Martinez-Marin
Maria Nunez
Christopher Ponce
Brian Rodriguez
Rocio Rodriguez
Mychael Solis-Wheeler
Theresa Tokar
Hector Valencia*

SKS RECIPIENT

Kristin Boyd

SOWER

*Celeo Arias
Diego Casas
Luis Castellanos
Skarleth Chinchilla
Darvin Cuellar
Jose Fuentes
Manuel Garcia
Jose Benjamin Gomez
David Fernando Iscoa
Vanessa Jimenez Huaman
Claudio Moreno
Monica Quezada
Rafael Quijada
Alex Villacres*

TTU/HHMI @ CISER

*Marisol Alonso
Victoria Banuelas
Jesus Cano
Erin Castelli
Kyler Conn
Rachel Dziuk
Philip Jarrett
Marcel Kroschb
Dalia Martinez-Marin
Alexander Norton
Maria Nunez
Christopher Ponce
Adair Reidy
Gage Rowden
Hector Valencia
Marisa Elise Wagley
Maksym Zhelyeznyakov*

URO

*Dallas Drane
Chelsea Emmanuel
Bailey Riedel*

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 RECIPIENT** 2014–15 Dr. Sarah Kulofsky Scholarship • **SOWER** Sustaining Our World through Education 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

 ARTS

1. GIRO GIRO TONDO: A COLLECTION OF CHILDREN'S SONGS FROM ITALY
Ballard, Joshua*
2. THE USE OF ORGANIC TEXTILES FOR CHILDREN WITH SENSORY PROCESSING DISORDER
Dawson, Taylor*

 BIOLOGICAL AND CHEMICAL SCIENCES

3. LONG WORK SHIFTS' EFFECT ON BALANCE, REACTION, AND VIGILANCE OF FEMALE NURSES
Akalonu, Chibuzo†
4. OBESITY-BREAST CANCER INTERACTION: EFFECTS OF ADIPOCYTES ON BREAST CANCER CELLS
Alhaj, Sara†
5. PYOCINS AS A NOVEL TREATMENT OF PSEUDOMONAS AERUGINOSA INFECTED WOUNDS
Amin, Adeet†
6. OBSERVATION OF RAPID ADAPTATION OF TUMOR CELLS TO HYPOXIA IN A MICROFLUIDIC CULTURE DEVICE
Ansari, Megan†
7. CONSUMER PERCEPTION OF PALATABILITY TRAITS BETWEEN FED COWS AND YOUNG CATTLE
Arias, Celeo†
8. EFFECTS OF LONG, CUMULATIVE WORK-SHIFTS ON MUSCLE STRENGTH AND POWER-RELATED MEASURES OF THE UPPER- AND LOWER-BODY IN FEMALE NURSES
Banuelas, Victoria†
9. PROTEIN-PROTEIN INTERACTIONS OF THE INFLAMMASOME
Bejarano, Hugo†
10. FINDING NOVEL INHIBITORS FOR D-ALANINE:D-ALANINE LIGASE IN MYCOBACTERIUM TUBERCULOSIS USING VIRTUAL HIGH-THROUGHPUT SCREENING
Benavidez, Maria Charina†
11. DETERMINATION OF MECHANISM OF ACTION FOR REDUCTION OF LISTERIA MONOCYTOGENES BY LACTIGUARD
Casas, Diego†
12. EFFECTS OF FINISHING MODE ON CONSUMER ASSESSMENT OF BEEF FROM MATURE CULL COWS
Castellanos, Luis†
13. LACTIC ACID BACTERIA (LAB) AFFECT ON MINERAL AND VITAMIN C CONTENT OF FRESH STRAWBERRIES
Castelli, Erin†
14. SALMONELLA BASELINE FOR HIDES, CARCASSES, AND LYMPH NODES OF CATTLE PRESENTED FOR SLAUGHTER IN HONDURAS
Chinchilla, Skarleth†
15. EFFECTS OF PLANT EXTRACTIVE ON CANCEROUS CELLS
Conn, Kyler†
16. IN-PLANT VALIDATION OF THE EFFICACY OF LACTIC ACID AS ANTIMICROBIAL INTERVENTION ON BEEF HEADS AND VARIETY MEAT
Cuellar, Darwin†
17. UPTAKE, TRANSLOCATION, AND STRESS EFFECTS OF CARBON NANOTUBES IN DROUGHT INDUCED CORN
Deleon, Sabrina†
18. THE EFFECT OF COMPLEMENT COMPONENTS C4 AND C3 ON HUMAN T LYMPHOCYTES EXPRESSING COMPLEMENT RECEPTOR 1 (CD35)
Dhir, Nikita†

19. SELECTIVE COATING OF MICRONEEDLES FOR IMPROVED VERSATILITY
Drane, Dallas†
20. DEVELOPING A PREDATOR-AVOIDANCE ASSAY IN XENOPUS LAEVIS: A POTENTIAL MODEL OF POST-TRAUMATIC STRESS DISORDER
Duggan, Paul†
21. XENOTRANSPLANTED SERTOLI CELLS INHIBIT THE ALTERNATIVE AND CLASSICAL PATHWAYS OF COMPLEMENT MEDIATED CELL LYSIS
Dziuk, Rachel†
22. MECHANISM OF ACTION OF SALT ADAPTATION MUTATIONS IN ARTEMIA FRANCISCANA
Eastman, Jessica†
23. SEX RATIO AND SEXUAL DIMORPHISM IN POPULUS DELTOIDES
Emmanuel, Chelsea†
24. DISTRIBUTION OF BETA-ADRENERGIC RECEPTORS ACROSS FIBER TYPES OF LONGISSIMUS DORSI, PSOAS MAJOR, AND SEMITENDINOSUS IN FEEDLOT STEERS AND HEIFERS
Endsley, AnnMarie†
25. USE OF TURING'S REACTION-DIFFUSION MODEL TO SIMULATE FISH PIGMENTATION PATTERNS
Fokar, Aicha†
26. NOVEL INHIBITOR DISCOVERY OF ENTAMOEBA HISTOLYTICA PROTEIN TYROSINE PHOSPHATASE (EHPTP) USING VIRTUAL SCREENING
Fonseca, Andrea†
27. MICROBIAL PREVALENCE FOUND IN SHEEP FECAL SAMPLES FROM THE LUBBOCK, TEXAS AREA
Fuentes, Jose†
28. DIGESTIBILITY OF BMR FORAGE SORGHUM SILAGE COMPARED TO CORN SILAGE IN BEEF FEEDLOT STEER DIETS
Gomez, Jose Benjamin†
29. THE EFFECTS OF LAND USE ON SEDIMENTATION OF PLAYAS IN NORTHWEST TEXAS
Gossett, Keegan†
30. THE EFFECT OF ISOMETRIC HAND-GRIP EXERCISE ON ELECTRICAL PAIN RESPONSES IN HEALTHY AFRICAN AMERICAN AND NON-HISPANIC WHITE ADULTS
Greenlee, Brennan†
31. EMPLOYING MODELING TECHNIQUES TO PREDICT THE SOLUBILITY OF HESPERETIN IN BINARY SOLVENT SYSTEMS
Hansen, Matthew†
32. TRACKING THE EFFECT OF THE EBOLA VIRUS
Harkins, Christian†
33. MODEL OF DIAGNOSTIC DIAPER WITH ACID-BASE INDICATOR
Harris, Jennifer†
34. HILIC AND ERLIC ENRICHMENT OF GLYCOPEPTIDES DERIVED FROM COMPLEX BIOLOGICAL SAMPLES
Hartmann, Alyssa†
35. CHANGES IN VASTUS LATERALIS MUSCLE THICKNESS DURING FOUR WEEKS OF BARBELL TRAINING IN COLLEGE-AGED WOMEN
Hernandez, Jennah†
36. SUPPORTED CU-PD CATALYSTS FOR THE SELECTIVE HYDROGENATION OF ACETYLENE
Huitema, Ricky*

* = Tuesday Presentation: 10:00 AM - 11:30 AM | NORTH BALLROOM

† = Wednesday Presentation: 1:30 PM - 3:00 PM | NORTH BALLROOM

37. EXPERIMENT TO SEE IF CRUDE OIL CAN BE EFFECTIVELY REPLACED BY BIO-FUEL OR A MIXTURE OF FUEL AND BIO FUEL AND CALCULATING THE AMOUNT OF CO GIVEN OFF DURING THE PROCESS OF COMBUSTION
*Ikeogu, Anthony-Moses**
38. SURVEY OF LATIN AMERICAN RUMINANT FEEDSTUFFS
*Iscoa, David Fernando**
39. THE FEASIBILITY OF CREATING SUPER SALT-TOLERANT ARABIDOPSIS THALIANA BY DUAL-GENE OVEREXPRESSION
Jarrett, Philip†
40. CONSUMERS ARE INFLUENCED BY NAME OF PRODUCT
*Jimenez Huaman, Vanessa**
41. DEVELOPMENT OF CARBOHYDRATE-BASED HETEROGENOUS SOLID ACID CATALYST FOR BIODIESEL PRODUCTION
*Jordan, Matthew**
42. EFFECT OF CHRONIC HIGH-FAT DIET CONSUMPTION ON POSTPRANDIAL PLASMA PEPTIDE YY LEVELS
*Kennerly, Nayane**
43. EFFECTS OF UNILATERAL OPHTHALECTOMY ON THE DISTRIBUTION OF UROCORTIN-1 EXPRESSING NEURONS IN THE EDINGER WESTPHAL NUCLEUS OF THE FROG, RANA PIPIENS
*Klein, Neil**
44. EFFECT OF CHRONIC HIGH-FAT DIET CONSUMPTION ON POSTPRANDIAL TRIGLYCERIDE ABSORPTION RATE
*Kouth, Kourtney**
45. DEVELOPMENT OF PUSH-BROOM HYPERSPECTRAL IMAGING SYSTEM FOR GLOW DISCHARGE OPTICAL EMISSION SPECTROSCOPY CHEMICAL IMAGING
Kroschik, Marcel†
46. NOVEL INHIBITORS OF LEISHMANIA MAJOR PROTEIN PTERIDINE REDUCTASE - VIRTUAL SCREENING AND BIOTECHNOLOGY APPROACHES
*Logbin, Andrei; Driscoll, Hailey**
47. CARDIAC ADAPTATION TO EXERCISE DURING PREGNANCY
*Looten, Kalli**
48. THE USE OF PIGMENT EPITHELIUM-DERIVED FACTOR (PEDF) TO ALTER CELL CYCLE PROGRESSION IN PROSTATE CANCER CELLS
*Loy, Sydney**
49. PEDF MODULATORY ACTION ON MACROPHAGES: A NEW WAY TO CURVE PROSTATE CANCER DEVELOPMENT
Martinez-Marin, Dalia†
50. THE MALE AND FEMALE BLOOD LIPID RESPONSES TO A SEVEN DAY POLYUNSATURATED FAT DIET FOLLOWING A THREE DAY CONTROL DIET
*Miller, Mary**
51. MOLECULAR EVOLUTION IN HIGH ELEVATION SOUTH AMERICAN RODENTS
*Monroy, Armando**
52. CONSUMER ACCEPTABILITY OF HONDURAN AND U.S. BEEF FROM DIFFERENT PRODUCTION AND PROCESSING SYSTEMS
*Moreno, Claudio**
53. EFFECTS OF SOIL MOISTURE ON THE BURROWING BEHAVIOR OF A JERUSALEM CRICKET, STENOPELMATUS MONAHANENSIS
*Morris, Molly**
54. THE INFLUENCE OF ENVIRONMENTAL TEMPERATURES ON VARIOUS DEVICES USED TO THAW SEMEN
*Mujahid, Momina**
55. UNDERSTANDING SPECIES LIMITS OF PEROMYSCUS MEXICANUS GROUP USING A GENETIC APPROACH
Nunez, Maria†
56. DETERMINATION OF POSSIBLE HUMAN TOXICITY OF THE CIS ISOMER OF VITAMIN K
*Oakes, Victoria**
57. EFFECT OF CHRONIC HIGH FAT DIET CONSUMPTION ON ADAPTIVE REMODELING OF THE SMALL INTESTINE
*Ortiz, Priscilla**
58. AN IMPROVED HIGH-THROUGHPUT METHOD FOR P-NITROPHENOL BASED ENZYME ASSAYS TO AID SOIL ECOLOGY STUDIES
*Penso, Jorge**
59. TYPE II DIABETES AND ITS AFFECT ON SKELETAL MUSCLE FIBER TYPES
*Perez, Casey**
60. DEVELOPMENT OF A MURINE MODEL TO STUDY THE ROLE OF ILOPROST IN ENHANCED EMBRYO DEVELOPMENT
*Phillips, Megan**
61. INTERACTIONS OF STRESS AND 3-IODOOTHYRONOMINE (T1AM) TREATMENT ON GENE EXPRESSION IN MCF-7 CELLS.
Ponce, Christopher†
62. DESIGN OF A QUANTITATIVE TOOL TO MEASURE THE LEVEL OF ADVANCEMENT OF A COMPANY WITH THE PROPOSED FOOD SAFETY MODERNIZATION ACT (FSMA).
*Quezada, Monica**
63. GENETIC VARIANCE AND POPULATION STRUCTURE IN TAMARIX RAMOSISSIMA BASED ON CHLOROPLAST DNA POLYMORPHISM
*Ramos, Emilio**
64. EFFECTS OF AN OMEGA 3 FATTY ACID, EICOSAPENTAENOIC ACID, ON BROWN ADIPOSE TISSUE, A NOVEL TARGET FOR OBESITY AND METABOLIC DISORDERS
*Razafimanjato, Fitia**
65. THE CANCER/TESTIS ANTIGEN, SP17, IS A NOVEL IMMUNOTHERAPY MARKER OF TRIPLE-NEGATIVE BREAST CANCER STEM CELLS.
Reidy, Adair†
66. MOLECULAR EVOLUTION OF THE CYTOCHROME-B GENE IN MOLES (LIPOTHYPPHA: TALPIDAE) WITH DIFFERENT LEVELS OF FOSSORIALITY
*Rodriguez, Brian**
67. GENETIC VARIATION AMONG THE EIGHT BREEDS OF ETHIOPIAN CAMELS (CAMELUS DROMEDARIUS)
Rowden, Gage†
68. CYTOCHROME B EVOLUTION ON FOSSORIAL RODENTS LIVING AT DIFFERENT ELEVATIONS IN THE ANDES
*Sherali, Susan**
69. CHARACTERIZATION OF MUSCULAR STRENGTH OF C. ELEGANS MUTANTS USED AS MODEL ORGANISM FOR NEURODEGENERATIVE DISEASES USING NEMAFLEX.
*Singh, Simran**
70. IRON- AND COBALT-CATALYZED HYDROSILYLATION OF CARBONYL COMPOUNDS
*Smith, Ashleigh**
71. SM-P80 BASED VACCINATION REDUCES EG-INDUCED PATHOLOGY & WORM FECUNDITY IN ANIMAL MODELS
*Solis-Wheeler, Mychael**
72. EFFECT OF HUMAN COMPLEMENT ON CD35+ CD4+ T CELLS
*Stanopiewicz, Jenna**

73. ROBUST HUMORAL RESPONSE INDUCED BY SM-P80 CONJUGATED WITH TLR4 ADJUVANT AS VACCINE CANDIDATE FOR SCHISTOSOMIASIS
Sudduth, Justin*
74. QUANTITATIVE ANALYSIS OF FREE OLIGOSACCHARIDES AND N-GLYCANS IN HUMAN MILK
Tello, Nadia*
75. AN ANALYSIS ON THE RELATIONSHIP BETWEEN LEG LENGTH OF HARVESTER ANTS AND THERMAL TOLERANCE
Torres, Vanessa; Fell, Cody*
76. MEASURING DYE MOVEMENT IN AQUEOUS SOLUTION WITH FLUORESCENCE CORRELATION SPECTROSCOPY
Truong, Tram*
77. RELATIONSHIP BETWEEN FKBP5 GENOTYPE, SERUM CORTISOL, AND COGNITIVE FUNCTION IN AGING HUMANS: A PROJECT FRONTIER STUDY
Tucker, Cody*
78. DEVELOPMENT OF INSTRUMENTATION TO ACHIEVE HIGH THROUGHPUT CHEMICAL IMAGING OF LARGE AREA SAMPLES VIA GLOW DISCHARGE OPTICAL EMISSION SPECTROSCOPY
Usala, John*
79. EFFICACY OF DETERGENT AND SANITIZERS ON ATTACHED SHIGA TOXIN-PRODUCING ESCHERICHIA COLI (STECs) ATTACHED TO STAINLESS STEEL
Valencia, Hector†
80. INVESTIGATING PREDATION IMPACTS OF NON-NATIVE GULF KILLIFISH FUNDULUS GRANDIS ON PECOS RIVER FISHES
Vaugban, Cassie*
81. VALIDATION OF FOSS FOODSCAN FOR ANALYSIS OF PROXIMATE COMPOSITION (MOISTURE, PROTEIN AND FAT) IN FRESH MEAT (BEEF) PRODUCTS
Villacres, Alex*
82. REEVALUATING THE TAXONOMIC ARRANGEMENT OF THE PEROMYSCUS BOYLII GROUP
Wagley, Marisa Elise†
83. EFFECT OF CAFFEINE INTAKE ON MUSCLE PAIN DURING ISOMETRIC HANDGRIP EXERCISE IN PATIENTS WITH FIBROMYALGIA
Weatherby, Amy*
84. IDENTIFICATION OF NOVEL ANTIMALARIAL INHIBITORS OF 6-PHOSPHOGLUCANATE DEHYDROGENASE (PV6PG) IN PLASMODIUM VIVAX BY HIGH-THROUGHPUT VIRTUAL SCREENING
Weber, Nicole*

BUSINESS EMPHASIS

85. THE INTERSECTION OF FUNDAMENTAL ANALYSIS AND OPTIONS
Subhani, Muhammad†

HUMANITIES

86. LET'S TALK ABOUT RAPE: COLLEGE STUDENTS IN GREEK ORGANIZATIONS DISCUSS WHAT SEXUAL ASSAULT AND CONSENT MEANS TO THEM
Alexander, Bethany†
87. REDESIGN FOR THE NEXT GENERATION: CREATING PRODUCTIVE HIGHER EDUCATION LEARNING ENVIRONMENTS
Beck, Sarah†
88. DON'T TOUCH ME: SENSORY CLOTHING FOR HYPER-SENSITIVE CHILDREN WITH ASD
Charlton, Emily†
89. CLOTHING FOR CONJOINED TWINS
Charlton, Emily*
90. THE COVERAGE OF HISPANIC ISSUES DURING THE 2014 MIDTERM ELECTION: A COMPARISON BETWEEN ENGLISH AND SPANISH-LANGUAGE TV NEWS
Coffman, Audra*
91. ASSESSING THE FOOD ENVIRONMENT OF THE EAST LUBBOCK COMMUNITY
Jun, Julie*
92. WHERE NO MAN HAS GONE BEFORE: SOCIETY AND SYMBOLISM IN THE NON-BINARY GENDER CHARACTERS OF STAR TREK
Kajihara, Meghan*



LAW, PUBLIC POLICY & EDUCATION

93. EXPANDING UPON PUBLIC SCHOOL LEARNING INVOLVING THE PURSUIT OF SCIENCE IN AN INTERDISCIPLINARY ENDEAVOR FOR ELEMENTARY STUDENTS
Robertson, Meghan†



PHYSICAL SCIENCES

94. RESEARCH PUZZLE/ADVENTURE RPG GAME
Agrilar, Chris; Reyes Jr., Pedro†
95. COMBUSTION PERFORMANCE IMPROVEMENT OF ENERGETIC THIN FILMS USING CARBON NANOTUBES
Cano, Jesus†
96. THE APPLICATION OF BAYESIAN STATISTICS AND INDUSTRIAL ENGINEERING STRATEGIES TO HEALTHCARE AND PATIENT READMISSION PRACTICES
Clements, Lauren†
97. INVESTIGATING FUEL SIZE EFFECTS ON THERMAL PROPERTIES OF ALUMINUM COMBUSTION
Cox, Jennifer†
98. USAGE OF FPGAs TO IMPLEMENT COMPLEX ALGORITHMS USED IN LINEAR SYSTEMS AND DIFFERENTIAL EQUATIONS SOLVERS
Dao, Mai†
99. A SIMPLIFIED BINOMIAL SUM
Davenport, Jianne†
100. AQUEOUS N-BUTANOL EXTRACTION THROUGH A NOVEL GEL STRIPPING PROCESS
Doerfert, Michael†

101. INFORMATION RETRIEVAL: WHAT DO USERS REALLY WANT
Dunning, Daniel†

102. NEMADOME: A MICROFLUIDIC PLATFORM FOR HIGH-THROUGHPUT RNAI SCREENING OF LONGEVITY GENES
Edwards, Hunter; Haq, Hridoy†

103. CALCULUS: CONCEPTUAL OR PROCEDURAL? A REFLECTION ON FINAL EXAMS
Finney, Brandon†

104. HOW PHYSICS CAN BE INCORPORATED IN VIDEO GAMES
Gloria, Joy; Williams, Kendrick†

105. MOLECULAR MODELING OF ASPHALTENE FLOCCULATION
Gulied, Mohamed-Gani*

106. WORM SIMULATOR, A UNITY GAME
Heath, Alexander; Turner, Austin*

107. EXPLORATION OF THE ITERATION OF COMPLEX FUNCTIONS
Jackson, Sarah*

* = Tuesday Presentation: 10:00 AM - 11:30 AM | NORTH BALLROOM

† = Wednesday Presentation: 1:30 PM - 3:00 PM | NORTH BALLROOM

108. HOW INDUSTRIAL ENGINEERING DISCIPLINE CAN BE APPLIED TO IMPROVE OUR CURRENT HEALTHCARE SYSTEM
*Kim, Dong Yeob (DK)**
109. DEVELOPMENT OF A MINIATURIZED TENSIOMETER FOR MEASUREMENT OF INTERFACIAL TENSION
*Kim, Yungjee **
110. ULTRAVIOLET AND ENVIRONMENT DEGRADATION OF POLYMERIC FABRICS
*Logan, April**
111. EVALUATING THE IMPACT OF CLIMATE CHANGE ON DYNAMICS OF HOUSE INSURANCE CLAIMS
*Naser, Danna**
112. MODELING HANTAVIRUS CYTOKINE ACTIVITY WITH STOCHASTIC DIFFERENTIAL EQUATIONS
*Offer, Annabel**
113. CIRCLE PACKING RANDOM TRIANGULATIONS
*Orrantia-Kotowski, Olivia**
114. AN ANALYSIS OF HUMAN CAPABILITY TO SOLVE LOGIC BASED PUZZLES
*Oyewole, Feyi; Chen, Victor**
115. ANALYZING AND ALLEVIATING HUMAN SOUND SENSITIVITY THROUGH DIGITAL SIGNAL PROCESSING
Waters, Graham †
116. SMARTX: AN EMBEDDED PROXIMITY DETECTION SYSTEM FOR REDUCING COLLISIONS
*Williams, Joshua**
117. IGNITION AND EXPLOSION CHARACTERISTICS OF ALUMINUM NANO-PARTICLES
*Zepper, Ethan**
118. MEASUREMENT OF BLACK HOLE MASS IN ACTIVE GALACTIC NUCLEI
Zhelyeznyakov, Maksym †
127. THE EFFECT OF VIOLENCE RISK EDUCATION ON JUROR PERCEPTION OF VIOLENCE
*Hoeffner, Camden **
128. ENDURING EFFECTS OF MULTIPLE AND SEVERE CONCUSSIONS ON COGNITIVE FUNCTION
*John, Joshua**
129. INGOLD'S LINE
*Lightfoot, Caleb**
130. DISMEMBERMENT IN SOUTH AND CENTRAL AMERICA: MACHETE CUT MARK ANALYSIS
*Mitchell, Samantha**
131. SEX TRAFFICKING: PROTOCOLS FOR HOTEL EMPLOYEES AND LAW ENFORCEMENT
*Overbeck, Ashton**
132. ASSESSMENT OF STUDENTS INTER-CULTURAL SENSITIVITY AFTER A SHORT-TERM STUDY ABROAD PROGRAM
*Quijada, Rafael**
133. VISUAL COLOR CUES AND HEALTH COMMUNICATION: INVESTIGATING THE PERSUASIVENESS OF MESSAGE DESIGN FEATURES
*Sirgo, Matthew**
134. CHANGES IN BODY WEIGHT AND HEALTH MARKERS FROM A SHORT-TERM VACATION
*Tokar, Theresa **
135. THE INFLUENCE OF TONIC ANXIETY LEVEL AND PFC EMOTIONAL REACTIVITY
*Wagner, Alison **



SOCIAL SCIENCES

119. DRINKING AND SEX MOTIVES: ASSOCIATIONS WITH ALCOHOL PROBLEMS AND RISKY SEX
Acosta, Ileana †
120. EVALUATING THE TELEVISION SHOW DANIEL TIGER'S NEIGHBORHOOD AS A VIDEO-BASED MODEL TO TEACH SOCIAL SKILLS TO CHILDREN WITH AUTISM
Alonzo, Marisol †
121. ABNORMAL HEALING OF A FEMORAL SPIRAL FRACTURE AND ITS FUNCTIONALITY IN A CYPRIOU GERIATRICIAN
Assefa, Sewasew †
122. SUICIDE RISK IN STUDENTS WHO ARE ATHLETES: THE ASSOCIATION BETWEEN PARTICIPATION IN SPORTS, SPORT-RELATED INJURIES, AND THE ACQUIRED CAPABILITY FOR SUICIDE
Boyd, Kristin; Hamlin, Lacey †
123. DEVELOPMENT OF A COMMUNITY-BASED FAMILY COOKING & NUTRITION EDUCATION INTERVENTION IN EAST LUBBOCK: A PILOT STUDY
Bunting, Kari; Moreno Jaramillo, Alejandra †
124. A NARRATIVE HISTORY OF NURSES IN NEONATAL INTENSIVE CARE UNITS
Floyd, Keely †
125. ANALYSIS OF FOOD SECURITY IN GUATEMALA
Garcia, Manuel †
126. AN ANALYSIS OF THE BROKEN WINDOWS THEORY
Geddes, Thomas †



FOR MORE INFORMATION,
 PLEASE DOWNLOAD THE #TTURC15
 FULL ABSTRACT eBook AT:

<http://bit.ly/TTURC15abstract>

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guidebook



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ARTS

- 136. SAINTE-CHAPELLE: KING LOUIS IX'S SPIRITUAL VISION AND POLITICAL CAMPAIGN
Jones, Sarah (Panel 2)
- 137. COPING WITH REALITY - LIVING WITH A CHRONIC DISEASE
Parr, Eric (Panel 3)
- 138. URBAN STAGE: STUDYING TRANSDISCIPLINARY RESEARCH
Rubio, Juan Raymon (Panel 8)
- 139. WHY STRASBOURG: REASONS BEHIND A GERMAN MOVEMENT DEVELOPING IN FRANCE
Stranahan, Teresa (Panel 2)

BIOLOGICAL AND CHEMICAL SCIENCES

- 140. NUTRITIONAL ASSESSMENT OF GRAIN SORGHUM HYBRIDS CROP RESIDUES GROWN UNDER CHALLENGING WATER CONDITION
Campanili, Pedro (Panel 5)
- 141. RUMINAL DEGRADATION KINETICS OF NUTRITIONAL COMPONENTS OF GRAIN SORGHUM HYBRIDS CROP RESIDUES GROWN UNDER CHALLENGING WATER CONDITIONS
Campanili, Pedro (Panel 6)
- 142. HDIA1 KNOCKDOWN IN HUMAN NATURAL KILLER CELLS GREATLY REDUCES CYTOTOXICITY
Cotton, Sarah (Panel 5)
- 143. GALECTIN-3C INHIBITS MURINE BREAST CANCER CELL GROWTH AND MAY INCREASE THE ANTICANCER ACTIVITY OF PACLITAXEL
Kim, Eunjee (Panel 3)
- 144. HIDDEN DANGERS OF HYDRAULIC FRACTURE DRILLING: INCREASED LEUKEMIA RATES IN NORTH TEXAS
Lanza, Jessica (Panel 4)
- 145. CLIMATE CHANGE AND ECOSYSTEM SERVICES
Norton, Alexander (Panel 1)
- 146. EXPRESSION PROFILING OF COTTON GHMYB25LIKE GENE A AND D ALLELES USING ARABIDOPSIS AS A MODEL SYSTEM
Person, Taylor (Panel 6)
- 147. THE IMMUNE RESPONSE OF ATLANTIC CROAKER TO PARASITE INFECTION AND TEMPERATURE INCREASE
Quincy, Tyler (Panel 1)
- 148. BETA-ADRENERGIC RECEPTOR SUBTYPE DISTRIBUTIONS DIFFER ACROSS CARCASS AND NON-CARCASS TISSUES IN FEEDLOT STEERS AND HEIFERS
Riedel, Bailey (Panel 6)
- 149. FINDING A NOVEL TREATMENT FOR THE BIOLOGICAL WEAPON THREAT OF EPIDEMIC TYPHUS BY TARGETING BETA-KETOACYL-ACP-REDUCTASE IN RICKETTSIA PROWAZEKII
Villarreal, Oscar (Panel 5)
- 150. PHOTO-INDUCED TOXICITY AND INTERACTION OF TITANIUM DIOXIDE NANOPARTICLES WITH NATURAL ORGANIC MATTER IN AQUATIC SYSTEMS
Wormington, Alexis (Panel 5)

BUSINESS EMPHASIS

- 151. FINANCIAL PROCESSES: THE COMPLETE AUTOMATION
Alexandrov, Olzhas (Panel 7)
- 152. AN ANALYSIS OF PRODUCT PACKAGING AND INCONGRUITY
Cook, Amanda (Panel 7)

HUMANITIES

- 153. CREATING, DOCUMENTING, AND ANALYZING A DATABASE OF NUPM PUBLIC SERVICE ANNOUNCEMENTS
Adams, Robyn (Panel 7)

- 154. AMERICA'S TEAM
Benn, Mark (Panel 4)
- 155. THE IMPORTANCE OF NONVERBAL BEHAVIOR IN THE TEACHING OF FOREIGN LANGUAGE
Carlton, Chelsea (Panel 10)
- 156. THE EFFECTS OF CODE-SWITCHING ON PREPOSITION STRANDING IN SPANISH-ENGLISH BILINGUALS
Mibalyov, Grace (Panel 10)
- 157. [R]EDDIT: A GLOBAL PLATFORM FOR INSTANTANEOUS ANONYMOUS ONLINE INTERACTION
Padron, Ronnie (Panel 7)
- 158. SURVIVOR STORIES: DOES PERSONAL RELEVANCE INCREASE WILLINGNESS TO ADVOCATE AGAINST SEX TRAFFICKING
Reynolds, Britney (Panel 8)

- 159. A COMPARISON OF JOHN GARDNER'S GRENDEL AND OSCAR WILDE'S THE PICTURE OF DORIAN GRAY
Smith, Cavyn (Panel 2)
- 160. DEVELOPMENT AND CREATION OF A BIG BEND COLLECTION IN THE ENCYCLOPEDIA OF EARTH WEBSITE
Ihogmartin, Kaitlin (Panel 1)
- 161. TEXAS STORIES: THE MYTHICAL BECOMES REALITY
White, Sheridan (Panel 4)

LAW, PUBLIC POLICY & EDUCATION

- 162. THE INSANITY DEFENSE IN TEXAS
Navarrete, Ana (Panel 4)

PHYSICAL SCIENCES

- 163. SIMULATING COSMIC AIR SHOWERS FOR THE HELADO COSMIC RAY OBSERVATORY
Hefele, John (Panel 9)
- 164. A NEW VISCOSITY EXPRESSION FOR AQUEOUS ELECTROLYTE SOLUTIONS
Kovalski, Matt (Panel 6)
- 165. THE COCKROFT-WALTON VOLTAGE MULTIPLIER DESIGN FOR POWERING PHOTOMULTIPLIER TUBES
Mason, Connor (Panel 9)
- 166. STAR FORMATION IN THE ZW1400+09 POOR CLUSTER GALAXIES
McElroy, Alyssa (Panel 9)
- 167. CHERENKOV RING FINDING ALGORITHM FOR COSMIC RAY OBSERVATORY (HELADO)
Mills, Casey (Panel 9)

SOCIAL SCIENCES

- 168. COMPARING GRADED STRUCTURE IN FEATURE-BASED AND SAME-DIFFERENT CATEGORY LEARNING
Giron, Josue (Panel 10)
- 169. DOES THE SIZE OF COLLEGE REALLY MATTER? A CASE STUDY FOR UNDERSTANDING WHICH FACTORS DETERMINE THE ENROLLMENT OF ACADEMIC INSTITUTIONS
Ijeb, Michael (Panel 10)
- 170. THE EFFECTS OF RACE ON RECENT IMMIGRANT SECONDARY STUDENTS
Ortegon, April (Panel 8)
- 171. EXAMINATION OF (RE)INTEGRATION PROCESS OF (SEX) TRAFFICKED WOMEN
Rodriguez, Rocio (Panel 3)
- 172. NEW CLOTHING DESIGNS TO ALLEVIATE SENSORY ISSUES.
Smith, Brianna Rae (Panel 3)

ORAL PRESENTATIONS SCHEDULE

WEDNESDAY, MARCH 31, 2015

PANEL 1	CANYON ROOM
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RISING TEMPERATURES, CHANGING CLIMATE, & THE ENCYCLOPEDIA OF EARTH

2:05 PM - 2:25 PM	147 <i>Tyler Quincy</i>
2:30 PM - 2:50 PM	145 <i>Alexander Norton</i>
2:55 PM - 3:15 PM	160 <i>Kaitlin Ihogmartin</i>

PANEL 2	MESA ROOM
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HISTORY & LITERATURE

2:05 PM - 2:25 PM	136 <i>Sarah Jones</i>
2:30 PM - 2:50 PM	139 <i>Teresa Stranahan</i>
2:55 PM - 3:15 PM	159 <i>Cavyn Smith</i>

PANEL 3	PLAYA ROOM
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TREATING DISORDERS, DISEASE, AND TRAUMA

2:05 PM - 2:25 PM	172 <i>Brianna Rae Smith</i>
2:30 PM - 2:50 PM	137 <i>Eric Parr</i>
2:55 PM - 3:15 PM	171 <i>Rocio Rodriguez</i>
3:20 PM - 3:40 PM	143 <i>Eunjee Kim</i>

PANEL 4	SOAP SUDS ROOM
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TEXAS: MYTHS, ICONS, AND HIDDEN DANGERS

2:05 PM - 2:25 PM	161 <i>Sheridan White</i>
2:30 PM - 2:50 PM	154 <i>Mark Benn</i>
2:55 PM - 3:15 PM	144 <i>Jessica Lanza</i>
3:20 PM - 3:40 PM	162 <i>Ana Navarrete</i>

PANEL 5	TRADITIONS ROOM
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SCIENCE A

2:05 PM - 2:25 PM	140 <i>Pedro Campanili</i>
2:30 PM - 2:50 PM	149 <i>Oscar Villarreal</i>
2:55 PM - 3:15 PM	142 <i>Sarah Cotton</i>
3:20 PM - 3:40 PM	150 <i>Alexis Wormington</i>

THURSDAY, APRIL 1, 2015

PANEL 6	CANYON ROOM
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SCIENCE B

9:35 AM - 9:55 AM	164 <i>Matt Kovalski</i>
10:00 AM - 10:20 AM	146 <i>Taylor Person</i>
10:25 AM - 10:45 AM	148 <i>Bailey Riedel</i>
10:50 AM - 11:10 AM	141 <i>Pedro Campanili</i>

PANEL 7	MESA ROOM
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ACCOUNTING, MARKETING, ONLINE MEDIA

9:35 AM - 9:55 AM	151 <i>Olzhas Alexandrov</i>
10:00 AM - 10:20 AM	152 <i>Amanda Cook</i>
10:25 AM - 10:45 AM	157 <i>Ronnie Padron</i>
10:50 AM - 11:10 AM	153 <i>Robyn Adams</i>

PANEL 8	PLAYA ROOM
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CROSSING BOUNDARIES: SURVIVOR STORIES, IMMIGRANT EXPERIENCES, AND TRANSCENDING DISCIPLINES

9:35 AM - 9:55 AM	158 <i>Britney Reynolds</i>
10:00 AM - 10:20 AM	170 <i>April Ortegon</i>
10:25 AM - 10:45 AM	138 <i>Juan Raymon Rubio</i>

PANEL 9	SOAP SUDS ROOM
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SCIENCE C

9:35 AM - 9:55 AM	163 <i>John Hefele</i>
10:00 AM - 10:20 AM	166 <i>Alyssa McElroy</i>
10:25 AM - 10:45 AM	167 <i>Casey Mills</i>
10:50 AM - 11:10 AM	165 <i>Connor Mason</i>

PANEL 10	TRADITIONS ROOM
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EDUCATION

9:35 AM - 9:55 AM	168 <i>Josue Giron</i>
10:00 AM - 10:20 AM	155 <i>Chelsea Carlton</i>
10:25 AM - 10:45 AM	156 <i>Grace Mibalyov</i>
10:50 AM - 11:10 AM	169 <i>Michael Ijeh</i>

————— PLEASE SEE PREVIOUS PAGE FOR ABSTRACT TITLES —————

PERFORMING ARTS SESSION

VISUAL & PERFORMING ARTS

APRIL 1 | 3:50 PM – 6:00 PM | ESCONDIDO THEATER

SYNOPSIS:

Ensembles featuring undergraduates from the TTU College of Visual and Performing Arts will showcase their creative scholarship through performances in dance, theatre, and music.

SCHEDULE:

3:50 PM – 4:00 PM	AUDIENCE SEATING
4:00 PM – 4:05 PM	WELCOME
4:05 PM – 4:20 PM	TTU CELTIC ENSEMBLE & THE ELEGANT SAVAGES ORCHESTRA
4:25 PM – 4:40 PM	UNIVERSITY DANCE COMPANY <ul style="list-style-type: none">• <i>Not That I Care</i> - Choreography: <i>Ali Duffy</i> Performers: <i>Kaitlyn Hopper</i> and <i>Hannah Miller</i>• <i>Crumble</i> - Choreography: <i>Genevieve Durham DeCessaro</i> Performers: <i>Hannah Miller</i>, <i>Breana Young</i>, <i>Kaitlyn Hopper</i>, <i>Bianca Barrera</i>, and <i>Ally Shepherd</i>
4:45 PM – 5:00 PM	TTU THEATRE UNDERGRADUATE STUDENTS: <i>Anthony Burton</i> (BFA Acting) and <i>Nate Hall</i> (BA Theatre) will perform: <ul style="list-style-type: none">• Scene from <i>Great Men of Science Nos. 21 & 22</i> by Glen Berger• Scene from <i>Red</i> by John Logan• Monologue from <i>King John</i> by William Shakespeare <i>Thomas Laney</i> (BFA Acting) and <i>Nate Hall</i> (BA Theatre) will perform: <ul style="list-style-type: none">• Scene from <i>Talking Cure</i> by Ethan Coen• Scene from <i>The Muckle Man</i> by Roberto Aguirre Sacasa• Monologue from <i>Two Gentlemen of Verona</i> by William Shakespeare
5:05 PM – 5:20 PM	TTU TANGO CAMARATA <i>Eddie Allan</i> Bass <i>Charles Olivier</i> Bandoneon <i>Tom Cimarusti</i> Piano <i>Catherine Burris</i> Violin
5:25 PM – 5:40 PM	UNIVERSITY DANCE COMPANY <ul style="list-style-type: none">• <i>Student Work (Untitled)</i> - Choreographers/Performers: <i>Allison Pelham</i>, <i>Bianca Barrera</i>, <i>Katie Parker</i>, <i>Hannah Miller</i>, and <i>Mary Van Natta</i>• <i>On Life's Terms (Excerpt)</i> - Choreography: <i>Ally Sanov</i> Performers: <i>Ally Shepherd</i> and <i>Allison Pelham</i>
5:45 PM – 6:00 PM	TTU THEATRE UNDERGRADUATE STUDENTS: <i>Isiah Columbus</i> (BFA Acting) and <i>Randall Rapstine</i> (MFA P&P) will perform: <ul style="list-style-type: none">• Scene from <i>Choir Boy</i> by Tarell Alvin McRaney• Scene from <i>Superior Donuts</i> by Tracy Letts• Monologue from <i>Jitney</i> by August Wilson <i>Thomas Laney</i> (BFA Acting) and <i>Nate Hall</i> (BA Theatre) will perform: <ul style="list-style-type: none">• Scene from <i>Talking Cure</i> by Ethan Coen• Scene from <i>The Muckle Man</i> by Roberto Aguirre Sacasa• Monologue from <i>Two Gentlemen of Verona</i> by William Shakespeare

INTERPRETACIONES GRÁFICAS: DÍA DE LOS MUERTOS

(GRAPHIC INTERPRETATION: DAY OF THE DEAD)

MARCH 31 - APRIL 1 | 9:00 AM - 4:00 PM | BALLROOM

SYNOPSIS:

This is a selection of artworks from Interpretaciones Gráficas, an exhibition of Día de los Muertos inspired posters designed by students in the Communication Design fall 2014 classes, 3383 Type and Image, taught by Dinah Hodges 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 2014.

UNTITLED

Taylor Armstrong

CUT OFF IN THE BLOOM OF LIFE

Sarah Balman

LET US GO THEN, YOU & I (A LOVE SONG, BY T.S. ELIOT)

Victoria Marie Bee

PERACTO HAC VITA

Joshua Cobb

THE CONGREGATION

Carlton Ellison

KICKED UP HER HEELS AND AWAY SHE WENT

Jordan Flinder

EXPIRED

Justin Hoover

"YOU'RE GONNA LOVE THIS..."

Brooke Hurley

ANOTHER ROOM

Brynnna Kern

HURRIED FROM THIS LIFE

Juan Labra

ROSE ABOVE THE END

Nick Leibold

HEART

Zachary Patton

FELL FROM A TREE

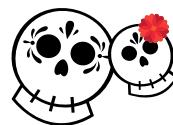
Collin Ryan

DIED

Halina Wojtkowski

INTEGRITY

Michaela Yarbrough



INTERPRETACIONES GRÁFICAS:
dia de los muertos

POSTER ORAL
BEGINS ON PAGE:

**ART**

ART HISTORY
DANCE
MUSIC
THEATRE
VISUAL ARTS

22**67****BIOLOGICAL AND CHEMICAL SCIENCES****24****69**

BIOLOGY/BIOCHEMISTRY
CHEMISTRY/BIOCHEMISTRY
ENVIRONMENTAL STUDIES
HEALTH PROFESSIONS

**BUSINESS EMPHASIS****47****73**

BUSINESS

**HUMANITIES****49****75**

CULTURAL STUDIES
GENDER STUDIES
LITERATURE
MEDIA & COMMUNICATIONS

**LAW, PUBLIC POLICY & EDUCATION****52****78**

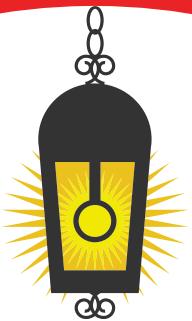
EDUCATION
LEGAL STUDIES
HISTORY
PHILOSOPHY
POLITICAL SCIENCE

**PHYSICAL SCIENCES****54****80**

COMPUTER SCIENCE
ENGINEERING
GEOSCIENCES
MATHEMATICS
PHYSICS/ASTRONOMY

**SOCIAL SCIENCES****61****82**

ANTHROPOLOGY/ARCHAEOLOGY
ECONOMICS
PSYCHOLOGY
SOCIAL WORK
SOCIOLOGY



ARTS

abstracts #1-2

POSTER
PRESENTATIONS

Art History
Dance
Music
Theatre
Visual Arts





1. GIRO GIRO TONDO: A COLLECTION OF CHILDREN'S SONGS FROM ITALY

Presenter(s): Ballard, Joshua

Authors: Ballard, Joshua

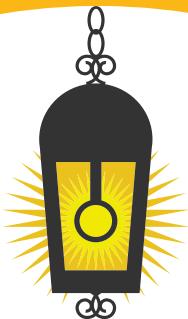
Finding new children's music remains a challenge for elementary school teachers. In order to enrich the public with interesting music to learn, we are compiling well known children's music from a different country in a way that is accessible and easy for elementary music teachers to draw from. The book will serve as an archival resource not only for Italian folksong, but for recordings made in the past and in the present day. This collection will provide more repertoire that will propagate an intriguing, beautiful culture into early music education.

2. THE USE OF ORGANIC TEXTILES FOR CHILDREN WITH SENSORY PROCESSING DISORDER

Presenter(s): Dawson, Taylor

Authors: Dawson, Taylor; Hwang Shin, Su-Jeong; Robinson, Joyce; Gaines, Kristi

Sensory Processing Disorder (SPD) exists in children with ASD when sensory signals do not integrate to provide appropriate responses. Because of the sensory concerns, which include the tactile, visual, and auditory senses, children with SPD can have difficulties getting dressed and have hypersensitivity to certain textiles. The objective of this study is to identify appropriate textiles for children with SPD and design new and innovative clothing, with a specific focus on fabrics. A database to cross reference stimuli and qualitative research method is used in this study. According to the cross reference stimuli, the most suitable fabrics for the children are found to be organic materials, such as cotton and bamboo. Compared to cotton, bamboo has all the perfect qualifications for clothing for children with SPD. Characteristics of organic textiles, that would be beneficial for children with SPD is the soft texture, breathable nature, and hypoallergenic. In this study, exemplary sensory clothing with organic textiles is suggested for children with sensory processing disorder.



BIOLOGICAL & CHEMICAL SCIENCES

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3. LONG WORK SHIFTS' EFFECT ON BALANCE, REACTION, AND VIGILANCE OF FEMALE NURSES

Presenter(s): Akalonu, Chibuzo*Authors: Akalonu, Chibuzo; Banuelas, Victoria; Moore, Amy*

Healthcare workers exhibit among the highest injury rates of any occupation, possibly a consequence of demanding work schedules leading to physical fatigue. However, no previous studies have quantified functional performance declines resulting from a rigorous, cumulative work-shift period in nurses. The purpose of this investigation was to examine the impact of three, 12-h work-shifts on changes in functional performance in female nursing workers. Ten full time female nurses reported for testing on three occasions, with the first visit being a familiarization trial. Participants then performed testing the day prior to, and the day following (within 24 hrs) a four-day period that involved three, 12-h work-shifts. Performance measures included a five-min computer based vigilance and simple reaction time test (PVT), a choice reaction time task (CRT), and single- and double-legged static standing balance for 30-s. Paired samples t-tests were used to assess pre-post differences. Results revealed that mean and slowest ten percent reaction time values were significantly slower after the three work-shifts, however, the CRT, and overall stability index scores for balance were not significantly different. These findings showed that rigorous nursing work periods induced 11.1 - 22.4 percent slower reaction time responses specifically indicative of vigilance and arousal levels. However, tasks involving choice reaction time and balance were not impaired. Such findings may be linked to increased risk of work-related injuries under circumstances requiring rapid responses during work-related fatigue. Practitioners may exercise caution in executing monotonous tasks requiring rapid responsiveness, during periods in which long work-shift periods have been performed.

4. OBESITY-BREAST CANCER INTERACTION: EFFECTS OF ADIPOCYTES ON BREAST CANCER CELLS

Presenter(s): Alhaj, Sara*Authors: Alhaj, Sara; Aljawadi, Arwa; Ramalingam, Latha; Moustaid-Moussa, Naima*

The American Medical Association has recently recognized obesity as a disease with more than two-thirds of adult Americans and 17% of children being obese. Furthermore, with increasing number of breast cancer cases each year, many studies indicate weight gain and high body mass index to escalate the risk of breast cancer. The risk of breast cancer is especially higher in post-menopausal obese women but the relation between breast cancer and obesity is not completely understood yet. Our research aims to understand the mechanism by which obesity increases the risk of breast cancer in menopausal women and how dietary interventions, using an omega-3 fatty acid from fish oil (eicosapentaenoic acid, EPA), can reduce obesity-induced breast cancer. We hypothesize that obesity increases the risk of breast cancer through secretion of pro-inflammatory adipokines from fat cells and/or through the secretion of small microvesicles known as exosomes which mediates cell-cell interaction. We cultured preadipocytes (murine 3T3-L1 cells or human cells) and human breast cancer cell lines (MCF-7), then transferred media from the preadipocytes into the cancer cells. We found that the adipocyte conditioned media increased breast cancer cell inflammation. In addition, MCF-7 cells exposed to preadipocyte conditioned medium treated with EPA had lower glycolytic activity compared to those treated without EPA. Our study suggests that adipocyte-secreted factors modulates glucose metabolism and inflammation in breast cancer cells, possibly reducing/preventing breast cancer. Currently, studies are underway to determine the influence of exosomes isolated from adipocytes on breast cancer cell metabolism.

5. PYOCINS AS A NOVEL TREATMENT OF PSEUDOMONAS AERUGINOSA INFECTED WOUNDS

Presenter(s): Amin, Adeet*Authors: Amin, Adeet*

With the continuing emergence of antibiotic resistant bacteria, the management of chronically infected wounds is extremely costly. Among the bacterial pathogens that infect chronic wounds is the gram-negative opportunist *Pseudomonas aeruginosa*. Due to its resistance to most available antibiotics and its ability to form biofilms, *P. aeruginosa* is a serious threat for patients with chronic wounds. The multi-drug resistance of *P. aeruginosa* plus the high cost of producing new antibiotics necessitates the search for other potential therapies. One such therapy is the utilization of pyocins, which are narrow-spectrum antimicrobials produced by *P. aeruginosa*. *P. aeruginosa* produces three main types of pyocins, the R, F, and S-type. Due to its continuous contact with infected tissues, topical application of anti-microbial agents is the most effective treatment of infected wounds. Therefore, we formulated the R-pyocin in polyethylene glycol (PEG) (1 part R-pyocin: 2 parts PEG). Utilizing the in vitro wound biofilm model, we showed that compared to the PEG control, application of the pyocin-cream inhibited biofilm development by *P. aeruginosa* strains. This was accomplished by the quantitative analysis of the biofilms (colony forming units (CFU)/disk. Next, we utilized the murine model of wound infection to test the inhibitory effect of R-pyocin on the growth of *P. aeruginosa* within infected wounds. In comparison with PEG-treated wounds, the number of microorganisms (CFU/gm of tissues) obtained from wounds treated with the pyocin cream was significantly reduced. These results suggest that the pyocin cream is a potential topical application to effectively treat *P. aeruginosa* infected chronic wounds.

6. OBSERVATION OF RAPID ADAPTATION OF TUMOR CELLS TO HYPOXIA IN A MICROFLUIDIC CULTURE DEVICE

Presenter(s): Ansari, Megan*Authors: Germain, Todd; Ansari, Megan; Pappas, Dimitri*

In this work we studied prostate cancer drug susceptibility in a hypoxic environment observing rapid adaptation to hypoxia. In a previous study we have looked at the response of prostate cancer cells to hypoxia at preconditioning times of an hour or greater. In this study we observe the response of PC-3 cells to staurosporine while in a hypoxic environment at preconditioning times from 0 min to 30 min in a low-shear microfluidic cell culture device. The cells were assayed using Annexin-V-Alexa Fluor 647 and Sytox Green after being cultured for up to 9 hours. Cells cultured in normoxia in the microfluidic device that were not exposed to staurosporine were found to be 84.5% viable, a viability that was similar to cells exposed to 2M staurosporine with 30 min of hypoxia preconditioning (78.0% viability). Cells exposed to the same concentration of staurosporine but with a preconditioning time of 0 min were found to be 48.6% viable. Cell viability was on



a similar level for all preconditioning times below 30 min and the staurosporine control experiment that did not involve hypoxia. The shear force experienced by the cells in the culture chamber was studied by observing the diffusion of a fluorescent dye flowing into a channel that had been photobleached. The shear stress in the culture chambers was found to be 0.0211 dynes/cm², which was 0.62% of the shear force in the medium-supply channel which was found to be 3.42 dynes/cm². This microfluidic device is capable of culturing cells in a low shear stress environment, and this method is capable of looking at different cell types with a minimal preconditioning time of 30 min under hypoxic conditions. The observation that cell adaptation to hypoxia is rapid has broad implications in the study of solid, hypoxic tumors.

7. CONSUMER PERCEPTION OF PALATABILITY TRAITS BETWEEN FED COWS AND YOUNG CATTLE

Presenter(s): Arias, Celeo

Authors: Arias, Celeo; Cashman, Drew; O'quinn, Travis; Miller, Markus

Every year, the price of beef increases because of the cost of cattle production including everything from feed costs to transportation costs. As a result, more beef producers are feeding more cull cows. Often consumers prefer young cattle due to the more desirable palatability components of tenderness, juiciness and flavor. Hopefully, feeding cull cows a high-energy ration of grain will improve the eating experience of mature cattle. Consumer research is necessary to find a more cost effective product for consumers by feeding cull cows without sacrificing the tenderness, juiciness and flavor of young cattle. The objective of this project is to measure the effects of beef from different age groups on tenderness, juiciness and flavor of beef strip loin steaks. Each group will have matching marbling scores corresponding to USDA Prime, Top Choice, Choice, Select, and Standard. Samples will be thawed at 2-4°C for 24 h prior to each consumer evaluation. An open-flame grill will be used to cook each steak to an internal temperature of 71°C. The project design consists on two different groups of subjects that will be used for the study: untrained consumer panelists and trained panelists. The untrained group will consist of 5 panels consisting of 24 consumers having a total of 120 panelists. Also their will be 15 trained panels will be conducted, each panelist will receive 10 samples per panel. The results will help market beef from cull cows to consumers based on the comparison of palatability traits to young cattle.

8. EFFECTS OF LONG, CUMULATIVE WORK-SHIFTS ON MUSCLE STRENGTH AND POWER-RELATED MEASURES OF THE UPPER- AND LOWER-BODY IN FEMALE NURSES

Presenter(s): Banuelas, Victoria

Authors: Banuelas, Victoria; Thompson, Brennan; Akalonu, Chibuzo; Moore, Amy

The care that nurses provide or the healthcare of nurses? Nurses work long, demanding schedules and exhibit high injury rates, predominantly caused by incidents resulting from overexertion and slips/falls; which may be a consequence of declines in performance from work-related fatigue. Many nursing tasks rely largely on physical strength- and power-based function of the upper- and lower-body to optimally and safely perform their duties. The purpose of this study is to investigate the effects of demanding healthcare work schedules on explosive strength and power of the upper and lower body in full-time, female nurses. Ten nurses reported to the laboratory on three occasions. Following a familiarization session, nurses were then tested prior to, and following a work period of three, 12-h shifts in a 4-d period. Participants performed two maximal contractions of the forearm flexors (hand grip; HG), followed by three maximal vertical jumps. Maximal and explosive strength was assessed from peak force (PF) and peak rate of force development (PkRFD) for the HG; and lower-body performance from jump height (JH) and peak power (PP) for the jump tests. The results indicated no differences for the left hand, for HG PF of the right hand, or for the JH and PP variables; however, PkRFD significantly declined. Although, findings revealed lower-body performance was unaffected by the work period, rigorous multi-shift nursing work resulted in a 15.8 percent decrease in explosive hand strength. This may have functional implications for work performance dealing with fast strength-related upper-body manual tasks required by nursing work.

9. PROTEIN-PROTEIN INTERACTIONS OF THE INFLAMMASOME

Presenter(s): Bejarano, Hugo

Authors: Bejarano, Hugo

The immune system uses inflammation to communicate the presence of a pathogen. Pathogens are detected through both unique microbial structures that are absent in eukaryotic cells, named Pathogen-Associated Molecular Patterns (PAMPs) and signs of damage in host cells, named Danger-Associated Molecular Patterns (DAMPs). These patterns are detected by Pattern Recognition Receptors like Nod-like Receptors (NLRs). When NLRs sense PAMPs or DAMPs, they assemble the inflammasome. This inflammasome contains the NLR, like NLRP3, the adaptor ASC, and effector, like Caspase-1. Caspase-1 activation releases pro-inflammatory cytokines that signal pathogen clearance. Many pathogen and host proteins can interact with the inflammasome, though the interaction mechanism is unknown. Exogenous production of inflammasome proteins will allow biochemical-binding studies to characterize novel host and pathogen protein-protein interactions as well as crystallography to determine the structural basis of these interactions. The objective of this study is to prepare the reagents needed to study protein-protein interactions of the inflammasome and attempt crystallography. To accomplish this, I am generating recombinant inflammasome proteins tagged to enable rapid purification. I am cloning the inflammasome proteins NLRP3, ASC, and Caspase-1 into the bacterial protein expression vectors p202 and pGEX-4T-1 to tag them with either the maltose-binding protein or glutathione S-transferase, respectively, for expression and purification of the resulting fusion proteins by affinity chromatography. Following purification, these proteins will be tested for function and prepared for crystallography. The findings derived from this study will help us better understand how the inflammasome helps protect us from disease.



10. FINDING NOVEL INHIBITORS FOR D-ALANINE:D-ALANINE LIGASE IN MYCOBACTERIUM TUBERCULOSIS USING VIRTUAL HIGH-THROUGHPUT SCREENING

Presenter(s): Benavidez, Maria Charina

Authors: Benavidez, Maria Charina; Truong, Grace; Villarreal, Oscar; Beckham, Josh

The chief purpose of this experiment is to find novel inhibitory compounds for the enzyme D-alanine:D-alanine ligase in Mycobacterium tuberculosis, the leading bacteria that causes tuberculosis. Through a series of processes that range from wet lab to virtual lab work, a list of compounds can be scored for their binding capabilities to MtDdla protein using GOLD and ICM programs, and these compounds can then be tested in wet lab through inhibition assays. The codon-optimized DNA sequence of the protein underwent primer design and PCR rounds, which allowed for a proper clone of the desired gene sequence. The D-ala-D-ala ligase was successfully expressed through protein expression using IPTG reagent and purified through Nickel Affinity Chromatography and FPLC (Fast Protein Liquid Chromatography). The concentrated protein solution was tested for viability using a malachite enzyme assay alternative; novel compounds taken from virtual screening results were used in performing inhibitory assays at 50 uM, 100 uM, and 500 uM concentrations. The third compound obtained, 7-[[[(4-methyl-2-pyridinyl)amino](2-pyridinyl)methyl]-8-quinolinol, showed increasing activity of enzyme at higher concentrations of compound, but a gradual increase of the concentrations did not support that result; therefore, more assays will be conducted with that particular compound. Virtual screening using various libraries available will be utilized to discover more promising compounds in the future.

11. DETERMINATION OF MECHANISM OF ACTION FOR REDUCTION OF LISTERIA MONOCYTOGENES BY LACTIGUARD

Presenter(s): Casas, Diego

Authors: Casas, Diego; Campos, David; Castelli, Erin; Guillen, Lacey; Brashears, Mindy

Lactic acid bacteria (LAB) are generally regarded as safe by the FDA. LAB can be easily implemented into current food processing environment operations. They have been found to be effective in inhibiting or killing food-borne pathogens (shiga toxin producing E.coli, Salmonella species, Listeria monocytogenes) in culture media and/or food products. Many LAB produce metabolites that display antimicrobial activity including: organic acids (lactic acid, acetic acid, formic acid, phenyllactic acid, caproic acid), carbon dioxide, hydrogen peroxide, diacetyl, ethanol, bacteriocins, reuterin, and reutericyclin. The objective of this study is to evaluate the mechanisms of lactic acid bacteria strains NP51, NP28, NP3 and NP7 (LactiguardTM) against Listeria monocytogenes. Listeria monocytogenes will be subjected to the following treatments of LAB: freeze dried product made normally, cell-free supernatant collected from cells after growth and washed and re-suspended LAB cells. Furthermore, treatments will be altered by means of neutralizing pH, adding enzyme and adding catalase to determine if acid, bacteriocin/protein-based compound and/or hydrogen peroxide are responsible for pathogen reductions. Samples will be stored at 7°C and analyzed for viable cell counts of Listeria monocytogenes and LAB on days 0 and 5. In addition samples will be stored at 37° C and analyzed for viable cell counts of Listeria monocytogenes and LAB on hours 0 and 24. Listeria monocytogenes and LAB will be enumerated on modified oxford (MOX) agar and De Man, Rogosa, Sharpe (MRS) agar, respectively.

12. EFFECTS OF FINISHING MODE ON CONSUMER ASSESSMENT OF BEEF FROM MATURE CULL COWS

Presenter(s): Castellanos, Luis

Authors: Castellanos, Luis; Gredell, Devin; O'quinn, Travis; Miller, Markus

Beef from mature cull cows is currently under utilized; however, these animals are a source of beef even after their value in a production setting is lost. The presence of off-flavors associated with cull cow beef and a decrease in tenderness are limiting factors in consumer acceptability. These unacceptable characteristics can be offset by finishing these animals on a high-energy grain diet prior to slaughter. The objective of the current study was to compare consumer sensory perceptions of grain-finished cull cow beef and non-fed cull cow beef, as compared to grain-finished A maturity beef. Beef strip loins representing three classes of beef cattle (grain-finished A maturity, grain-finished cull cow, and non-fed cull cow) across two marbling score groups per class (USDA Slight and USDA Practically Devoid/Traces) will be evaluated. Consumer panelists (n = 120) will be used to evaluate beef palatability and acceptability of palatability traits. Each steak will be cooked on a propane gas grill to an internal temperature of 71°C. Each sample will be cut into 8 equal pieces with each consumer receiving 1 piece. A 10 cm line scale anchored at both ends will be used to evaluate samples for overall liking, tenderness, juiciness, beef flavor, and off-flavor. Proximate analysis of samples will be used to estimate fat, moisture, and protein composition. It is anticipated that consumer scores for cull cow beef will increase with grain-finishing and be more comparable to grain-finished A maturity beef.

13. LACTIC ACID BACTERIA (LAB) AFFECT ON MINERAL AND VITAMIN C CONTENT OF FRESH STRAWBERRIES

Presenter(s): Castelli, Erin

Authors: Castelli, Erin; Krieg, Andrea; Campos, David; Brashears, Mindy

Introduction: Since 1990, 600 outbreaks associated with fresh produce have occurred. Lactic acid bacteria cultures can be an effective intervention to reduce foodborne pathogens. / / Purpose: Evaluation of lactic acid bacterial cultures and their effect on nutritional value of strawberries. / / Methods: Fresh strawberries were obtained for this study. A control sample was treated with deMan, Rogosa and Sharpe (MRS) broth. Three LAB treatments with MRS broth were applied as a dip as follows: 1) Lactococcus lactis (FS56), 2) Lactobacillus plantarum (C28), and 3) L. acidophilus (NP51). Treated strawberries were stored at 4 °C for five days before analysis of selected minerals and Vitamin C was performed. / / Results: Data was compared with values from the USDA National Nutrient Database. Strawberries treated with MRS broth showed an increase in sodium (Na), phosphorus (P), and potassium (K). Reductions in calcium (Ca), Iron (Fe), and zinc (Zn) were observed. All three LAB cultures decreased Ca by 3.5 mg/100g. Fe decreased by 0.051 mg/100g with FS56 and 0.095 mg/100g with C28 and NP51. P increased approximately 5.0 mg/100g in all of the LAB cultures. K was affected the most of all of the minerals that



were evaluated. C28 and NP51 increased K values by 33 mg/100g while FS56 increased it by 40.7 mg/100g. FS56 culture treatment increased Na levels by approximately 3.5 mg/100 and 5.5 mg/100g by C28 and NP51. Zn levels increased by 2.0 mg/100g in all three LAB cultures. / Significance: These data suggest that the LAB cultures can impact the nutritional value of strawberries.

14. SALMONELLA BASELINE FOR HIDES, CARCASSES, AND LYMPH NODES OF CATTLE PRESENTED FOR SLAUGHTER IN HONDURAS

Presenter(s): Chinchilla, Skarleth

Authors: Chinchilla, Skarleth; Vipham, Jessie; Miller, Mark; Trojan, Sara; Brashears, Mindy

Salmonella is considered a major cause of foodborne illness throughout the world, with millions of human cases occurring worldwide every year (World Health Organization, 2013). Over 2,500 different serotypes of Salmonella have been identified to date (World Health Organization, 2013). *Salmonella Enteritidis* and *Salmonella Typhimurium* are the two most important serotypes of salmonellosis transmitted from animals to humans in most parts of the world. Consumption of contaminated food of animal origin, mainly meat, is a major mode of transmission from animals to humans (World Health Organization, 2013). Interventions are needed to control Salmonella, to avoid loss of lives and chronic loss of productivity. The purpose of this project is to create a baseline for Salmonella in bovine lymph nodes and for Salmonella beef carcass contamination in slaughter facilities in Honduras. Cattle in the study are part of a cattle sustainability project designed to utilize local resources for cattle feed in Honduras to improve productivity. Lymph nodes, hides, pre-evisceration, and final carcass swabs from different slaughter facilities in Honduras will be collected. The samples will be shipped back to Texas Tech University and undergo microbial analysis. The development of a Salmonella baseline for Honduras will aid in developing a fuller picture of the types of contamination that exist in the country and how interventions can be used to control and reduce the incidence of Salmonella in the food system and public health.

15. EFFECTS OF PLANT EXTRACTIVE ON CANCEROUS CELLS

Presenter(s): Conn, Kyler

Authors: Conn, Kyler

Current chemotherapies are very effective at causing cell death and toxicity in cancerous cells. Unfortunately, they also cause death in normal cells. In this study, we tested a candidate plant extractive, which is a natural product, to determine whether the potency in killing cancer cells was high, while the cytotoxicity to normal cells was reduced. The plant-derived anticancer agent was suspended in a 95% ethanol vehicle and different cancer cell lines were treated over a 7-day period. The cell lines treated in this study included the breast cancer cell line MCF7, the non-small cell lung cancer cells H1299 and the HT29 line of colon cancer cells. Concurrently, primary, normal human epithelial keratinocytes were used as the normal cell strain. MCF7, H1299, and HT29 cells were seeded onto a 48 well plate, allowed to attach and then treated with 1uL of the natural compound in different extractive solutions. Trypan blue exclusion, cell size and diameter were used to analyze for cytotoxicity and cell death compared to untreated cells, 1uL 95% Ethanol and 1uL of Taxol at 2x10-6M. Cell death curves were determined. Cytotoxicity was measured using XTT assay. Our results of the natural compound showed a decline in cell diameter, circularity, and total number of cells. XTT assay resulted in a reduced number of viable cells compared to untreated cells, 95% ethanol treated cells and Taxol. The effect on normal cells appeared to be less than of the cancer cells. Experiments to determine the mechanism of cell death are ongoing.

16. IN-PLANT VALIDATION OF THE EFFICACY OF LACTIC ACID AS ANTIMICROBIAL INTERVENTION ON BEEF HEADS AND VARIETY MEAT

Presenter(s): Cuellar, Darvin

Authors: Cuellar, Darvin A.; Parks, Amy R.; Brashears, Mindy

The application of different organic acids, such as lactic acid, as interventions for carcasses has been shown to be effective in reducing the presence of pathogenic bacteria like *Salmonella* and *Shiga toxin-producing Escherichia coli* (STEC). This in-plant validation was conducted to determine the efficacy of lactic acid applied to beef heads and beef variety meat (hearts and livers) passing through a spray cabinet with lactic acid applied at a 2 to 5 percent concentration. For each part of the study (heads, hearts, and livers), 10 swab samples were collected pre-treatment and 10 swab samples. The experiment was conducted in triplicate. The samples underwent microbiological analysis consisting of Total Aerobic Plate Counts (APC), generic E. coli, and Coliform petrifilms, with the aim of determine the reduction of these microorganisms after treatment. For APC, reductions of 2.23, 1.36, and 1.30 log cfu/cm² were observed for heads, livers, and hearts, respectively. Coliform reduction was 1.20 and 0.77 log cfu/cm² for livers and hearts, respectively. For hearts, the amount of coliforms present pre- and post-treatment were small and the log cfu/cm² reduction could not be measured. These results show that the treatment of lactic acid spraying in a concentration of 2% to 5%, was effective reducing indicator microorganisms used by industry to assess intervention control. Additionally, this treatment improves the safety of the products tested.

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

Presenter(s): Deleon, Sabrina

Authors: Deleon, Sabrina; Parra, Amanda; Mcmanus, Michelle; Green, Micah; Cañas-Carrell, Jaclyn

Carbon nanotubes have high thermal conductivity capabilities, high tensile strength, and are one of the most used manufactured nanomaterials. However, these materials are not regulated and there are concerns regarding their behavior in 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). Plants were grown for 21 d in soil with 10 mg/kg of CNTs or COOH-CNTs in 1 L or 3 L of soil in a greenhouse with natural day:night



conditions. Corn was 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. Photosynthetic rate declined throughout the duration of the drought treatments. CNT uptake was only detected in roots of drought-treated plants exposed to CNTs and COOH-CNTs. Additional plant analyses are currently ongoing.

18. THE EFFECT OF COMPLEMENT COMPONENTS C4 AND C3 ON HUMAN T LYMPHOCYTES EXPRESSING COMPLEMENT RECEPTOR 1 (CD35)

Presenter(s): Dhir, Nikita

Authors: Dhir, Nikita

The complement system is part of the immune system, and is made up of different protein molecules that can be activated by an antibody to fight pathogens. Previous studies have shown that a small percentage of T lymphocytes express CD35. This receptor recognizes and binds to C4 and C3. The effect of C3 and C4 binding to CD35 on T cell function is currently unknown, and reagents containing these natural ligands are severely limited. The objective of this research was to make a reagent containing C4 and C3 to study how these natural ligands influence T cell function. For these experiments, rabbit immunoglobulin was covalently coupled to polystyrene beads to be used as an activator of C4 and C3. To validate that the beads were completely coated with the protein, fluorescently labeled goat anti-rabbit Ig was added to the beads. A flow cytometer was then used to measure the percentage of beads that were coated with the rabbit antibody. Our results showed that 100% of the beads were uniformly coated with the antibody. Next, the antibody-coated beads were incubated with normal human serum. Preliminary results suggest that polystyrene beads coated with rabbit antibody efficiently activates human complement. Using this reagent, experiments are being conducted to determine the effect of C3 and C4 on those T cells that express the CD35 receptor.

19. SELECTIVE COATING OF MICRONEEDLES FOR IMPROVED VERSATILITY

Presenter(s): Drane, Dallas

Authors: Drane, Dallas; Gill, Harvinder

Drug delivery using coated microneedles has been shown to be an efficient method of drug delivery. Most previous research has used uniformly coated patches of microneedles, we are exploring the potential of selectively coating multiple drugs each microneedle on a single array. The objective of this research is to show that microneedles can become a more versatile method of drug delivery by coating a prodrug and its activator on separate needles on a single patch. To accomplish this we created a program to selectively coat needles in whatever arrangement is desired. Fluorescent chemicals, Sulforhodamine and Riboflavin were coated on alternating needles to confirm that multiple drugs could be evenly coated on a single array. To test the viability of a prodrug and activator combination delivered transdermally by microneedles, a fluorescent drug and a neutralizing chemical will be applied to separate needles on a microneedle array and then inserted into a skin sample to monitor the reaction as it takes place in the skin via fluorescent imaging. Multiple patterns will be used to coat the needle to determine the optimal arrangement for the reactants. We seek to determine if the fluorescent drug and its co-reactant can serve as a valid model for prodrug and activator reactions.

20. DEVELOPING A PREDATOR-AVOIDANCE ASSAY IN XENOPUS LAEVIS: A POTENTIAL MODEL OF POST-TRAUMATIC STRESS DISORDER

Presenter(s): Duggan, Paul

Authors: Duggan, Paul; Carr, James; Harris, Breanna

Post-Traumatic Stress Disorder (PTSD), which affects 7% of Americans, results from a severe trauma and leaves sufferers feeling stressed or threatened in non-threatening situations. Although the etiology of PTSD is unknown, aberrant functioning of the stress-response system and amygdala fear-processing neurochemistry appear to play a role. Several predator-stress paradigms have been used to induce PTSD-like symptoms in rats. Predator exposure is a life-threatening, predominantly psychological stressor, making it a good PTSD model. We aim to develop a predator-avoidance model in African clawed frogs to 1) measure anxiety and 2) serve as a model of PTSD. Using an aquarium with a plastic divider we exposed 12 juvenile frogs to a control (no frog), a size-matched conspecific, or a large frog (predator) for 50 min and recorded behavior. Frogs were given 10 min to acclimate, were exposed to the stimulus for 10 min, and were given 1g of chicken liver for 30 min. The 12 focal frogs were exposed to all three scenarios over 1 week. We hypothesize exposure to a large conspecific, but not a size-matched conspecific, will increase anxiety-like behavior (increased hiding, air gulping, decreased activity) and decrease food consumption. Exposure to large, but not size-matched, conspecifics resulted in decreased liver consumption ($F_{2,22} = 8.17, P = 0.002$; large vs. size-matched and control, $P < 0.035$). Behavioral analysis is underway. To establish this as an anxiety test we predict that injection of anxiolytic drugs will ameliorate the effects of the large frog and decrease anxiety behavior and increase food consumption.

21. XENOTRANSPLANTED SERTOLI CELLS INHIBIT THE ALTERNATIVE AND CLASSICAL PATHWAYS OF COMPLEMENT MEDIATED CELL LYSIS

Presenter(s): Dziuk, Rachel

Authors: Dziuk, Rachel; Kaur, Gurvinder; Wright, Kandis; Mital, Payal; Dufour, Jannette

Clinical potential of xenotransplantation is restricted by potent immune response generated against the transplanted tissue. Immune privileged Sertoli cells (SC) survive xenotransplantation long term (at least 90days) without immunosuppression, and can be used to identify xenotransplant survival mechanisms. Eleven million neonatal pig SC (NPSC) or non-immune privileged pig islets (NPI) were transplanted into rats. Grafts were collected at days 1-20 post-transplantation. Cell survival analysis revealed complete NPI rejection within 9 days and



NPSC survival throughout the study. Production of antibodies along with complement cascade activation contribute to xenograft rejection. We hypothesized NPSC survive by inhibiting antibody deposition and complement cascade activation. For testing, collected NPSC or NPI grafts and serum from transplanted animals were analyzed for antibody production and deposition, and complement factor (C3 and MAC) deposition. IgM production against NPSC or NPI grafts did not significantly increase compared to pre-transplant values. IgM deposition was detected at day 6 onwards in NPSC and NPI grafts. IgG production significantly increased at days 13 and 20 in NPSC grafts, and day 20 in NPI grafts. IgG deposition was detected at day 9 and 13 onwards in NPSC and NPI grafts, respectively. C3 deposition was detected in NPI grafts at days 1 and 3, and day 1 in NPSC grafts. MAC deposition was only observed at days 1-4 in NPI grafts. Collectively, these data suggest that activation of the alternative pathway of complement cascade aid in rejecting NPI grafts. NPSC actively inhibit both alternative and classical pathways of complement mediated cell lysis.

22. MECHANISM OF ACTION OF SALT ADAPTATION MUTATIONS IN ARTEMIA FRANCISCANA

Presenter(s): Eastman, Jessica

Authors: Eastman, Jessica; Chebrolu, Sukanya Lakshmi; Artigas, Pablo

Nearly all animals maintain a large electrochemical gradient for Na across the plasma membrane. This gradient is generated by the Na-K pump, which exports 3 Na 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*) that live in extreme saline conditions express a pump with two asparagine to lysine substitutions within the ion binding site region. We used two-electrode voltage clamp on Na-loaded Xenopus oocytes to evaluate the effect of the equivalent substitutions (N333K and N785K) individually and concurrently on the function of Xenopus Na/K pumps by studying the activation of pump currents by external K and voltage-dependent conformational changes related to external Na binding. The center of the Q-V curves are displaced by ~80 mV by both individual mutations suggesting a reduced (>10 fold) external Na affinity. Surprisingly the double mutant showed a similar shift in the Q-V, indicating non-additive effects on external Na affinity. The apparent affinity for K in the absence of Na was reduced (~10-fold) by the N785K mutation while N333K and the double mutant had similar affinity to the wild type. These results can be explained with recent structures of the Na/K pump with Na or K bound. N333, outside the ion-binding pocket, forms a hydrogen bond with the ion-coordinating N785 in the Na bound conformation. Therefore once the disruption of normal Na coordination by N785K is in place the mutation N333K does not affect Na binding. Supported by NSF-MCB-1243842 & NIH-NS081570-01.

23. SEX RATIO AND SEXUAL DIMORPHISM IN POPULUS DELTOIDES

Presenter(s): Emmanuel, Chelsea

Authors: Emmanuel, Chelsea ; Lakey, David; Olsen, Matt

Variation in population sex ratios and their underlying causes is not thoroughly understood in dioecious plants (those with separate male and female individuals). Whether or not different selective pressures on male and female individuals have produced sexual dimorphism in some of these species also remains elusive. I aim to determine the sex ratio of a population of *Populus deltoides* (cottonwoods) along the Canadian River system and evaluate the possibility of morphological dimorphism between the sexes. I will utilize newly discovered sex linked genetic markers for the *Populus* genus to identify the sexes of individuals in natural populations. Leaf/flower buds will be collected from 50 individuals from a single population. Genomic DNA will be extracted and subsequently digested with restriction enzymes to cut the male and female alleles into different sized fragments. The DNA fragments will then be separated via gel electrophoresis and their banding patterns will be assessed to identify sex. A comprehensive morphological assessment will be made of each screened individual in the field. Measurements such as the number of forks in the trunk, the diameter at breast height (DBH), and total tree height will be used to assess morphological variation between sexes. Results are anticipated to provide valuable insight into the effectiveness of these newly discovered markers at identifying the sex of *P. deltoides* in wild populations, estimate sex ratio, and determine if male and female individuals harbor distinct morphological characters.

24. DISTRIBUTION OF BETA-ADRENERGIC RECEPTORS ACROSS FIBER TYPES OF LONGISSIMUS DORSI, PSOAS MAJOR, AND SEMITENDINOSUS IN FEEDLOT STEERS AND HEIFERS

Presenter(s): Endsley, Annmarie

Authors: Endsley, Annmarie

Beta-adrenergic (β_2 -AR) receptors span the cell membrane and bind endogenous catecholamines and synthetic β_2 -adrenergic agonists (β_2 -AA). Synthetic β_2 -AA, such as ractopamine HCl and zilpaterol HCl, have been shown to increase muscle mass in beef cattle. There is little data describing the relationship between muscle fiber type (FT) and β_2 -AR type. Subsequently, the objective of this study was to determine the distribution of β_2 -AR types across bovine skeletal muscle FT. Samples from three muscles (longissimus dorsi, psoas major, and semitendinosus) were collected from feedlot cattle (n=5, steers=3, heifers=2) at time of harvest for histology analysis. Muscle samples were serially cryosectioned (10 μ m-thick) and stained by immunofluorescence. Skeletal muscle FT and β_2 -AR densities were measured. In the longissimus dorsi, there was a FT by sex interaction ($P < 0.05$) for the density of β_{22} -AR, with type IIA fibers in heifers having the greatest and type IIX fibers in steers having the lowest density. In the semitendinosus, there was an interaction of FT and sex ($P < 0.05$) for β_{21} -AR and β_{22} -AR. Type IIX fibers in heifers exhibited the greatest density of both β_2 -AR. A FT by muscle interaction ($P < 0.05$) was present for all three β_2 -AR; the densities of all three β_2 -AR were lowest in type I fibers in the semitendinosus compared with the other FT in the muscles evaluated. These data indicated that β_2 -AR densities differ according to FT, muscle, and sex in feedlot cattle. These changes in densities across different FT can impact postnatal skeletal muscle hypertrophy in cattle.



25. USE OF TURING'S REACTION-DIFFUSION MODEL TO SIMULATE FISH PIGMENTATION PATTERNS

Presenter(s): Fokar, Aicha*Authors: Fokar, Aicha; Strauss, Rich*

A great number of animals maintain stripes and spots or various other forms of pigmentation patterns on their skin. These pigmentation patterns are quite significant as they are key in many behaviors including schooling, mate choice and camouflage. While the importance of these patterns is well known, the formation of pigmentation patterns in embryos is still a mystery. This study will be assessing the complex pigmentation patterns of *Corydoras*, a genus of South American catfishes that is a useful model for phenotypic variation. In quantifying these patterns, the Turing Reaction-Diffusion Model will be utilized. This model is most efficiently used to account for self-regulated pattern formation in the developing embryo and can generate a wide variety of spatial patterns. Acquiring this wide array of spatial patterns may provide potential of application as a means of understanding the fundamental conditions of pattern formation. This project aims to utilize the Turing Reaction-Diffusion model to develop a working hypothesis to stimulate various pigmentation patterns among *Corydoras* species in order to account for interspecific variation in terms of a small number of model parameters.

26. NOVEL INHIBITOR DISCOVERY OF ENTAMOEBA HISTOLYTICA PROTEIN TYROSINE PHOSPHATASE (EHPTP) USING VIRTUAL SCREENING

Presenter(s): Fonseca, Andrea*Authors: Fonseca, Andrea*

Amoebiasis is a devastating disease caused by the organism *Entamoeba histolytica*, which induces serious gastrointestinal health issues. The mechanism of protein tyrosine phosphatase in *E. histolytica* (EhPTP) plays a critical role in allowing the parasite to invade the host by rendering the defense system of host cells defenseless through protein dephosphorylation. In this experiment, the *E. coli* codon-optimized coding DNA sequence was ordered in oligo segments, which were assembled using overlap PCR. The full-length sequence was cloned into the pNIC-Bsa4 expression vector and transformed into *E. coli* BL21(DE3) cells. Over-expression of the pNIC-Bsa4 expression vector was induced by isopropyl- β -D-thiogalactopyranoside (IPTG), and the harvested cells were purified using Ni-NTA affinity chromatography and Fast Protein Liquid Chromatography (FPLC). Structure-based virtual screening of EhPTP (PDB: 3JS5) was completed using GOLD docking software, which resulted in the identification of three potential novel inhibitors. EhPTP was confirmed as being active via *in vitro* phosphatase assay. Activity assays were completed in 50 mM tris-acetate buffer at pH 5.5 and 10 mM MgCl₂ with 1 mM pNPP substrate and varying concentrations of enzyme. Enzyme assays are currently being optimized in order to find the most favorable concentration of enzyme to be used to complete the pNPP dephosphorylation reaction. When the optimal concentration of enzyme is experimentally obtained, inhibition assays will be completed using the top three screened compounds in order to find an inhibitor.

27. MICROBIAL PREVALENCE FOUND IN SHEEP FECAL SAMPLES FROM THE LUBBOCK, TEXAS AREA

Presenter(s): Fuentes, Jose*Authors: Fuentes, Jose; Hanlon, Keelyn; Brasbears, Mindy; Miller, Markus*

Information is known about pathogens present in cattle, such as pathogenic *Salmonella*, *Escherichia coli*, and *Campylobacter*. But less is known about the prevalence of these organisms in small-ruminants such as sheep. The purpose of this research will be to determine a pathogenic microbial prevalence in sheep fecal samples collected from farms in Lubbock, TX, over several days in late winter. The fecal samples will be collected from pens or fields and put into individual containers. After collection, samples will be kept cold and transported immediately to a laboratory for processing. Samples will be processed using selective and differential media to identify and culture pathogenic microorganisms. / Based on the limited available research we expect to identify and isolate some pathogenic microorganism from the sheep fecal samples. Additional research about the microbes prevalent in sheep that can cause foodborne illness would be beneficial. This study could result in valuable information regarding pathogens in sheep, and how to avoid foodborne illness by implementing food safety strategies in sheep harvest and processing.

28. DIGESTIBILITY OF BMR FORAGE SORGHUM SILAGE COMPARED TO CORN SILAGE IN BEEF FEEDLOT STEER DIETS

Presenter(s): Gomez, Jose Benjamin*Authors: Gomez, Jose Benjamin; Opheim, Tasha; Campanilli, Pedro; Sarturi, Jhones; Trojan, Sara*

Texas is a semiarid region, water use for irrigation depends significantly on the Ogallala aquifer. There is concern on the rapidly decreasing level of underground water due increased water usage for crop irrigation. Many farmers have reduced irrigation inputs systems because of their lack of water. Silage is produced as a roughage source for dairy and feedlots operations in the Texas Panhandle, with historically a greater abundance of corn grown for silage compared to other sources. Corn is a grain with high water requirements. That's why there had been investigations to give a solution for growing alternative feeds in this region. Sorghum provides an alternative for sustainable grain and forage production in the region due to reduced water requirements. To evaluate the incorporation of sorghum in to beef production systems, 64 steer grazed forage sorghum 60 days before entering the feedlots and 64 steers were placed directly on a high-concentrate finishing ration. Finishing diets contain 20 % (DM basis) of either an improved BMR forage sorghum silage or corn. This study will evaluate the digestibility of each of the diets by collecting samples of each diet and daily feed refusals and compositing by period. Each diet sample and feed refusal will be analyzed for different parameters as dry matter, starch, organic matter, neutral detergent fiber, acid detergent acid and ash. This study will help characterize the nutrients properties of an improved forage sorghum hybrid to corn silage, providing valuable information to producers seeking to incorporate sorghum into livestock production.



29. THE EFFECTS OF LAND USE ON SEDIMENTATION OF PLAYAS IN NORTHWEST TEXAS

Presenter(s): Gossett, Keegan*Authors: Gossett, Keegan*

Playas are temporary, runoff-fed wetlands of the Great Plains that are regionally important in supporting biodiversity. Sedimentation (primarily from human activities such as tillage) is a major threat to playas and their wildlife because infill decreases the volume of water and causes the period of wetness to decrease. We analyzed sedimentation in 8372 playa basins in northwest Texas (a region with very high playa density that had been experiencing severe drought). We used satellite imagery to examine a dry date (before extensive rains came in which 28% of the annual average fell in only 13 days) and a wet date and determined how many playas contained water on each date. Only 82 playa basins contained water on 3 May 2014 (dry date), 91% of which were associated with human modifications (e.g. pits, ditches) or urbanization in 10 cities in the focal region. On 4 June 2014 (wet date), 2730 playas were wet. We developed an automated classification scheme to distinguish clear from turbid playas in the satellite imagery. We then used data from the National Agricultural Statistics Service to examine land use within a 200-meter buffer surrounding each playa. There was an association between sedimentation and surrounding land use, with urban playas being less turbid than those surrounded by other forms of land use such as cropland or pasture. Even with extensive rains, 67% of playa basins did not hold water at all, suggesting that sedimentation has already compromised the ability of some playas to function as wetlands.

30. THE EFFECT OF ISOMETRIC HAND-GRIP EXERCISE ON ELECTRICAL PAIN RESPONSES

IN HEALTHY AFRICAN AMERICAN AND NON-HISPANIC WHITE ADULTS

Presenter(s): Greenlee, Brennan*Authors: Greenlee, Brennan; Kempka, Laura; Weatherby, Amy; Umeda, Masataka*

It has been shown that African Americans (AAs) typically exhibit higher muscle pain ratings (MPRs) during exercise than non-Hispanic Whites (NHWs). It is uncertain if the racial/ethnic differences in MPRs will occur in conjunction with the functional differences in exercise-induced hypoalgesia, a behavioral testing to examine pain modulatory processing within the central nervous system. To test this hypothesis, we examined the effect of isometric exercise on pain ratings to electrical pain stimulus in sixteen young, healthy AAs and sixteen NHWs. The participants squeezed a hand dynamometer with their dominant hand at 25% of maximal strength for three minutes, and then stayed seated for three minutes after exercise. The MPRs were assessed every minute during exercise. Phasic electrical stimuli were applied to the ankle, and numeric ratings were obtained using a 0-100 scale before exercise to determine pain thresholds. The stimuli at the intensity of pain thresholds were applied and the ratings were obtained at one minute intervals during the six minutes, to observe the effects of exercise on pain threshold ratings. The MPR for both groups increased throughout exercise, and MPRs were generally higher for AAs than NHWs ($p < 0.05$). Predominantly, the participants reported lower ratings during and after exercise than their baseline. However, the ratings for AAs were consistently greater than NHWs ($p < 0.05$). These observations from our study suggest that the augmented pain during muscular contraction among AAs may be due to their less efficient central pain modulation compared to NHWs.

31. EMPLOYING MODELING TECHNIQUES TO PREDICT THE SOLUBILITY OF HESPERETIN IN BINARY SOLVENT SYSTEMS

Presenter(s): Hansen, Matthew*Authors: Hansen, Matt; Islam, Rashedul; Chen, Chau-Chyun*

Processes involving solubility, such as crystallization, are utilized all throughout industry. The efficiency of these processes significantly increases when optimal solute-solvent mixtures are used. The composition of these mixtures can be determined both quickly and inexpensively with the use of predictive solubility models. The Non-Random Two Liquid Segment Activity Coefficient (NRTL-SAC) thermodynamic solubility model, first proposed by Chen and Song, predicts solubility behavior more accurately than competing models, such as COSMO-SAC and UNIFAC. Recently, however, Ferreria et al. suggested that NRTL-SAC is incapable of qualitatively predicting the solubility of hesperetin, a drug molecule, in some binary solvent systems. In this work, we use NRTL-SAC, along with single-solvent and binary solvent solubility data, to accurately predict the solubility trends of hesperetin in the aforementioned binary solvent systems. Additionally, we compare the predictions obtained by using COSMO-SAC with those obtained by using NRTL-SAC. Finally, we demonstrate a representation of the system involving the use of COSMO-SAC in conjunction with NRTL-SAC.

32. TRACKING THE EFFECT OF THE EBOLA VIRUS

Presenter(s): Harkins, Christian*Authors: Harkins, Christian; Williams, Brock*

Since February of 2014 the world has been watching the outbreak of the Ebola virus. Common fear of the virus ran through even countries like the United States and other first world nations. As the medical community has learned from the virus outbreaks, research has presented that the Ebola virus can be controlled in small pockets. However when the Ebola Virus is not appropriately contained, an epidemic can and has occurred. Entire communities, cities, countries, and even regions have been effected by either the sickness or loss of individuals as well as by the medical, mental, and physical needs of Ebola victims. The objective of this research is to determine the economic impact of the Ebola virus on the world as a whole and also the impact on particular regions such as West Africa. By modeling the growth of the Ebola Virus with the Lazarus Super Computer, models will be developed to estimate the number of people that potentially could be infected, and the economic effects that may be realized if an effective vaccine is not developed, or if proper precautions aren't taken with infected individuals.



33. MODEL OF DIAGNOSTIC DIAPER WITH ACID-BASE INDICATOR

Presenter(s): Harris, Jennifer*Authors: Harris, Jennifer*

Diapers are used all around the world to care for children and the elderly. The purpose of this research is to propose a model of a diagnostic diaper that can easily identify the presence of diseases using urine or fecal matter. The diaper should have a visual indicator, such as a color change, that represents the presence of the disease. In order to do this, our research will be building upon the "Personal care compositions with color changing indicators" developed by Sabnis et al. (2006); their material identifies when the diaper is wet by a change in pH of the environment, thus triggering a color change in the material. However, instead of looking for when urine is present the acid-base indicator will be developed at a specific pH level that corresponds with common diseases. We will be identifying and evaluating the acid-base indicator on non-pathogenic diseases, but the ultimate goal is for the indicator to work with more serious diseases such as E. Coli. We predict that acid-base indicators will work, and that by identifying these pH levels we can more easily detect the disease.

34. HILIC AND ERLIC ENRICHMENT OF GLYCOPEPTIDES DERIVED FROM COMPLEX BIOLOGICAL SAMPLES

Presenter(s): Hartmann, Alyssa*Authors: Hartmann, Alyssa; Song, Ebwang; Zacharias, Lauren; Zhu, Rui; Mechref, Yehia*

Breast cancer metastasizes to the brain in approximately 30% of patients. The one-year survival rate of breast cancer patients with brain metastasis is as low as 20%. In metastasis of the brain, the blood-brain barrier fails to prevent the blockage of breast cancer cells. A recent glycomic study from our group showed that distinct abundances of glycans were monitored in different breast cancers. This indicates the correlation between glycomic profiles and different cancer metastatic properties. Here, we applied glycoproteomic approaches to investigate the microheterogeneity of glycosylation using hydrophilic interaction liquid chromatography (HILIC) and electrostatic repulsion liquid chromatography (ERLIC) enrichment techniques. One of the major challenges in glycoproteomics originates from the low abundance of glycoproteins. Thus, in complex biological samples, efficient enrichment improves the characterization and quantitation of glycopeptides and glycoproteins. Six breast cancer cell lines were used, namely MDA-MB-231BR, MDA-MB-231, MDA-MB-361, CRL-1620, HTB-131, and HTB-126. Preliminary data showed different abundances of glycopeptides among the six cell lines. Peak areas were measured and a t-test was performed to determine the number of statistically different glycopeptides from sample HTB-131 in comparison to the other five cell lines. There were 241 glycopeptides determined to be significantly different after HILIC enrichment. After HILIC-ERLIC enrichment, 107 glycopeptides were determined to be statistically different in cell line HTB-131. Further analysis of this data will be conducted to identify and quantify the glycopeptide trend within the remaining five cell lines and to develop a comparison among the six cell lines.

35. CHANGES IN VASTUS LATERALIS MUSCLE THICKNESS DURING FOUR WEEKS

OF BARBELL TRAINING IN COLLEGE-AGED WOMEN

Presenter(s): Hernandez, Jennah*Authors: Hernandez, Jennah*

A limited number of research studies have examined muscular adaptations following resistance training programs in women. The purpose of this study was to examine changes in vastus lateralis muscle thickness following a four week training program. Thirty-four previously untrained women (mean \pm SD age = 21 ± 3 years; body mass = 61.9 ± 10.4 kg) were randomly assigned to high volume ($n = 11$), low volume ($n = 10$), and control ($n = 13$) groups. The high and low volume training groups performed four and two sets of both back squats and deadlifts, respectively, twice per week for four weeks. Progressive overload was used to increase the external resistance during each training session. A portable B-mode ultrasound device was used on a weekly basis to record images of the right vastus lateralis. ImageJ software was used to measure muscle thickness, which was based on the distance between the deep and superficial aponeuroses. A mixed-factorial analysis of variance (group \times time) was used to examine the data. The results indicated that there was no group \times time interaction, and no main effect for group, but there was a main effect for time. The marginal mean comparisons indicated that muscle thickness at weeks one (2.15 cm) and three (2.17 cm) was significantly greater than that from the pre-test (2.07 cm). Collectively, our findings demonstrated evidence for muscular adaptations within four weeks of engagement in a resistance training program. Additional studies with larger sample sizes are needed to confirm these findings.

36. SUPPORTED CU-PD CATALYSTS FOR THE SELECTIVE HYDROGENATION OF ACETYLENE

Presenter(s): Huitema, Ricky*Authors: Huitema, Ricky; Cao, Xinxiang; Mirjalili, Arash; Jang, Ben*

The selective hydrogenation of acetylene to ethylene is one of the most important reactions in the plastic industry today. In fact, the selective hydrogenation of acetylene is the most common selective hydrogenation reaction. Acetylene is an undesired by-product of the high temperature cracking of naphtha or other short chained hydrocarbons. The acetylene will poison the catalysts used downstream in the free radical reaction series used to form polyethylene. Acetylene must be hydrogenated to ethylene to an industry standard of 5 ppm. Catalysts are commonly utilized to hydrogenate acetylene to ethylene. A majority of these catalysts incorporate Pd commonly combined with Au, Ag or Ga. Cu-Pd catalysts have never before been attempted with this reaction. Previous work done with other selective hydrogenation reactions show that Cu-Pd catalysts show much promise. The Cu-Pd catalysts were synthesized with varied loadings of Cu and Pd. Along with the different loadings, different treatment methods were also used. The treatments included calcination, vacuum drying, and non-thermal plasma treatments. All of the catalysts were supported on alumina. Cu loadings ranged from 1.25 wt% to 15 wt%. The Pd loadings were 250 ppm, 500 ppm and 0.19 wt%. The catalysts were characterized by TGA, dTGA, TPR and AA. A new high-performance catalyst was created by using Cu and Pd supported on alumina. The catalyst showed high conversion and selectivity at a high temperature. Cu noticeably increases the selectivity of the catalyst. Further work must be done to optimize the Pd loading for the catalyst.



37. EXPERIMENT TO SEE IF CRUDE OIL CAN BE EFFECTIVELY REPLACED BY BIO-FUEL OR A MIXTURE OF FUEL AND BIO-FUEL AND CALCULATING THE AMOUNT OF CO GIVEN OFF DURING THE PROCESS OF COMBUSTION

Presenter(s): Ikeogu, Anthony-Moses

Authors: Randazzo, Mario; Sodre, Jose

The effects of diesel oil soybean biodiesel blends on a passenger vehicle exhaust pollutant emissions were investigated. Blends of diesel oil and soybean biodiesel with concentrations of 3% (B3), 5% (B5), 10% (B10) and 20% (B20) were used as fuels. Additionally, the effects of anhydrous ethanol as an additive to B20 fuel blend with concentrations of 2% (B20E2) and 5% (B20E5) were also studied. The emissions tests were carried out following the New European Driving Cycle (NEDC). The results showed that increasing biodiesel concentration in the fuel blend increases carbon dioxide (CO₂) and oxides of nitrogen (NO_x) emissions, while carbon monoxide (CO), hydrocarbons (HC) and particulate matter (PM) emissions are reduced. The addition of anhydrous ethanol to B20 fuel blend proved it can be a strategy to control exhaust NO_x and global warming effects through the reduction of CO₂ concentration. However, it may require fuel injection modifications, as it increases CO, HC and PM emissions. The objectives of this experiment is to see if crude oil can be effectively replaced by bio-fuel or a mixture fuel and bio-fuel. If yes what will be the cost of production. To test this we will theoretically calculate the CO (carbon monoxide) output of the various samples and then experimentally measure it. Previous research has shown that crude oil give out CO we predict that bio-fuel will give low to no CO during combustion.

38. SURVEY OF LATIN AMERICAN RUMINANT FEEDSTUFFS

Presenter(s): Iscoa, David Fernando

Authors: Iscoa, David Fernando; Opheim, Tasha; Campanilli, Pedro; Sanchez, Marcos; Trojan, Sara

Knowledge of available feed resources and nutrient composition is very important to properly and cost-effectively formulate diets. Ruminant animals are capable of using a wide-variety of feedstuffs; availability of feedstuffs varies tremendously within regions. Additionally, many different feed byproducts may be available across regions. Currently there is no widely-available, well-documented library of available feeds in Latin American and surrounding countries. As groups work toward enhancing food security in developing countries, knowledge of available feed resources is key. A survey will be developed and administered to eight Latin America countries, including countries of Central America, Dominican Republic, Panama and Belize. The survey will be directed through Texas Tech University, with help from IICA partners. This work will serve to learn different prices, trend, costs and nutritional composition of feedstuffs to know availability and price fluctuations within regions and growing seasons. To do this survey we will need the help and the influence of IICA on social networks within respective countries. The survey will be administered electronically. The hardest part of this project is to encourage people to complete make the survey. Overall this survey will serve as a valuable resource for livestock producers in helping to enhance productivity and assist with food security in developing countries.

39. THE FEASIBILITY OF CREATING SUPER SALT-TOLERANT ARABIDOPSIS THALIANA BY DUAL-GENE OVEREXPRESSION

Presenter(s): Jarrett, Philip

Authors: Pehlivan, Necla; Jarrett, Philip; Sun, Li; Zhang, Hong

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 needs. Genes that improve plant performance under various stress conditions have been identified and these genes could be used to engineer GOC. For example, AtNHX1, a gene encoding a vacuolar membrane Na⁺/H⁺ antiporter in *Arabidopsis thaliana* (AT) that plays a role in sequestering Na⁺ into plant vacuoles, has been shown to confer increased salt resistance when overexpressed in transgenic plants. Additionally, AtSOS1, a gene encoding a plasma membrane Na⁺/H⁺ antiporter in AT plants that plays a role in excretion of Na⁺ from plant cells, has conferred increased salt resistance when overexpressed in transgenic plants. In this study, wild-type AT is transformed with both AtNHX1 and AtSOS1 in an effort to demonstrate the proof-of-concept that it is possible to further salt tolerance by overexpressing two genes that share a similar role. As a consequence, this model of multi-gene overexpression for additive abiotic stress tolerance may help design future crops that can tolerate harsh environmental conditions, yet maintain high yields.

40. CONSUMERS ARE INFLUENCED BY NAME OF PRODUCT

Presenter(s): Jimenez Huaman, Vanessa

Authors: Jimenez, Vanessa; Ron, Olivia; O' Quinn, Travis; Brooks, J. Chance; Garcia, Lida

As more consumers are being swayed by popular media and pseudoscience the organic and natural markets have become more prevalent in recent times due to their perceived increased nutritional content and lack of harmful additives. Industry has strived to meet this growing consumer demand. The main objectives of this study are to measure palatability traits of beef samples from various production practices, determine if bias exists when consumers are informed of the product type prior to sampling, and to determine the effects of price and product labeling when presented to consumers. Strip loins were selected to represent USDA Select, Certified Angus Beef, Local Grass Fed, Grain-Fed Natural, and Organic. Samples were cooked to a medium degree of doneness on a belt grill and served to consumers as 1 cm³ cubes. Consumers will be served a sample of each production system in a blind random order and each sample will be rated on flavor, juiciness, tenderness, and overall liking. Consumers will then be read a short verbal description about each of the production systems to stimulate a bias and consumers will then rank the same traits for the later samples. Currently there are no studies that quantify the bias of production systems and the anticipated conclusions of this study aim to provide the industry with insight into consumer preferences.



41. DEVELOPMENT OF CARBOHYDRATE-BASED HETEROGENOUS SOLID ACID CATALYST FOR BIODIESEL PRODUCTION

Presenter(s): Jordan, Matthew*Authors: Jordan, Matthew; Chilukuri, Sowmya; Jang, Ben*

A production of biodiesel utilizes a catalyst to efficiently generate product from an esterification reaction of a fatty acid. To study this esterification reaction, the reaction of oleic acid and methanol is used as a model due to being the primary fatty acid in a number of oilseed crops. This study investigates a starch-based catalyst due to its economic and environmental advantages, including being recyclable, reusable and relatively low cost. The focus of this study is on the development of preparation procedures for high surface-area mesoporous cornstarch and the effects this material has on the model reaction. The preparation of mesoporous cornstarch is a four step process that is performed prior to sulfonating the material into a catalyst. Mesoporous materials have higher surface areas and pore volumes which allow for a higher acid density and easy access of reactants on the catalyst. Hypothetically, the higher acid density and minimum transport issues will lead to a more active catalyst and more efficient biodiesel production. BET analysis was used to verify that the cornstarch achieved mesoporous structure and an acid-base titration was performed to determine the acid density of the catalysts. The findings of this study determined that a faster rate of reaction was achieved for the mesoporous catalyst as compared to a traditionally prepared catalyst. These findings were reinforced by quantitative acid density results to verify the increase in observed rate of reaction.

42. EFFECT OF CHRONIC HIGH-FAT DIET CONSUMPTION ON POSTPRANDIAL PLASMA PEPTIDE YY LEVELS

Presenter(s): Kennerly, Nayane*Authors: Kennerly, Nayane; Kouth, Kourtney; Ortiz, Priscilla; Vaughn, Roger; Paton, Chad*

Background: Peptide YY (PYY) is a satiety hormone that is released from the small intestine following the consumption of dietary fats. We hypothesized that chronic consumption of dietary fat can cause a decrease in PYY release as the fat absorption rate increases. / **Methods:** Six mice were given standard rodent chow and six were given a high-fat diet for a total of twelve weeks. The mice were weighed and their food intake was measured each week. An oral gavage of a high-fat meal was given to the mice after 12 weeks. Tail vein blood was taken after the oral gavage every 30-min for 4-hours in order to test for PYY levels using an ELISA assay kit. After this, the mice were euthanized and dissected to collect tissues. / **Results:** Mice fed a high fat diet gained significantly more weight than standard chow-fed mice ($38.3+/-1.8$ vs. $29.8+/-1.6$; $p=0.0002$). Plasma and tissue samples are now being analyzed to measure PYY levels between groups. / **Conclusions:** If the high-fat fed mice have a decreased release of PYY in the plasma than the chow-fed mice, it would imply a decreased postprandial satiety level compared to the chow-fed mice. If PYY levels are decreased, than it will support the notion that high-fat consumption over a long period of time leads to enhancements in fat digestion and absorption which ultimately leads to increased food intake and obesity.

43. EFFECTS OF UNILATERAL OPHALECTOMY ON THE DISTRIBUTION OF UROCORTIN-1 EXPRESSING NEURONS IN THE EDINGER WESTPHAL NUCLEUS OF THE FROG, RANA PIPIENS

Presenter(s): Klein, Neil*Authors: Klein, Neil; Carr, James*

Urocortin-1 is one of a paralogous family of neuropeptides believed to be involved in the central nervous system regulation of the stress response. Strangely, the bulk of urocortin-1 in the brain is located in cells located in the area of the Edinger-Westphal nucleus, a preganglionic cell group that innervates the ciliary ganglion of the eye and regulates smooth muscle contraction of the iris, ultimately regulating pupil diameter. Whether or not urocortin neurons innervate the ciliary ganglion is unknown. In order to test the null hypothesis that urocortin-1 neurons do not innervate the ciliary ganglion we performed unilateral ophalectomy in adult frogs in order to examine differences in urocortin-1 cell number in the Edinger-Westphal nucleus ipsi- and contralateral to the surgery. If urocortin-1 neurons do not project to the ciliary ganglion, then removal of one eye, and its associated ciliary ganglion, would result in no changes in the number of labeled cells on the side contralateral to the surgery. Two weeks after surgery, frogs were anesthetized in MS222 and transcardially transfused with fixative. Brains were removed, processed for routine paraffin sectioning, and urocortin-immunoreactivity determined using immunohistochemistry. We are currently analyzing these slides and the results of this analysis will be presented.

44. EFFECT OF CHRONIC HIGH-FAT DIET CONSUMPTION ON POSTPRANDIAL TRIGLYCERIDE ABSORPTION RATE

Presenter(s): Kouth, Kourtney*Authors: Kouth, Kourtney; Ortiz, Priscilla; Kennerly, Nayane; Vaughn, Roger; Paton, Chad*

Chronic consumption of a high-fat diet is known to induce physiological adaptations altering the effectiveness of dietary fat absorption as triglycerides (TG), therefore also altering satiety levels after a meal. The faster nutrients disappear from the intestine, the less effective they are at inducing satiety. The objective of this study is to determine the effect of chronic consumption of a high-fat hyper-caloric (HFHC) diet on the rate of dietary TG uptake and clearance. Mice (age 8 weeks) were fed either chow or HFHC diet for 12 weeks (n=6/group). Changes in bodyweight and caloric intake were recorded weekly. After 12 weeks, mice received an oral gavage of a liquid meal rich in saturated fat with fasting and postprandial tail-vein plasma samples collected over a 2-hour period. Plasma TG will be measured using a colorimetric kit. Tissues were collected for the analysis of gene and protein expression relevant to triglyceride metabolism in gut, liver, muscle, and adipose tissue. As expected, mice fed a HFHC diet gained significantly more weight ($38.3+/-1.8$ vs. $29.8+/-1.6$; $p=0.0002$) than chow-fed mice. Plasma samples are being analyzed for TG content and tissue samples are being processed for mRNA analyses. If the HFHC-fed mice demonstrate more rapid postprandial blood TG appearance, it would suggest heightened rates of lipid absorption compared to chow-fed mice. If confirmed, this study will lend support to the idea that chronic high-fat consumption enhances the body's ability to process incoming fat, which may explain lower satiety levels and thus greater caloric consumption in obese individuals.



45. DEVELOPMENT OF PUSH-BROOM HYPERSPECTRAL IMAGING SYSTEM FOR GLOW DISCHARGE OPTICAL EMISSION SPECTROSCOPY CHEMICAL IMAGING

Presenter(s): Kroschk, Marcel*Authors: Kroschk, Marcel; Usala, John*

Since Grimm et al. first introduced their glow discharge lamp design for spectrochemical analysis, glow discharge optical emission spectroscopy (GDOES) has become an invaluable tool for the direct bulk analysis of elemental composition of solid samples. Over the years this technique has been successfully adapted to depth-profile analysis which can be performed with nm depth resolution and in a very fast manner. In addition, the use of rf power has enabled applications for a greater variety of samples, including those of biological interest. / Recently, it was shown that GDOES can also provide laterally resolved information at high-speed which opens up the possibility of high-throughput chemical imaging. Thus, it offers many advantages over typical chemical imaging techniques which are very slow, can be expensive, require extensive sample preparation and are often performed under high vacuum, which has inherent disadvantages. / An integral part of the GDOES chemical imaging technique is the imaging spectrometer used to collect the light emitted from the GD. Herein we present the development of a push-broom hyperspectral imaging system which allows us to obtain the spectral and one spatial dimension simultaneously, and the second spatial dimension sequentially. Automated acquisition software is being developed to scan the glow discharge image and then digitally stitch the hyperspectral data cube. We will discuss the importance of the types of optics used and why they were chosen, as well as the importance of designing sampling software to give the accurate spatial information.

46. NOVEL INHIBITORS OF LEISHMANIA MAJOR PROTEIN PTERIDINE REDUCTASE - VIRTUAL SCREENING AND BIOTECHNOLOGY APPROACHES

Presenter(s): Logbin, Andrei; Driscoll, Hailey*Authors: Logbin, Andrei; Driscoll, Hailey*

Parasitic protein pteridine reductase (PTR1) is an essential virulence determinant in Leishmania Major (L. Major) and represents a potential major drug target. The protein converts pterins to active tetrahydropterin, and promotes resistance to current treatments that inhibit dihydrofolate reductase. We report the results of screening and testing for small molecule PTR1 inhibitors, using both high throughput and wet laboratory approaches. Ligand groups were found using the molecular docking program GOLD. Final compounds were chosen based on screening rank and Lipinski's rules of human drug viability. PTR1 normally binds to NADPH and 6-biopterin, and the two active sites were targeted differentially. Pteridine reductase was synthesized in host E. Coli bacteria, and purified via fast protein liquid chromatography. Inhibitory compounds, substrates, and cofactors were ordered for spectrophotometric enzyme assays. Two compounds per active site that potentially inhibit the enzyme were identified. Our study illustrates that applied virtual screening, and in vitro synthesis are effective approaches for identifying selective inhibitors of PTR1.

47. CARDIAC ADAPTATION TO EXERCISE DURING PREGNANCY

Presenter(s): Looten, Kalli*Authors: Looten, Kalli; Lunsford, Taylor; Chung, Eunhee*

Although engaging in exercise during pregnancy is recommended, the role of exercise during pregnancy on cardiac adaptation remains poorly understood. Research has shown that there are two types of physiological cardiac hypertrophy: exercise- and pregnancy-induced. Signaling pathways mediating these two types have limited overlap, with pregnancy-induced being more complex. The objective of this study was to determine signaling pathways underlying cardiac hypertrophy in response to exercise during pregnancy. Methods: Ten week old C57BL/6 mice were divided into three groups: virgin female non-pregnant sedentary control group (C), pregnant only group (P), and an exercise during pregnancy group (Ex+P). The pregnant mice in the exercise group were subjected to voluntary wheel running from gestation day 1 to 17. Results: Exercise performance decreased significantly as pregnancy progressed. However, there were no significant differences between P and Ex+P. We found that both P and Ex+P groups had significantly increased heart mass, but exercise during pregnancy did not further increase pregnancy-induced cardiac hypertrophy. Signaling pathways responsible for cardiac hypertrophy were investigated using the Western Blot analyses. Pro-hypertrophic signaling pathways (Akt, p70, mTOR) were significantly increased in P. Akt and p70 were trended toward an increase in Ex+P, but were not significant compared to C. mTOR was significantly increased in Ex+P compared to C, but was not significantly different between P and Ex+P. Stress-induced kinase p38 was significantly decreased in P, but was even further decreased in Ex+P. Conclusion: Together, pro-hypertrophic signaling pathways are significantly up-regulated during gestation, but are more subtle in Ex+P than P.

48. THE USE OF PIGMENT EPITHELIUM-DERIVED FACTOR (PEDF) TO ALTER CELL CYCLE PROGRESSION IN PROSTATE CANCER CELLS

Presenter(s): Loy, Sydney*Authors: Loy, Sydney; Filleur, Stephanie; Jarvis, Courtney L.*

Prostate cancer is the second most common cancer among American males. If detected at an early stage, most prostate cancers, are manageable and have a plethora of different treatment alternatives. If left unchecked, prostate cancer advances (metastasizes) and becomes virtually incurable. Our lab focuses on the inhibition of angiogenesis (new blood vessel formation from pre-existing ones) by using the endogenous molecule Pigment Epithelium-Derived Factor (PDF). PEDF is present in healthy prostate gland tissue. In the cancerous gland, PEDF disappears leading subsequently to increased angiogenesis and uncontrolled proliferation of the tumor cells. Our lab has shown that reintroducing PEDF in prostate cancer cells inhibits tumor growth *in vivo*. We have also identified at least four molecular mechanisms involved in PEDF growth inhibition: i) stimulation of death of endothelial cells in the tumor compartment, leading to reduced tumoral angiogenesis and delayed tumor growth; (ii) decrease proliferation of prostate cancer cells; (iii) induction of tumor cells differentiation towards



a less malignant phenotype; and (iv) stimulation of an effective host inflammatory immune response. The objective of this project will be to identify cell cycle changes due to treatment with PEDF and correlate these results with previous data pertaining to inhibition of tumor cells in response to PEDF treatment. In this experiment, we will incubate the prostate cancer cells at 37°C with varying amounts of PEDF for 24hrs. We will then fluorescently label the cells with propidium iodide (binds to nucleic acid) and analyze cell cycle distribution using a BD Accuri C6 flow cytometer.

49. PEDF MODULATORY ACTION ON MACROPHAGES: A NEW WAY TO CURVE PROSTATE CANCER DEVELOPMENT

Presenter(s): Martinez-Marin, Dalia

Authors: 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. We have demonstrated that PEDF re-expression in PCa cells curbs tumor growth *in vivo* and prolongs the survival of tumor-bearing mice. Though PEDF's role in inflammation has been suggested, the precise modes of action remain unknown. We have shown that PEDF stimulates the migration of monocytes/macrophages towards tumor spheroids, PEDF directly induces the polarization of macrophages towards a tumor-cytotoxic pathway, and as a result, stimulating the phagocytosis of tumor cells, suggesting another mechanism by which PCa growth is halted. We are currently investigating the molecular mechanisms by which PEDF induces the migration, differentiation and phagocytic activity in macrophages. PEDF mechanisms are being investigated by the expression levels of PEDF receptors and have identified the two main receptors. To map the functional region involved in PEDF's inflammatory action, we have investigated the PEDF-derivative synthetic 18-mer peptide. We were able to demonstrate that macrophages treated with P18 show a higher efficacy than PEDF for macrophages differentiation. The results of our study are of importance as they suggest that macrophages may play a key role in PEDF anti-tumor effects. A better understanding of PEDF may lead to further development of PEDF-based anticancer therapy or alternatives to chemotherapy for PCa.

50. THE MALE AND FEMALE BLOOD LIPID RESPONSES TO A SEVEN DAY POLYUNSATURATED FAT DIET FOLLOWING A THREE DAY CONTROL DIET

Presenter(s): Miller, Mary

Authors: Miller, Mary; Stevenson, Jada; Paton, Chad; Cooper, Jamie

Objective: Determine the fasting blood lipid response to a 7-day polyunsaturated fatty acid (PUFA)-rich diet or control (CTRL) diet and compare total energy, macronutrient, and fatty acid compositions between the two diets. Methods: Twenty five, normal weight ($BMI=18.0\text{--}24.9 \text{ kg/m}^2$), sedentary (exercise<3hr/wk) males and females participated in this study. At the screening visit; height, weight, blood pressure, and a 5ml fasting blood sample were taken to ensure each participant had blood lipid levels within normal levels. At visit 1, height, weight, body composition and a 5ml fasting blood sample were collected. For the next 7-days, participants consumed a PUFA diet (35% fat, 13% protein, 54% carbohydrate) or CTRL diet (33% fat, 12% protein, 53% carbohydrate). Visit 2 involved the same measurements as visit 1. Results: From visit 1 to 2, the PUFA group significantly decreased serum total cholesterol ($148.3\pm6.3 \text{ mg/dL}$; $118.0\pm4.4 \text{ mg/dL}$), triglycerides ($68.9\pm4.7 \text{ mg/dL}$; $48.3\pm5.3 \text{ mg/dL}$), nonHDL ($100.1\pm5.1 \text{ mg/dL}$; $69.7\pm4.2 \text{ mg/dL}$), LDL ($84.9\pm5.4 \text{ mg/dL}$; $54.9\pm4.5 \text{ mg/dL}$), VLDL ($13.8\pm0.9 \text{ mg/dL}$; $9.6\pm1.1 \text{ mg/dL}$) and cholesterol to HDL ratio (3.2 ± 0.2 ; 2.6 ± 0.1); whereas, the CTRL had no significant changes. The PUFA diet provided significantly lower amounts of cholesterol ($148.3\pm6.3 \text{ mg/dL}$), SFA ($10.4\pm0.6 \text{ g}$) and transfat ($0.007\pm0.001 \text{ g}$) than the CTRL diet ($118.0\pm4.4 \text{ mg/dL}$, $36.2\pm8.8 \text{ g}$, $3.3\pm1.4 \text{ g}$, respectively). The PUFA diet also contained significantly higher amounts of dietary fiber ($35.9\pm2.0 \text{ g}$) than CTRL ($19.5\pm0.8 \text{ g}$). Conclusions: Consuming a PUFA-rich diet improved blood lipids more effectively in 7-days than CTRL, despite similar macronutrients between the diets. The PUFA-rich diet's higher fiber and lower dietary cholesterol may have contributed to the lipid level improvements.

51. MOLECULAR EVOLUTION IN HIGH ELEVATION SOUTH AMERICAN RODENTS

Presenter(s): Monroy, Armando

Authors: Monroy, Armando; Salazar-Bravo, Jorge

The availability of oxygen acts as a significant selection pressure for species living in high altitude environments. *Punomys korfordi* and *Andinomys edax* are two closely related species of South American rodents that inhabit high elevation habitats in the Andes Mountains. *Punomys korfordi* is found in Bolivia and Peru, inhabiting environments above 4500m in elevation. In contrast, *Andinomys edax* has populations in Bolivia and Argentina ranging from 4000m down to 650m in elevation. Our project aims to understand if the differences in elevation within *Andinomys* and between *Andinomys*, *Punomys*, and other high elevation species, such as those in the *Eligmodontia* genus, drive corresponding levels of natural selection at a molecular level. To address this question, we obtained the DNA sequence of the gene cytochrome b, which is involved in cellular respiration, from tissues of the representative species; in addition, we analyzed the patterns of substitution rates along these DNA sequences and the patterns of replacements at the amino acid level. Together, these two methods can provide evidence of selection acting according to the pressure of oxygen availability. Evidence of positive selection exists when comparing human populations living in climatically different environments, so we predict that the same positive selection will be present in these two rodents living in different environments.



52. CONSUMER ACCEPTABILITY OF HONDURAN AND U.S. BEEF FROM DIFFERENT PRODUCTION AND PROCESSING SYSTEMS

Presenter(s): Moreno, Claudio*Authors: Moreno, Claudio; Gomez, Ana; O'quinn, Travis; Brooks, Chance; Miller, Mark*

Meat quality is an important factor that influences consumers retail choices. Quality differs in every country due to the different cattle diets. The objective of this study was to compare U.S. beef strip loins (*longissimus dorsi*) to strip loins obtained from Honduran cattle. Top Choice (Upper 2/3 USDA Choice) and USDA Select quality grade strip loins were used in this study. Honduran treatments included meat from different cattle including grass fed, sugar cane finished and grain finished. Half of the Honduran treatments were enhanced and half were unenhanced. Meat was enhanced by injection and then stored under vacuum at 0 to 4°C for 21 days. U.S. strip loins and unenhanced meat were stored under the same conditions. Sensory, proximate and shear force analysis were performed to each of the treatments. A total of 240 consumers were fed to compare juiciness, flavor, tenderness and overall liking. By enhancing Honduran treatments we expect that sensory attributes will be similar to those of U.S. meat.

53. EFFECTS OF SOIL MOISTURE ON THE BURROWING BEHAVIOR OF A JERUSALEM CRICKET, *STENOPELMATUS MONAHANENSIS***Presenter(s): Morris, Molly***Authors: Morris, Molly; Longing, Scott; Discua, Samual; Moore-Kucera, Jennifer*

Stenopelmatus monahanensis is a psammophilic Jerusalem cricket with a distribution primarily including the Monahans sandhills in western Texas. While information on the seasonal distribution of this species has been gained from recent studies, little is known of its habitat requirements. From historical and recent observations, *S. monahanensis* has been associated with sands containing a moderate level of soil moisture, and non-dry sand has been required to facilitate burrowing in captive individuals. Threats from prolonged recent droughts and oil and gas intensification that might affect freshwater availability and groundwater tables in the region could potentially threaten *S. monahanensis* populations. We conducted an experiment to determine how different levels of soil moisture (0, 5-10, 15-20 and 25-30%) affect cricket burrowing behavior. One cricket individual was placed in the center of an array of four, 3.5 gallon aquariums and allowed to randomly crawl among the different moisture treatments. Time until burrowing, preferred soil moisture treatment, and depth of burrowing were measured after a period of 60 minutes for each individual. Analyses of data and results are forthcoming. Information from this experiment will support further investigations of the habitat requirements and threat assessments for *S. monahanensis* populations throughout the Monahans sandhills.

54. THE INFLUENCE OF ENVIRONMENTAL TEMPERATURES ON VARIOUS DEVICES USED TO THAW SEMEN

Presenter(s): Mujahid, Momina*Authors: Mujahid, Momina; Sultenfuss, Cody; Penrose, Lindsay*

Artificial insemination and sperm cryopreservation have become an important part of animal husbandry. The overall goal of the present research was to produce an improved technique for thawing cattle semen that is not only efficient but is also cost effective. As semen is sensitive to fluctuations in temperature and can be killed with the exposure to excess heat or cold, the goal of the present study was to compare various instruments used to thaw semen [including: various types of waterbaths, pocket thaws, coffee cups and a MSTD (modified semen thawing device)] and test their effectiveness under different environmental conditions. Results demonstrated the new MSTD to be as stable as the electric waterbath systems under all environmental conditions, and more stable than either pocket thawing or the simple non-electric waterbath (coffee cup) techniques; techniques currently used as alternatives to waterbath technologies. As many breeders lack facilities such as electronic waterbaths or even clean water to maintain a constant temperature for semen thawing, alternatives must be found which allow the efficiency of waterbath thawing without the required equipment. Data from the present study suggest the MSTD to be a reasonable alternative. Further study will be needed to assess the device using frozen semen samples and pregnancy outcomes.

55. UNDERSTANDING SPECIES LIMITS OF *PEROMYSCUS MEXICANUS* GROUP USING A GENETIC APPROACH**Presenter(s): Nunez, Maria***Authors: Nunez, Maria; Ordóñez-Garza, Nicte; Rowden, Gage; Bradley, Robert*

The genus *Peromyscus*, deer mice is one of the most widely distributed mammalian taxa in North America. Its range extends from the Atlantic to Pacific coast east to west and from Canada to Panama north to south. Due to their wide distribution this genus consists of more than 50 species and several subspecies. Currently *Peromyscus* is divided into 13 species groups. *Peromyscus nudipes* is one of the species of the *P. mexicanus* species group, and it is found in southern Costa Rica and northern Panama. *P. nudipes* systematic relationships to the other *P. mexicanus* species has not been studied therefore will be the objective of the study. For this study, 65 Cytochrome-b (cytb) sequences were used, 28 samples were obtained from GenBank and the other 37 from the Museum of Texas Tech University. Mitochondrial DNA was extracted with standard DNA methods. Standard Polymerase Chain Reaction (PCR) procedures were followed using primers LH14115 and H15288 for amplification. The laboratory work included PCR cleaning, and cycle sequencing using the same primers. Cycle sequencing reactions were purified and products were sequenced with an automated sequencer. Resulting sequences were aligned and proofed using sequencer 4.10.1 (Gene Codes Corp). A phylogenetic tree was generated and genetic distances among samples to assess levels of genetic divergence of the species in the *P. mexicanus* group were calculated with the Kimura 2-parameter model of evolution.



56. DETERMINATION OF POSSIBLE HUMAN TOXICITY OF THE CIS ISOMER OF VITAMIN K

Presenter(s): Oakes, Victoria*Authors: Oakes, Victoria*

Through previous experimentation, it was discovered that the cis isomer of Vitamin K is inactive and accumulates in the mitochondria of cells (Knauer et al. 1975). It has also been discovered that in some cases Vitamin K can cause mitochondrial toxicity (Sibayama-Imazu et al. 2007). Commercially available Vitamin K contains a 15% contamination of the cis isomer despite the mitochondrial toxicity. This research project will look at the potential difference of toxicity between the cis and the trans isomers of Vitamin K. Experiments will be carried out with pure isolates of the Vitamin K cis isomer and trans isomer. Different concentrations of these isomers will be added to cells growing in culture and we will monitor mitochondrial function over different time periods. We will measure the Oxygen Consumption Rate (OCR) through Oxidative Phosphorylation and measure the glycolysis by extracellular acidification rate (ECAR). The OCR and ECAR will be measured in real-time by measuring the changes in concentrations of dissolved oxygen and free protons by solid state sensor probes above the cell monolayer. The results of this experiment should give us an indication of whether or not attempts should be made to remove the cis isomer from the Vitamin K supplements that are sold to the public.

57. EFFECT OF CHRONIC HIGH FAT DIET CONSUMPTION ON ADAPTIVE REMODELING OF THE SMALL INTESTINE

Presenter(s): Ortiz, Priscilla*Authors: Ortiz, Priscilla; Kouth, Kourtney; Kennerly, Nayane; Vaughan, Roger; Paton, Chad*

The mammalian small intestine functions to absorb nutrients from the diet; therefore, the amount of surface area of intestinal lining present is paramount for nutrient absorption. Due to this, dietary patterns may modify intestinal characteristics, such as intestinal length, in order to maximize nutrient uptake. The objective of this work is to see if, when on a high fat diet, the mammalian small intestine will undergo an increase in surface area by lengthening over time in order to increase fat absorption rate and maximize nutrient uptake. In order to test this hypothesis, male C57BL/6 mice will receive either a standard chow or high-fat/hyper caloric diet for a period of twelve weeks starting at eight weeks of age (n=6 mice/group). Following the feeding trial, the small intestine of both groups will be collected and measured in order to observe a variation between the two feeding groups. Changes in expression of genes involved in tissue remodeling, nutrient absorption, and satiety will be analyzed from mRNA collected from different regions of the small intestine. A t-test will be utilized to determine significance between groups with a priori alpha<0.05. After this twelve week feeding period, mice undergoing a high fat diet weighed more than chow mice ($38.3g \pm 1.8g$ vs. $29.8g \pm 1.6g$; $p=0.0002$). This may support that the alteration of small intestinal length in mice on a high fat diet would cause fats to be absorbed by the intestinal lining at an increasing rate over time, which introduces higher food intake, slower satiety, and overall weight gain.

58. AN IMPROVED HIGH-THROUGHPUT METHOD FOR P-NITROPHENOL BASED ENZYME ASSAYS TO AID SOIL ECOLOGY STUDIES

Presenter(s): Penso, Jorge*Authors: Penso, Jorge; Moore-Kucera, Jennifer; Acosta-Martinez, Veronica*

The activities of soil enzymes, influence critical ecological processes including decomposition, and transformation of organic matter, biogeochemical cycling. The p-nitrophenol (pNP)-based methods are widely used in agronomic and ecological studies but an adequate high-throughput, microplate method has yet to be adopted. The overall goal of this study is to further refine current pNP microplate methods to reduce the high variability and low sensitivity previously reported. Specific objectives were: 1) determine the correct ratio of soil:water to ensure similar quantities of soil are compared regardless of texture; 2) reduce variability between replicates by removing soil particles from wells using filters embedded within microplate wells; 3) identify the influence of homogenization timing on enzyme activity; and 4) compare results to the traditional bench scale method. b-glucosidase activity was determined in sandy loam and clay loam soils with four homogenization times with filtered microplates. Soil textural class significantly affected the actual quantity of soil pipetted into microplate wells, which supports the necessity to quantify soil used and adjust soil:water ratios. Results from the microplate method were significantly correlated with those of the bench scale results with an average r^2 of 0.98 and an average slope of 1.37. The filtered plates removed the variability otherwise imparted by soil particles in the non-filtered technique with an average coefficient of variation of 7.3%. Slope increased with increasing homogenization with no significant difference between the 2 and 3 minute tests and the 4 and 5 minute tests. Results from additional tests will be discussed.

59. TYPE II DIABETES AND ITS AFFECT ON SKELETAL MUSCLE FIBER TYPES

Presenter(s): Perez, Casey*Authors: Perez, Casey*

Type 2 Diabetes is the inability to produce enough insulin and causes elevated levels of glucose. When diagnosed, the pancreas produces a lot of insulin, but overtime it is not able to produce enough. This is called insulin resistance. In 2014, 29.1 million Americans had diabetes according to the National Diabetes Statistics Report. They also reported that 86 million Americans were diagnosed with pre-diabetes, which can lead to Type 2 diabetes. In 2012, we spent an estimate total of about \$245 billion to treat this disease. This is a problem because it places a heavy economic burden that continues to increase as the number of people with diabetes grows. In order to help this burden, we need to acquire more knowledge as to how diabetes affects our body. Our purpose is to see how type 2 Diabetes affects skeletal muscle. We hypothesized that type 2 diabetes can decrease muscle mass and switch muscle fiber types. In order to test this hypothesis, we used rats and placed them on a high fat diet. We then injected 3 rats with 15 STZ, 3 rats with 25 STZ and 3 rats with 35 STZ. Our results showed that the tibial anterior muscle mass did decrease with the rats that were injected with 25 and 35 STZ ($p=0.052$). Future studies will include testing the isoform of muscle heavy chain. This will be done with gel electrophoresis and we expect for the myosin heavy chains to shift from fast twitch to slow twitch fibers.



60. DEVELOPMENT OF A MURINE MODEL TO STUDY THE ROLE OF ILOPROST IN ENHANCED EMBRYO DEVELOPMENT

Presenter(s): Phillips, Megan*Authors: Phillips, Megan; Estes, Jennifer; Ahmad, Khalid; Huang, Jaou-Chen; Prien, Samuel*

Survivin, an anti-apoptotic protein, has already been shown to be produced by embryos and play a vital role in their successful development. As such, it can be utilized as a target for antagonistic drugs. The current study was done in an attempt to elucidate the median lethal dose of the Survivin inhibitor YM155 for embryonic cells as a disruptor of the Survivin pathway. Superovulated mouse embryos were collected at the two-cell stage and cultured in Global media with 10 percent Serum Substitute Supplement at 37 degrees Celsius, 6 percent CO₂, and 95 percent relative humidity. Embryos were exposed to various concentrations of YM155 (0.1-10ug) for 15 hours starting at 33 hours post harvest. Embryos were then monitored for development up to 120 hours post harvest. All doses attempted to date have caused embryo death. As these studies are ongoing and no previous study has been done with this compound and cell type, expected end points remain unclear. However, after determining the median lethal dose of YM155 on embryos, the overall goal of the research project is to use the median lethal dose of YM155 as a standard means of disruption of embryo function and triggering apoptosis, and then attempt to reverse the apoptotic process using iloprost, a prostacyclin analog that has been shown to improve embryo development.

61. INTERACTIONS OF STRESS AND 3-IODOOTHYRONOMINE (T1AM) TREATMENT ON GENE EXPRESSION IN MCF-7 CELLS.

Presenter(s): Ponce, Christopher*Authors: Ponce, Christopher; Rogowski, Michael; Assadi-Porter, Fariba; Rabman, Shaikh*

The present study assessed the effects of T1AM treatment and cell density mediated oxidative stress on the expression of three different genes implicated in stress, hypoxia-inducible factor 1-alpha (HIF1a), pyruvate dehydrogenase alpha 1 (PDH1a), and lactate dehydrogenase alpha (LDHa). We hypothesized that both T1AM and cell density mediated oxidative stress affect HIF1a, PDHa, and LDHa gene expression in MCF-7 cells. To test our hypothesis, non-invasive MCF-7 (ER+) breast cancer cells were cultured under standard culture conditions (5% CO₂) and incubated at 37° C. Cells were seeded at 50k, 100k, and 150k in Dulbecco's Modified Eagle's Medium (DMEM). The cells were then treated with either 50 mM T1AM or DMSO (control) for 24 hours. After that, cells were harvested for total RNA extraction and gene expression analyses. Cells in the plate those were seeded at 100k and treated with 50 mM T1AM showed moderate increase in HIF1a and LDHa gene expression. In conclusion, our data indicate that, the cell density mediated stress along with the T1AM treatment are responsible for moderate increase in HIF1a and LDHa gene expression in MCF-7 cells.

62. DESIGN OF A QUANTITATIVE TOOL TO MEASURE THE LEVEL OF ADVANCEMENT OF A COMPANY WITH THE PROPOSED FOOD SAFETY MODERNIZATION ACT (FSMA).

Presenter(s): Quezada, Monica*Authors: Quezada, Monica; Calle, Alexandra; Sanchez, Marcos*

Introduction: In 2013 the Food and Drug Administration (FDA) proposed to update their FSMA cGMP rules to rather have a preventive approach to ensure food safety. Food companies need to assess how prepared they are and identify potential improvement requirements once the rule is implemented. **Purpose:** To design a quantitative tool to evaluate the progress of a company with the new standard developed by FSMA. **Methodology:** Requirements established in the proposed cGMP will be put into questionnaires. A color-coded scale from 0 to 5 will be created to grade application level of the proposed rule. Using Microsoft Excel, a series of formulas and hyperlinks will be created. Once the user applies the tool, the final scores will be displayed as graphs and a score will reveal how prepared the company is with respect to the proposed cGMP rules. **Results:** After completion of the project, it is expected that food companies are able to apply the instrument and to identify aspects that require improvement. They also should be able to create plan of actions based on the results and use the numerical scales as indicators to follow the progress when putting in place a plan of action. **Significance:** This tool will provide valuable information to companies and to the government to start the necessary changes to comply with the new standard. Food companies need to assess the level of preparedness to potentially comply with the rule once implemented, so that their market access is not compromised.

63. GENETIC VARIANCE AND POPULATION STRUCTURE IN TAMARIX RAMOSISSIMA BASED ON CHLOROPLAST DNA POLYMORPHISM

Presenter(s): Ramos, Emilio*Authors: Ramos, Emilio; Lee, Soorang; Olson, Matt*

Tamarix ramosissima (salt cedar) is among the most harmful of invasive species to native plant communities in the southwest U.S. Understanding genetic connectivity among Tamarix populations provides insight into its colonization history. Maternally inherited chloroplast (cp) DNA markers display high variability and are an excellent tool to study population structure and resolve intra-specific relationships among populations. In this study, we will explore cpDNA length variation using four non-coding chloroplast regions, L1-L2, E-F, S-G and H-A, and use this variation to estimate genetic variance within and between 10 populations of Tamarix ramosissima. Genomic DNA will be extracted and amplified with universal primers for the four chloroplast regions. Enzyme digestion will be conducted with Hinfl, and length variation will be visualized on metaphor gels. We will calculate genetic diversity indices (Na, He and Ho) within and among population and assess the population differentiation (Fst) using AMOVA in ARLEQUIN 3.5. Population structure will be identified in STRUCTURE 2.3.4. We expect that small isolated populations would have lower genetic variation because of increased genetic drift. We also expect population differentiation to increase with geographical distance among populations. These data will provide insight into the colonization of Tamarix and provide the backdrop for assessing whether quantitative traits such as drought tolerance have experienced natural selection during their establishment.



64. EFFECTS OF AN OMEGA 3 FATTY ACID, EICOSAPENTAENOIC ACID, ON BROWN ADIPOSE TISSUE, A NOVEL TARGET FOR OBESITY AND METABOLIC DISORDERS

Presenter(s): Razafimanjato, Fitia

Authors: Razafimanjato, Fitia; Pahlavani, Mandana; Scoggin, Shane; Ramalingam, Latha; Moustaid-Moussa, Naima

Brown adipose tissue (BAT) is a unique tissue that converts excess food energy into thermal energy, and has therefore attracted attention as a new area of research to counteract obesity. Prior studies from our laboratory have shown that a high fat diet containing a polyunsaturated omega 3 fatty acid, eicosapentaenoic acid (EPA) protects against insulin resistance, inflammation and diet induced obesity. The effects of EPA on BAT are not known completely yet, hence we hypothesize that one mechanisms by which EPA might reduce obesity include induction of thermogenesis in BAT. Accordingly, the objective of our research is to investigate the changes in thermogenic markers in BAT at the gene and protein levels. Brown and white adipose tissue (subcutaneous and visceral) were collected from mice that were fed high fat (HF) diet with or without EPA. Protein levels determined by immunoblotting revealed levels of thermogenic markers like uncoupling protein-1 (UCP1) to be significantly increased in BAT with EPA diet, but not in white adipose tissue. Tissue content of Irisin, a new hormone linked to thermogenesis were not significantly different between brown, subcutaneous and visceral fat. However, serum irisin concentration was higher compared to tissue levels, particularly with the EPA diet, which merits further investigation. Other potential thermogenic markers and mechanisms involved in inducing thermogenesis are currently under investigation. In conclusion, results from our BAT studies in mice indicate that EPA induces thermogenesis which may help counteract obesity. Thus this research is very promising for future translational studies in humans.

65. THE CANCER/TESTIS ANTIGEN, SP17, IS A NOVEL IMMUNOTHERAPY MARKER OF TRIPLE-NEGATIVE BREAST CANCER STEM CELLS.

Presenter(s): Reidy, Adair

Authors: Reidy, Adair; Mirandola, Leonardo; Rahman, Rakhsanda Layeequr

Triple negative breast cancer (TNBC) is a heterogeneous disease most commonly affecting women less than 50 years old. TNBC is an aggressive malignancy void of specific targets found in other BC subsets. While TNBC may be initially sensitive to chemotherapeutic treatments, many subsets are resistant and rate of relapse is high possibly due to cancer stem cell (CSC) population. CSC are the only cancer cells capable of self-renewal and tumor initiation and are an area of interest in regards to the development of novel TNBC immunotherapeutic approaches. Therapies directed against specific tumor-associated antigens (TAA) presented on CSC to promote cytotoxic T lymphocyte (CTL)-mediated antitumor responses may provide a promising alternative for patients with chemo-resistant or relapsed TNBC. Cancer testis antigens (CTA) are immunogenic TAA down-regulated in somatic adult tissues but aberrantly re-expressed in malignant neoplasms, particularly TNBC. Abnormally expressed in both solid and non-solid tumors, CTA SP17 has been suggested as a potential target for cancer immunotherapy with possible expression on TNBC CSC. In this study, we assessed SP17 expression on CSC (identified using CSC markers, i.e. CD24, CD44, EpCAM, and ALDH1A1) of human TNBC cell lines and tissues using immunofluorescence and flow cytometry. We showed that SP17 was expressed in TNBC cell lines and primary breast tumor samples on CSC. Therefore, SP17 may function as a novel biomarker of CSC and consequently as an immunotherapeutic target in TNBC.

66. MOLECULAR EVOLUTION OF THE CYTOCHROME-B GENE IN MOLES (LIPOTHYPHLA: TALPIDAE) WITH DIFFERENT LEVELS OF FOSSORIALITY

Presenter(s): Rodriguez, Brian

Authors: Rodriguez, Brian; Salazar-Bravo, Jorge

Broadly distributed in Asia, Europe and North America, members of the family Talpidae present a rich variety of anatomical and physiological specializations that have enabled them to exploit a diverse range of habitats: terrestrial, semi-aquatic, aquatic/fossorial, semi-fossorial, and fossorial. An energetically demanding lifestyle, coupled with the hypoxic atmosphere characteristic of the subterranean and aquatic environment may change the selective regime of genes that encode proteins involved in cellular respiration. Here, we examine the molecular evolution of the cytochrome b gene, a mitochondrial-encoded gene participating in oxidative phosphorylation in this monophyletic family. Several methods designed to detect the presence and direction of selection at the molecular level requires a phylogenetic tree for the group of interest; however, despite numerous studies to the effect the phylogeny of this group remains controversial. To address this shortcoming we used a multi-locus approach to reconstruct a well-resolved phylogenetic tree for the family. Our main hypothesis is that the colonization of the subterranean and aquatic niches created regimes of positive, directional selection in the cytochrome b gene. We estimated the rates of synonymous (dS) and non-synonymous (dN) substitutions, and selection on AA based on physicochemical characteristics along different branches, across codons and simultaneously across codons and along lineages in the family. We detected evidence of positive selection on cytochrome-b variation in only 3 of 379 codon positions: 43, 360 and 372. Results of our phylogenetic analysis of codon-substitution patterns revealed that the evolution of cytochrome-b in this group of moles is chiefly governed by purifying selection.

67. GENETIC VARIATION AMONG THE EIGHT BREEDS OF ETHIOPIAN CAMELS (CAMELUS DROMEDARIUS)

Presenter(s): Rowden, Gage

Authors: Rowden, Gage; Dunn, Christopher; Legesse, Yoseph; Bradley, Robert

The camels of Ethiopia and the Somalian region (*Camelus dromedarius*) are integral to the region's economy and indigenous people. Domestication of these camels provides the population with milk, meat, and other essential goods. Eight breeds (Afar, Kerreyu, Borana, Issa, Hoor, Jijiga, Aydin, Liben) were selected for this study, and the mitochondrial molecular marker, cytochrome-b, was utilized to determine intra-species variation within the breeds. DNA was extracted from ear samples using Qiagen DNeasy Kits. Standard DNA sequencing



techniques were utilized in this study. Sequencing was conducted using four samples of cyt-b-amplified DNA for each breed. The genetic information will be used to examine the relationship of the various above-mentioned breeds which will detect possible genetic variation among the selected individuals.

68. CYTOCHROME B EVOLUTION ON FOSSORIAL RODENTS LIVING AT DIFFERENT ELEVATIONS IN THE ANDES

Presenter(s): Sherali, Susan

Authors: Salazar-Bravo, Jorge

Ctenomys, the only living genus of the family Ctenomyidae is composed of species of fossorial habits (living underground). The objective of this research is to compare the cytochrome b gene sequences (a gene associated with cellular respiration) from populations and species living in high versus low elevation in the Andes Mountains of South America. Because there is evidence for positive selection in human populations living in high elevation environments, we hypothesize that species living in the highlands will show levels of selection at the molecular level, significant and positive when compared to those of populations and species living in the lowlands. We will test this hypothesis by estimating the rates of synonymous (dS) and nonsynonymous (dN) substitutions and their ratio along different branches, across codons and simultaneously across codons and along lineages in the family; in addition, we will test for positive selection on quantitative physicochemical amino acid properties.

69. CHARACTERIZATION OF MUSCULAR STRENGTH OF C. ELEGANS MUTANTS USED AS MODEL ORGANISM FOR NEURODEGENERATIVE DISEASES USING NEMAFLEX.

Presenter(s): Singh, Simran

Authors: Singh, Simran; Rahman, Mizanur; Vanapalli, Siva

Caenorhabditis elegans is a model organism for the study of neurodegenerative diseases such as Alzheimer, Parkinson, and Huntington. The proteome of the nematode contains numerous homologies to mammalian proteins, most notably the dnj-27/ERdj5 ortholog, an endoplasmic reticulum (ER) resident thioredoxin protein that function in the ER associated degradation of malfunctioning proteins. Mutation in the dnj-27/ERdj5 gene alters the ability of the animal's mobility as well as the ability of force generation. Due to the absence of tools, there was no information regarding muscle strength. These mutants were only scored by locomotion. In this study, we report a novel force measurement device named NemaFlex designed to measure muscle strength of C. elegans. The objective of this experiment is to observe the muscle force strength in C. elegans mutants (onco52 and onco1152) of the dnj-27 gene using a NemaFlex device. Conclusion: Our use of NemaFlex device will support and measure the intuitive result the mutants should have, that is, reduced muscle force due to neuron degeneration.

70. IRON- AND COBALT-CATALYZED HYDROSILYLATION OF CARBONYL COMPOUNDS

Presenter(s): Smith, Ashleigh

Authors: Smith, Ashleigh; Saini, Anu; Singer, Laci; Findlater, Michael

Transition metal complexes with pincer-type ligands, especially those containing precious metals like Ir and Rh, have shown incredible versatility in bond activation reactions. Due to the high cost of these metals and the significant commercial impact of these reactions, there is a large demand to replace precious metals with earth abundant, 1st row, replacements. We investigated four pincer complexes, tBu-PNP (2,6-bis(di-tert-butyl-phosphinomethyl)pyridine) complexes of iron, (tBu-PNP)FeCl₂, and cobalt, (tBu-PNP)CoCl₂, and the corresponding tBu-PONOP (2,6-bis(di-tert-butyl-phosphinito)pyridine) complexes, (tBu-PONOP)FeCl₂ and (tBu-PONOP)CoCl₂, as pre-catalysts for the hydrosilylation of ketones, aldehydes, esters, and amides. All four complexes were found to be catalytically active when treated with NaBEt₃H, presumably generating a metal-hydride species in-situ.

71. SM-P80 BASED VACCINATION REDUCES EG-INDUCED PATHOLOGY & WORM FECUNDITY IN ANIMAL MODELS

Presenter(s): Solis-Wheeler, Mychael

Authors: Solis-Wheeler, Mychael; Lee, Loc; Siddiqui, Afzal

Schistosomiasis, a neglected tropical disease, impacts close to a billion people, with 240 million infected and 700 million more at risk worldwide in tropical and sub-tropical areas of developing countries with no adequate sanitation. Chronic form of this disease causes degenerative ill-health such as stunted growth, deformities, and loss of productive life years. Although there are preventative measures, health programs, and effective chemotherapy with praziquantel to deter this disease, the disease continues to spread. Furthermore, praziquantel does not address the possibilities for re-infection and drug resistance after treatment. However, there is a potential solution utilizing a leading schistosomiasis vaccine (Sm-p80 vaccine), which has been shown and tested for its distinct prophylactic and therapeutic efficacies in animal models of infection and disease. Sm-p80 is the large subunit of Schistosoma mansoni calpain, a protein that plays an important role in surface membrane renewal, a mechanism widely considered to be used for evading host immunity by the parasite. In this study, we hypothesized that Sm-p80 based vaccine will reduce egg-induced pathology and female worm fecundity of S. mansoni. We compared liver tissue sections from vaccinated animals to non-vaccinated to test our anti-pathology efficacy hypothesis. Furthermore, we exhaustively analyzed data on female worm fecundity in the baboon model, comparing vaccinated animals to non-vaccinated animals. We observed distinct reductions in tissue pathology and in egg production following Sm-p80 based vaccinations in baboons. Based upon these results, Sm-p80 is a strong candidate and should be further developed for human clinical trials in vaccinations against schistosomiasis.



72. EFFECT OF HUMAN COMPLEMENT ON CD35+ CD4+ T CELLS

Presenter(s): Stanopiewicz, Jenna*Authors: Stanopiewicz, Jenna; Reilly, Brian*

The complement system is a highly regulated enzymatic cascade with linkages to both innate and adaptive immune defense. Our laboratory focuses on the function of Complement Receptor 1 (CR1/CD35) expressed on a small percentage of CD4+ T cells. Our previous research indicates that CD35+ T cells are a physiologically distinct subset of CD4+ T cells. Since CD35 is expressed by a small subset of T lymphocytes, we are investigating the role this receptor has in T cell activation. The major ligand of CD35 is the activated form of the third component of complement (C3b). We have created a reagent containing C3b by covalently coupling rabbit immunoglobulin to polystyrene beads and incubating those beads with human serum. Since rabbit immunoglobulin activates human complement, we were able to assay, by flow cytometry, for the presence of C3b using fluorescently labeled goat anti-human C3 antibody. Serum was titrated to determine the dilution that would give us the greatest amount of C3b deposition. Our results show that a 1:4 dilution of serum is optimal. This reagent is currently being used in a cell culture system to assess the role played by CD35 in regulating T cell activation.

73. ROBUST HUMORAL RESPONSE INDUCED BY SM-P80 CONJUGATED WITH TLR4

ADJUVANT AS VACCINE CANDIDATE FOR SCHISTOSOMIASIS

Presenter(s): Sudduth, Justin*Authors: Sudduth, Justin; Siddiqui, Afzal; Zhang, Weidong*

Schistosomiasis is a neglected tropical disease with an estimated 200 million people currently infected and another 800 million at risk. Currently, there is no vaccine available to prevent or treat the disease, but it was found that a host-interactive protein would be a prime option. One such protein, Calpain, expressed on the surface of schistosomes is involved with membrane development and renewal. More specifically, Sm-p80, the large subunit of Calpain has proved to be the ideal candidate. This project aims to evaluate the vaccine efficacy of Sm-p80 combined with TLR4 agonists as adjuvants against Schistosomiasis. The vaccine strategy administered 1 primary injection and 2 boosters given to control and experimental groups each having 15 mice. The control group was given adjuvant and the experimental group received the combination of adjuvant and Sm-p80. Injections were given every 4 weeks with bleedings every 2 weeks for sera collection. During the 12th week mice were challenged with 150 infectious cercariae, and after 6 weeks were sacrificed. Antibodies were monitored by using Enzyme-linked Immunosorbent Assay (ELISA). Results have shown that worm reduction reached 47.06%, egg reduction in tissues to be 44.42%, in the liver it was 42.57%, and in the intestine 47.46% reduction. The antibody readings obtained showed increase from the 2nd week and peaked at the 10th week. This vaccine has shown strong protection against this disease, and in the future the emphasis of this research will be placed on clinical trials in humans.

74. QUANTITATIVE ANALYSIS OF FREE OLIGOSACCHARIDES AND N-GLYCANS IN HUMAN MILK

Presenter(s): Tello, Nadia*Authors: Tello, Nadia; Zhou, Shiyue; Mechref, Yehia*

Oligosaccharides are an abundant and diverse component of human milk. Free oligosaccharides are quantitatively the third most abundant species in human milk, after lactose and lipids. Although they have minimal nutritional value, human milk oligosaccharides (HMOs) perform a variety of important biological functions. HMOs function as prebiotics to stimulate the growth of the beneficial intestinal micro biome in infants. They are also responsible for lowering the risk of diarrhea, otitis media, and meningitis in infants by binding to and decreasing the virulence of these certain pathogens. HMOs are also involved in promoting the development of the nervous and immune systems. Glycosylated proteins are an additional source of milk oligosaccharides that possess similar protective properties. Although these free oligosaccharides and N-linked glycans play such vital roles in human development, the association of specific structures with functions is extremely scarce. In this study, free oligosaccharides and N-glycans derived from whey proteins were isolated and purified from a human milk sample. The free and released glycans were then reduced and permethylated. Finally, the glycans were separated using C18 liquid chromatography and detected by Orbitrap Valos mass spectrometer. Tandem mass spectrometry and exoglycosidase digestion were utilized to confirm the structure and specific linkages of various glycans. Thirteen fucosylated and seven sialylated N-glycans were identified out of a total of twenty-five N-glycans derived from milk whey. Out of twelve identified free oligosaccharides, ten structures were fucosylated.

75. AN ANALYSIS ON THE RELATIONSHIP BETWEEN LEG LENGTH OF HARVESTER ANTS AND THERMAL TOLERANCE

Presenter(s): Torres, Vanessa; Fell, Cody*Authors: Torres, Vanessa; Verble, Robin*

Previous studies of limb length have shown that decreases in limb length are associated with decreases in critical thermal maxima: that is, ants with shorter legs can tolerate less heat. We sought to examine whether artificial increases in limb length can increase heat tolerance. We collected ten harvester ants from each of twenty colonies. Harvester ants were either left untreated or were given "stilts" to increase their limb lengths. Stilts were constructed from pig bristles and attached with hide glue. Ants were then simultaneously exposed to a temperature increase of 1 degree C per minute until they reached their critical thermal maxima, as indicated by loss of righting response. Control and manipulated ants were compared via a t-test.



76. MEASURING DYE MOVEMENT IN AQUEOUS SOLUTION WITH FLUORESCENCE CORRELATION SPECTROSCOPY

Presenter(s): Truong, Tram*Authors:* Truong, Tram

Our research involves the use of Fluorescence Correlation Spectroscopy (FCS) to elucidate cellular, chemical, and physical phenomena. In this work, we have worked to develop a FCS system for measurement of dye movement in aqueous solution. We studies the concentration effects of Rhodamine 110 a fluorescent organic molecule on the transport phenomena of droplets. We investigated concentration and laser powers and the effect on molecular diffusion time. Using molecular motion information from FCS, we are able to measure fluid viscosity in femtoliter regions of microliter-sized droplets. We also investigated spatial sampling bias at five different positions in each droplet to measure their viscosity. In future work, we will measure viscosity across many cell types, elucidating structural effects on molecular transport. We will also measure viscosity changes in cells in different states (resting/mitosis, healthy/apoptotic, etc).

77. RELATIONSHIP BETWEEN FKBP5 GENOTYPE, SERUM CORTISOL, AND COGNITIVE FUNCTION IN AGING HUMANS: A PROJECT FRONTIER STUDY

Presenter(s): Tucker, Cody*Authors:* Tucker, Cody; Harris, Breanna

Stress activates of the hypothalamic-pituitary-adrenal (HPA) axis, resulting in release of glucocorticoids (e.g., cortisol). Prolonged elevated levels of cortisol can negatively affect cognitive function. Cortisol exerts its effects by binding to intracellular receptors, therefore factors associated with receptor sensitivity may affect cortisol actions. One factor is FKBP5, a cortisol receptor co-chaperone. A single nucleotide polymorphism of this gene, rs1360780 (T allele), has been associated with impaired negative feedback on the HPA axis and prolonged cortisol exposure. We predict that 1) high levels of cortisol will lead to an enhanced decline in cognitive function over time, and 2) the T allele of FKBP5 will be associated with higher cortisol and exacerbated cognitive decline. Using data from Project FRONTIER (n=193, 140 females, 53 males, age 40-87), maintained by the F. Marie Hall Institute for Rural and Community Health, we are currently measuring serum cortisol via radioimmunoassays at two time points (baseline and 3 years) for all individuals. We will determine FKBP5 genotype of all individuals by PCR. We will assess how these two variables relate to cognitive function at baseline and 3 years as measured by the Executive Interview (Exit25) and the CLOX1 clock drawing task, which both measure executive function. In addition, we have CLOX 2 scores that measure visual-spatial abilities. Out of 20 individuals assayed so far, individuals with the greatest increase in baseline cortisol from baseline to yr 3 also showed the greatest decrease in CLOX2 scores over the same time period ($r = -0.507$, $P = 0.023$).

78. DEVELOPMENT OF INSTRUMENTATION TO ACHIEVE HIGH THROUGHPUT CHEMICAL IMAGING OF LARGE AREA SAMPLES VIA GLOW DISCHARGE OPTICAL EMISSION SPECTROSCOPY

Presenter(s): Usala, John*Authors:* Usala, John; Krosch, Marcel

Chemical imaging is very important for obtaining an improved understanding in natural and manufactured systems. However, typical chemical imaging techniques are very time consuming. In this study, glow discharge optical emission spectroscopy (GDOES) is used for fast surface elemental mapping. A glow discharge is a plasma formed by passing an electric current through a low pressure gas, here argon. The sputtered atoms in the sample are excited in the plasma and emit light at specific wavelengths. The emitted light is subsequently collected through an imaging spectrograph thus giving both elemental composition and two dimensional surface resolution. Historically, the GDOES technique has been confined to analysis of samples with a few millimeters in diameter. However, analysis of larger samples is desirable to fully exploit the high throughput advantage of the GDOES chemical imaging technique. This project aims to develop a glow discharge lamp to accommodate large samples and refine the resolution of the subsequent chemical image by optimizing the experimental parameters of voltage, pressure, and anode-cathode geometry. In particular, pressure has been shown to have a positive correlation with resolution but a negative one with intensity. Preliminary investigations reveal that intensity decreases as a power function with increased pressure, but qualitative resolution increases with higher pressure. The subject of this study investigates the tradeoff of intensity and resolution with increased pressure and which pairing of the two variables is desirable for optimum imaging.

79. EFFICACY OF DETERGENT AND ON ATTACHED SHIGA TOXIN-PRODUCING ESCHERICHIA COLI (STECs) ATTACHED TO STAINLESS STEEL

Presenter(s): Valencia, Hector*Authors:* Valencia, Hector; Parks, Amy; Brashears, Mindy

Shiga Toxin-Producing Escherichia coli (STEC) serogroups (O157:H7, O26, O45, O103, O111, O121, O145) that are adulterants in non-intact beef products can attach to commonly used surfaces based on our previous research. We evaluated the effectiveness of detergent and sanitizers and combinations of both in their ability to remove attached STECs from stainless steel (SS) and polyurethane coupons. STEC cells were allowed to attach and grow on SS and polyurethane coupons for 24 h at 25°C. Coupons were rinsed to remove loosely attached cells and treated with detergent, sanitizer, bleach, detergent/sanitizer, detergent/bleach, control, or no treatment. Coupons were immersed into the solutions for 5 min for each step and a concentration of 200 ppm for sanitizer and bleach. STEC cells were removed from the coupons and plated onto Tryptic Soy Agar, incubated at 37°C for 24 h, and counted. Counts were converted to log CFU/cm² before statistical analysis. A significant ($p < 0.0001$) treatment effect occurred, with quaternary ammonium, bleach, and combinations of both with detergents being the most effective treatments. All treatments significantly reduced STECs when compared to the untreated coupons (14 log CFU/cm²). Log reductions ranged from a 5 log CFU/cm² difference observed on coupons treated with detergent, to a 12 log CFU/cm² reduction with bleach only. These results show that a complete cleaning and sanitation program is important to processing plants and food service establishments to reduce the amount of STECs that could attach and grow on surfaces such as SS and polyurethane.

80. INVESTIGATING PREDATION IMPACTS OF NON-NATIVE GULF KILLIFISH *FUNDULUS GRANDIS* ON PECOS RIVER FISHES**Presenter(s): Vaughan, Cassie***Authors: Vaughan, Cassie; Breaux, Jared; East, Jessica; Pease, Allison*

Gulf Killifish (*Fundulus grandis*) is a species native to estuaries and lower reaches of rivers along the Gulf of Mexico coast that has become established in the Pecos River, likely as a result of bait-bucket introductions. In the Permian Basin region, it is now one of the most abundant fish species in the river. Non-native, inland populations are also established elsewhere in the Rio Grande and Brazos basins, but little is known about the ecological impacts of these invasions. First, we investigated trophic resource use of non-native *F. grandis* in the Pecos using stomach contents analysis. We found that they primarily consumed other fishes (*Cyprinodon variegatus*, *Lucania parva*, and *Menidia beryllina*). Up to 18 fish were found in individual *F. grandis* stomachs, with prey fish size ranging from 8 to 25 mm TL. To investigate piscivory further, we carried out timed feeding trials in which *F. grandis* were presented with ten juvenile prey fish of various sizes in laboratory aquaria. We found that *F. grandis* consumed an average of four fish (from 21-34 mm TL) within 30 minutes of feeding. Our results suggest that predation impacts of *F. grandis* could be significant in the Pecos and other rivers where the species has invaded.

81. VALIDATION OF FOSS FOODSCAN FOR ANALYSIS OF PROXIMATE COMPOSITION (MOISTURE, PROTEIN AND FAT) IN FRESH MEAT (BEEF) PRODUCTS

Presenter(s): Villacres, Alex*Authors: Villacres, Alex ; Spivey, Kari; Miller, Markus*

Fresh USDA No Roll Inside Rounds (peeled and denuded) and 50% lean:50% fat beef trimmings will be used to formulate targeted lean:fat blends. Upon receipt, a subsample of each formulation (inside round and 50:50 beef trimmings) will be analyzed by the AOAC method 983.23 to obtain the total fat amount. Using a Pearson's Square, the correct amounts needed to formulate the targets lean: fat formulations which will be 95% lean:5% fat increasing the amount of fat and reducing the amount of lean until have a formula of 50% lean:50% fat. These two components will be increasing and decreasing 5% by 5% respectively to have at least ten different formulas. The lean and fat sources will be coarse ground separately, and then these two will be mixed in a commercial meat mixer for approximately 15 minutes. The amount of mixture for each formulation will be 10 pounds approximately. This amount is the necessary to prepare 20 aliquots so at the end the experiment will have 200 experimental units. The weight of each mixed formulation will be recorded and the unused amount of these once the aliquots were prepared can be discarded.

82. REEVALUATING THE TAXONOMIC ARRANGEMENT OF THE PEROMYSCUS BOYLII GROUP

Presenter(s): Wagley, Marisa Elise*Authors: Wagley, Marisa Elise*

The genus *Peromyscus* has been the focus of many systematic studies because of the diversity that exists within this group of rodents. Although members of *Peromyscus* may be well suited for study, the taxonomic arrangements of *Peromyscus* remain the subject of much. Wilfred Osgood established 6 subgenera and formed 7 subspecies groups. The following years of research have led to the elevation of some of these subgenera to generic status and the addition of subgenera. / As it is currently recognized, the genus *Peromyscus* consists of 5 genera (*Habromys*, *Neotomodon*, *Podomys*, *Megadontomys*, *Osgoodomys*). This genus can be further divided into 5 species groups. Of these species groups, the *Peromyscus boylii* group is of special interest because of the speciation that has occurred within this group. This is due to the diverse environment and geographical isolation that has followed in the regions of Mexico in which these organisms are found. Previous studies have used morphological, allozymic, mitochondrial and nuclear DNA sequences, and karyotypic data to try to resolve species level relationships within this group of rodents and have been unsuccessful. This is because the data that remains to be collected would cause a significant impact on any newly formed arrangement. Herein, we propose to utilize a combined dataset consisting of one mitochondrial and five nuclear genes to try to resolve relationships within the *boylii* species group. DNA sequences from these genes will be analyzed in a phylogenetic context to determine the evolutionary relativity of a species within the *boylii* group.

83. EFFECT OF COFFEEINE INTAKE ON MUSCLE PAIN DURING ISOMETRIC HANDGRIP EXERCISE IN PATIENTS WITH FIBROMYALGIA

Presenter(s): Weatherby, Amy*Authors: Weatherby, Amy; Kempka, Laura; Greenlee, Brennan; Umeda, Masataka*

Fibromyalgia (FM) is a chronic pain syndrome that causes widespread musculoskeletal pain, often accompanied by psychological symptoms such as anxiety, depression, and chronic fatigue. Although these symptoms often cause patients with FM to limit their activity levels, research has shown that exercise is an effective way to manage FM symptoms. Evidence suggests that caffeine intake before exercise corresponds with a reduction in pain perception during exercise. This study examined the effect of caffeine intake on the intensity of muscle pain during exercise in patients with FM. Eight adult patients with clinically diagnosed FM completed two sessions conducted on different days. Thirty minutes after chewing a caffeinated gum containing 100 mg of caffeine in one session, and a placebo chewing gum in the other session, they completed exercise consisting of squeezing a hand dynamometer at 25% of their maximum voluntary contraction for three minutes. Their muscle pain rating (MPR) and rate of perceived exertion (RPE) were assessed every thirty seconds during exercise. Our preliminary data appear to show that the FM patients experienced a slight reduction in both their MPR and RPE during exercise after consumption of caffeinated gum compared to placebo gum. The findings suggest that caffeine intake prior to exercise may help reduce the intensity of localized muscle pain during exercise in patients with FM. We will continue to collect more data to confirm these preliminary findings and present the complete data in the conference.

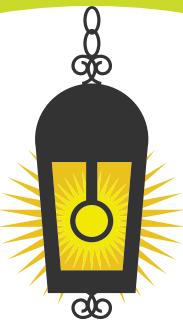


84. IDENTIFICATION OF NOVEL ANTIMALARIALINHIBITORS OF 6-PHOSPHOGLUCANATE DEHYDROGENASE (PV6PG) IN PLASMODIUM VIVAX BY HIGH-THROUGHPUT VIRTUAL SCREENING

Presenter(s): Weber, Nicole

Authors: Weber, Nicole; Trieu, Carolyn; Ali, Zain; Beckham, Joshua

The discovery of novel drugs is warranted in the face of rising resistance developed by Plasmodium vivax parasites to a number of malaria medicines. Therefore, the principal aim of this research study is to discover unknown inhibitors for 6-phosphoglucanate dehydrogenase (Pv6PG) in the protozoan parasite P.vivax. This process entails synthesizing the full Pv6PG sequence with oligo-primers, amplifying that sequence via Polymerase Chain Reaction (PCR) methods, and cloning the gene within an incised pNIC-Bsa4 vector. Next, following transformation, a purified protein will be obtained through expression, purification and characterization techniques utilizing Nickel Affinity Chromatography and Fast Protein Liquid Chromatography. After high-throughput screening of a commercial library of ligands the best ranking 3 will be tested in wet lab using inhibition assays to determine if any have significant ability to impede the enzymatic functionality of Pv6PG. In addition, because there exists no PDB structure for 6-phosphoglucante dehydrogenase, only a related homology structure, crystallization of the Pv6PG structure will be pursued regardless of whether or not the inhibition assays prove to be successful.



BUSINESS EMPHASIS

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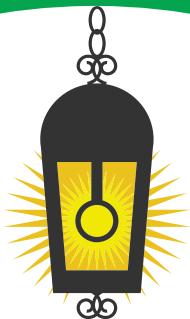


85. THE INTERSECTION OF FUNDAMENTAL ANALYSIS AND OPTIONS

Presenter(s): Subhani, Muhammad

Authors: Subhani, Muhammad

Since there has always been a large divide between fundamental analysis and technical traders, perhaps it is time to test the viability of fundamental analysis valuation in the context of growing instruments, options, for the retail investor. This study aims to test the results of short puts, when applicable, approximately one standard deviation out-the-money rolling month to month or quarterly in a bullish market from 2011-2014 based on filtration of various variables of financial statements from 2010 for S&P 500 companies in comparison to the return on capital of Berkshire Hathaway equity holdings and the S&P 500 index. Furthermore, multi-legged strategies can potentially increase the number of winning trades in all market volatility conditions. Going short on options theoretically allow for significantly greater return on capital through leveraged positions on margin with greater statistical chances of success than going long in financial derivatives as demonstrated by the Thinkorswim platform, derived from historical floating, liquid pricing. It is anticipated that a firm with robust fundamentals should perform in a bullish manner in the context of a bullish market, and options can merely amplify the profits for the retail investor with leverage and calculated, limited risk. If the return on capital of the options is higher, this could both satisfy the underlying needs of fundamental analysis investors and the astronomical returns desired by technical traders. The primary applications in use will be Microsoft Excel, the TD Ameritrade Thinkorswim platform, Dough, Morningstar, and the Quandl API.



HUMANITIES & THE ARTS

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86. LET'S TALK ABOUT RAPE: COLLEGE STUDENTS IN GREEK ORGANIZATIONS DISCUSS WHAT SEXUAL ASSAULT AND CONSENT MEANS TO THEM

Presenter(s): Alexander, Bethany

Authors: Alexander, Bethany; Ortiz, Rebecca

Rape and sexual assault is a major issue of concern on college campuses in the United States. Past research indicates that many college students are unable to clearly define what is sexual consent and therefore are also unable to accurately identify when sexual assault occurs. To better understand how college students make sense of and define rape, sexual assault, and sexual consent, two same-sex focus groups were conducted with four male and four female students active in Greek organizations at Texas Tech University, between the ages of 18-22. Participants were asked questions regarding their views on rape, sexual assault, and sexual consent, and were shown media examples to illicit responses. Participants generally indicated that for an act to be classified as rape or sexual assault, it would likely have to include physical aggression, alcohol or drugs, and is typically committed by a male, though neither group could distinctly define what rape or sexual consent was to them. Media, peers, alcohol, drugs, partying, the Greek system, and gender roles were all mentioned as influencers for how college students try to understand rape and sexual assault. Results indicate that college students across the United States likely need better education and prevention programs while in college to better understand how to define rape and sexual consent for themselves, and to help prevent sexual assault incidence on college campuses.

87. REDESIGN FOR THE NEXT GENERATION: CREATING PRODUCTIVE HIGHER EDUCATION LEARNING ENVIRONMENTS

Presenter(s): Beck, Sarah

Authors: Beck, Sarah

Open, collaborative spaces allow accessibility, communication, and interaction among students. The perceptions of comfort, ability to control noise, and flexibility of environment have been linked to corresponding levels of productivity and user satisfaction within the classroom setting. NEXT University is a hypothetical small liberal arts institution dedicated to increasing student learning and engagement. The major objective was to create successful learning environments within the university based on empirical data that highlighted the variables responsible for either assisting or hindering various work and study methods. Guided by this data, the existing interior environment was altered to maximize optimal design solutions. Utilizing the theory, palette of place (balancing independent, private, public, and collaborative spaces), allows learning throughout the entire contract area. Enclosed spaces with relaxed style furniture support productive independent study. Collaborative active learning thrives with brighter lighting, dynamic furniture, and access to both analog and digital tools. The new plan is simple to navigate, allowing for quick transitions between learning spaces. The concluding project encompasses all aspects of building design, including furniture plans with corresponding labels for palette of place, lighting plans, furniture specifications, finishes, elevations, sections, and perspective renderings.

88. DON'T TOUCH ME: SENSORY CLOTHING FOR HYPER-SENSITIVE CHILDREN WITH ASD

Presenter(s): Charlton, Emily

Authors: Charlton, Emily

Out of all of the effects associated with ASD, hypersensitivity causes particular problems when choosing clothing for children diagnosed with ASD. These issues are dependent upon the individual case, as unique as the child. However, studies have shown that there are common sensory issues associated with hypersensitivity in ASD. A few of these pertaining to clothing would be increased reactivity to tactile, visual, and auditory sensation. The object of this project is to explore what is wearable and comfortable for children suffering from hypersensitivity, but also to experiment with clothing that can help control the wearer's environment. This includes features such as hoods for light exposure control, mufflers to block sound, or cowl additions to a hood for fume control. For the hood, it contains a small brim, which can be pulled over the child's head. Mufflers are added to control auditory sensation; patches included on the sides of the hood containing layers of batting and other sound-proofing materials based on the extent of the sensitivity to sound. Finally, a gathered cowl is included with a slot into which can be inserted a deodorizing sheet for the control of olfactory senses. Studies have also shown that minimal behavioral conditioning can be applied to help maintain normality in children with ASD. This adds another function to the garments. It is seen in minimally textured pocket inserts for conditioning involving tactile sensation. The outcome of this project is to create clothing that would ease the discomfort of the wearer due to hypersensitivity.

89. CLOTHING FOR CONJOINED TWINS

Presenter(s): Charlton, Emily

Authors: Charlton, Emily

A story about the conjoined twins was on local news in April 2014. The conjoined twin girls were born at Texas Children's Hospital (The parents traveled from their hometown of Lubbock to Houston Texas for the birth). The babies were conjoined in their chests, sharing the diaphragm and the liver. The girls will be having surgery to separate them in about three months, but until the survey is performed, the twins need clothes like all other newborns. Since the clothing was specialized, there were no available commercial outfits for the conjoined twins. These two have been remarkable though. Conjoined twins are born only once for every 200,000 babies yearly, and of those, 40-60% are stillborn. Another 35% of the survivors only live through their first day. This makes the survival rate an overall 5-25%. The purpose of this project was to research, develop, and provide adequate, comfortable clothing for conjoined twins. The project was executed by measuring babies' dimensions, drafting flat patterns, re-engineering, re-structure garments. The materials used were 100% Cotton Sateen for comfort, and 100% polyester organza for visual interest.



90. THE COVERAGE OF HISPANIC ISSUES DURING THE 2014 MIDTERM ELECTION: A COMPARISON BETWEEN ENGLISH AND SPANISH-LANGUAGE TV NEWS

Presenter(s): Coffman, Audra*Authors: Coffman, Audra*

The goal of this research is to understand how English and Spanish-language TV outlets covered the 2014 midterm election, and more specifically, how differently they covered the issues related to Hispanics in the United States during the midterm election. People of Hispanic origin make up the largest ethnic minority group in the United States. Therefore, this study examines the most pressing topics for Hispanics as English and Spanish-language TV outlets cover them simultaneously. In doing so, this study takes into account the emerging importance of Spanish-language channels distributing news to the growing number of Hispanics who are becoming an important political force. We conduct a visual content analysis of mainstream English-language news (ABC and NBC) and compare those to Spanish-language TV news (Univision and Telemundo) in the United States. Practical outcomes include a detailed analysis of the coverage of Hispanic and immigration topics by Spanish and English-language media as well as its possible impact on Latino voters' opinion on the midterm election. Theoretical outcomes include a more sophisticated understanding of how different media cultures may co-exist in the same country and the factors that contribute to differences between the two language cultures and news coverage within the United States.

91. ASSESSING THE FOOD ENVIRONMENT OF THE EAST LUBBOCK COMMUNITY

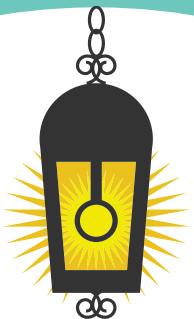
Presenter(s): Jun, Julie*Authors: Jun, Julie; Park, Oak-Hee*

The East Lubbock community is a low-income and ethnic minority community that might have a greater difficulty meeting dietary guidelines established by the U.S.D.A., setting them at greater risk for health problems. The objective of this study was to investigate the East Lubbock community food environment by examining accessibility and availability of food outlets. Geographic Information System (GIS) was used to map all food outlets in the City of Lubbock and analyze spatial relationships of these locations in relation to neighborhood centroids. A list of all food outlets ($n=1,524$) provided by the City of Lubbock were classified into six categories including supermarket, grocery, convenience, specialty, full-service restaurants, and fast foods on the basis of North American Industry Classification System's (NAICS) definition of food outlets. A series of maps were created using a GIS mapping system. Three population-weighted centroids were mapped in the East Lubbock area from which accessibility and availability to food outlets were measured (i.e. by distance, driving time, walking time, and public transportation). Findings indicated that 1) East Lubbock Community residents required traveling farther to access certain food outlets than did other Lubbock residents and 2) lack of accessible public transportation contributed to fewer food locations within the same distance as for other Lubbock neighborhoods. Supermarkets were inaccessible to residents up to 0.5 miles, while fast food restaurants were accessible to about half of the population in this same distance. All residents were able to reach each of the six classified food outlets within 10 minutes driving time.

92. WHERE NO MAN HAS GONE BEFORE: SOCIETY AND SYMBOLISM IN THE NON-BINARY GENDER CHARACTERS OF STAR TREK

Presenter(s): Kajihara, Meghan*Authors: Kajihara, Meghan*

Non-binary gender is a type of emerging gender identity in the United States. It denotes an individual who identifies as neither male nor female, or even both simultaneously. However, portrayals of this identity in pop culture have been visible for decades in the seminal television series Star Trek. This study seeks to analyze the social and symbolic construction of non-binary gender, using the Star Trek universe as a culture in a fishbowl. I will investigate the symbolic function of these non-binary individuals through a textual analysis of 10 characters throughout Star Trek's five series, seeking connections between their fictional embodied meanings and how the role of real non-binary people is conceptualized today. I posit that the non-binary characters of Star Trek are portrayed dualistically, with those that are more ambiguous being portrayed as dangerous while those who possess easily gendered qualities are portrayed as benevolent and human. In the Star Trek universe, non-binary gender individuals are the "unknown" incarnate. The fact of their inexplicable bodies is a "memento mori" of the universe's infinite mystery. They are a constant shock to the culture of Star Trek's central maxim that all things are knowable through science and our own exceptionalism; their identities, like non-binary people today, are continually parsed by the binary assumptions of a cisgender society but, through the performance of their gender identity, they find unity in liminality to begin reconcile the dual faces of their "self" which society sees and judges, but which they can only live.



LAW, PUBLIC POLICY & EDUCATION

abstract #93

POSTER
PRESENTATIONS

Education
Legal Studies
History
Philosophy
Political Science



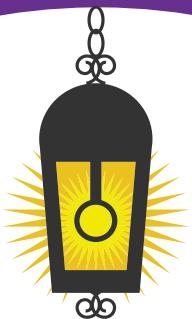


93. EXPANDING UPON PUBLIC SCHOOL LEARNING INVOLVING THE PURSUIT OF SCIENCE
IN AN INTERDISCIPLINARY ENDEAVOR FOR ELEMENTARY STUDENTS

Presenter(s): Robertson, Meghan

Authors: Robertson, Meghan

The success of education in science, technology, engineering, and math (STEM) disciplines is of utmost importance in our society today and plays a critical role shaping the world of future generations. The rapid advancements in all technological fields in the modern age bring high promises to solving some of the long-standing challenges faced by populations around the world. The importance of STEM education is perhaps most relevant to the field of environmental engineering, because of the complexity of environmental issues (requiring in-depth science knowledge) and the vast scale of the problems (warranting critical engineering thinking). Focusing on Environmental Engineering, the objective of this study is to design a series of enrichment classes catered for 3rd through 5th graders to encourage students to embrace knowledge of STEM subjects related to major environmental science and engineering topics. In addition, the goal includes developing assessment tools to measure the effectiveness of these classes. The classes take the form of four separate two-hour sessions held on four consecutive Saturdays, known as the "Super Saturdays - In the Lab". The topics of focus are water quality, the global water cycle, solid waste, and soil pollution. The most recent "In-the-lab" offering had 18 participants from local elementary schools, who completed both initial interest surveys and exit surveys. Improved activities include children stories and involvement of the freshmen Environmental Engineering (ENVE) Seminar class with poster presentations. There will be future contact between the educators and students to collect long term data of the students STEM pursuits.



PHYSICAL SCIENCES

abstracts #94-118

POSTER
PRESENTATIONS

Computer Science
Engineering
Geosciences
Mathematics
Physics/Astronomy





94. RESEARCH PUZZLE/ADVENTURE RPG GAME

Presenter(s): Aguilar, Chris; Reyes Jr, Pedro*Authors: Aguilar, Chris; Reyes Jr, Pedro; Tijerina, Joe; Hart, Jessica*

Wolf Games Unity is a programming team that currently operates within the CS4331 Video Game Design and Programming class in the TTU Department of Computer Science. Our aim is to create a unique type of video game using the Unity game engine. This video game will be based on a simple game design of adventure style of play while using puzzle mechanics as its core base. The goal of this research project is to stimulate the player to make certain choices which will result in either rewards or consequences. The projects main language will be in C# language. We intend to utilize the implementation this language provides in order to make fast and quick response from interpreted to compiled, meaning if a player makes a certain choice, Wolf Games Unity will have a previously created scenario based on the player's choice. The ability to have free will and choose how they play is the ultimate goal of this project. The game will be in a 2D environment and will mainly have characteristics of a side scrolling for simplicity and retro style feeling to younger and older audiences alike.

95. COMBUSTION PERFORMANCE IMPROVEMENT OF ENERGETIC THIN FILMS USING CARBON NANOTUBES

Presenter(s): Cano, Jesus*Authors: Cano, Jesus; Kappagantula, Keerti; Pantoya, Michelle*

Metal fuel and oxide mixtures, commonly termed as thermites, have been extensively used in ordnance and industry alike. An important use of thermites has been as heat and energy sources in the form of thin films. Carbon nanotubes (CNTs) have been used to control the electrical conductivity and electrostatic discharge of thermites. In addition, CNTs have demonstrated a unique ability to improve the combustion performance of thermites. The current study demonstrates the improved combustion performance of energetic thin films of magnesium and manganese oxide by the addition of CNTs. Micrometer size particles of magnesium (Mg) and manganese oxide (MnO_2) were used as fuel and oxidizer, respectively. Multi-walled CNTs, used as an additive, were 0.1-10 μm long with 20 nm outer and 3 nm inner diameters. Four types of energetic thin films were prepared containing 0, 0.5, 1 and 1.5% by mass of CNTs, respectively. In casting the thin films, 1.0% by mass polyvinylidene fluoride (PVDF) was used as the binder. Requisite amounts of Mg, MnO_2 , CNTs and PVDF were mixed using methyl pyrrolidone (NMP) as the solvent such that the solids content of the slurry was 40% by mass. Each slurry was mixed in a planetary centrifugal mixer at 1600 rpm for 1.5 minutes and blade cast onto a glass substrate using a 120 μm drawdown blade to obtain the energetic thin films. Results from testing indicate a strong correlation between the increase in electrical conductivity and flame propagation in these mixtures resulting from the addition of CNTs.

96. THE APPLICATION OF BAYESIAN STATISTICS AND INDUSTRIAL ENGINEERING

STRATEGIES TO HEALTHCARE AND PATIENT READMISSION PRACTICES

Presenter(s): Clements, Lauren*Authors: Clements, Lauren; Matis, Timothy*

Professional opinion, technical expertise, and technology are all of great importance in the healthcare world. However, when it comes to patient admittance, professional opinion tends to be the widely used judging factor. Could a mix of technology and technical expertise be used to improve such processes? It was theorized that exploring the use of Bayesian statistics and patient monitoring would improve admittance and care accuracy while also lower readmission rates. To explore this possibility, research was conducted on the application of Bayesian statistics through programming methods and further examination of existing health care practices with a focus on efficiency. The team conducted a literature review, and the undergraduate research scholar carried out solo research on the program and modules from the Institute for Healthcare Improvement.

97. INVESTIGATING FUEL SIZE EFFECTS ON THERMAL PROPERTIES OF ALUMINUM COMBUSTION

Presenter(s): Cox, Jennifer*Authors: McCollum, Jena; Cox, Jennifer; Pantoya, Michelle*

Aluminum combustion is widely studied due to its exothermic nature, high reaction temperatures and high heats of combustion. This study investigates the particle size effect on various combustion characteristics. Aluminum particle size was determined by dynamic light scattering. The spherical Al particles range in size from 50 nm to 5 micron in diameter. Each aluminum size was combined with copper oxide (CuO) and held to a constant equivalence ratio. The composites were burned in semi-confined quartz tubes in order to evaluate the energy propagation rates. Differential scanning calorimetry was also performed in order to relate energy propagation with reaction kinetics. The results conclude that onset temperature exhibits a decline and energy propagation an increase as Al particle size decreases.

98. USAGE OF FPGAS TO IMPLEMENT COMPLEX ALGORITHMS USED IN LINEAR SYSTEMS AND DIFFERENTIAL EQUATIONS SOLVERS

Presenter(s): Dao, Mai*Authors: Dao, Mai*

Field-programmable gate arrays (FPGAs) are very flexible computer chips, and they are used to enhance the performance of complex mathematical solvers. The Verilog language for Xilinx is used to write parallel hardware Conjugate Gradient implementations that execute numerical methods like the Finite Difference Methods and Finite Element Methods. Such methods can be used to solve various partial differential equations like fluid dynamics, heat transfer, and Laplace transformation equations and to locate the areas of possible solutions



for various linear systems. Not only has the cost of such technologies been greatly reduced in recent years, but this method is also superfast and can present novel approaches to complex mathematical challenges. We will describe a systematic review of innovations in the world of complicated equations solvers using FPGAs.

99. A SIMPLIFIED BINOMIAL SUM

Presenter(s): Davenport, Jianna

Authors: Davenport, Jianna; McCarthy, Dermot

A rational number is a number that can be written as a fraction of integers (e.g. 3/5). If a number is not rational, it is irrational. For example, π is an irrational number. Proving the irrationality of a number is often difficult. In 1979, Roger Apery used binomial sums to prove the irrationality of several numbers. Binomial sums are sums whose terms contain binomial coefficients. Apery's result created a great interest in these sums among the mathematical community. Recently, mathematician Zhi-Wei Sun has conjectured formulas for the simplification of many binomial sums. I will discuss my progress in settling one of his conjectures.

100. AQUEOUS N-BUTANOL EXTRACTION THROUGH A NOVEL GEL STRIPPING PROCESS

Presenter(s): Doerfert, Michael

Authors: Doerfert, Michael; Godbole, Rutvik; McClung, Stephen;

Butanol is an organic liquid common in chemical synthesis that is now receiving attention as a renewable biofuel with combustion properties comparable to gasoline. A major method of producing butanol is fermenting biomass hydrolysates to produce dilute aqueous butanol solutions. After butanol production, large energy requirements hinder the separation of butanol from dilute aqueous solutions. Gel stripping is a novel, energy-efficient process for recovering butanol from fermentations. Gel stripping involves a column filled with a mostly hydrophobic polymeric gel that selectively captures n-butanol while letting water and contaminants pass. Passing a second, low-boiling liquid through the column recovers the n-butanol. This process could surpass existing separation methods due to the reusable gel and efficient butanol recovery. However, gel stripping has yet to be demonstrated in the lab. Therefore, is gel stripping a viable butanol separation process? Gel material design involves combinatorial chemistry techniques and property testing. Apparatus testing involves optimizing gel packing for liquid flow, sample collection, High Performance Liquid Chromatography analysis of samples' n-butanol content, and separating the butanol from the reusable gel. An acrylated castor oil gel was found to be an effective, reusable n-butanol absorber with high n-butanol selectivity and optimal packing properties. Current work involves testing the secondary extraction of the n-butanol with volatile solvents like diethyl ether. Removing n-butanol from the gel in high yield will make gel stripping a promising route to energy-efficient recovery, potentially lowering the cost of future renewable energy production.

101. INFORMATION RETRIEVAL: WHAT DO USERS REALLY WANT

Presenter(s): Dunning, Daniel

Authors: Dunning, Daniel

Everyday people use software and applications on their computers, whether it be a word document, an internet application, or music listening applications. With all of these applications, things sometimes don't go as we intended, and we need help. Most programs have a "Help" aspect, but often these are, ironically, not helpful. The purpose of this research and project is to better equip these "Help" tools in order to answer the questions users have. The first step in order to achieve this goal is to formulate possible actions a user would perform. Next, design a survey to show these commands to people and see how they would ask for this information. Finally, use algorithms to sort the responses into different categories to better equip a program to answer those sample responses.

102. NEMADOME: A MICROFLUIDIC PLATFORM FOR HIGH-THROUGHPUT RNAI SCREENING OF LONGEVITY GENES

Presenter(s): Edwards, Hunter; Haq, Hridoy

Authors: Edwards, Hunter; Haq, Hridoy; Gabrilska, Rebecca; Rahman, Mizanur; Vanapalli, Siva

Caenorhabditis elegans (*c.elegans*) has emerged as a model organism for lifescience research due to its advantageous characteristics including short lifespan (3-5 weeks), well-defined cell lineage and well established genetics. It has its genome fully sequenced and was found to have approximately 19,735 protein-coding genes. It is often required to identify genes responsible for specific biological functions such as life expectancy, fitness and exercise benefit. RNAi interference is one powerful technique used for such screening. However, traditional agar based methods are tedious and screening for all 19,735 genes for a simple organism like *c.elegans* may take 8-10 years. In this study we propose a simple, bench-top use, microfluidic based lifespan device that is capable of capturing RNAi efficacy. Two lifespan influencing genes were used in this study, a lifespan shortening *daf-16* and lifespan extending *age-1*. Bacterially expressed dsRNA were introduced by ingestion. A 12% decrease and 32% increase of wild type *c.elegans* lifespan for *daf-16*(life shortening) and *age-1*(life extending) respectively confirms the device capability to capture RNAi efficacy. Our parallelized 24 well plate format aging device can increase the screening throughput by 3 - 5 fold.



103. CALCULUS: CONCEPTUAL OR PROCEDURAL? A REFLECTION ON FINAL EXAMS

Presenter(s): Finney, Brandon*Authors: Finney, Brandon; Harris, Gary; Surles, James*

The literature is rich with articles addressing and assessing the effects of conceptual versus procedural approaches to teaching and learning in Calculus. This poster is interested in just what these terms mean in practice and how to gauge the extent to which the teaching and expected student outcomes in calculus classes can be viewed as conceptual, procedural, or some combination of both. To this end, using definitions motivated by the early work of Hiebert and Lefevre (1986), a Conceptual/Procedural rubric (C-P rubric) has been created that is designed to assess the extent to which our Calculus exams are entirely conceptual (C), primarily conceptual with procedural knowledge needed (CP), primarily procedural with conceptual knowledge needed (PC), or entirely procedural (P). This poster presents the data from the use of the CP rubric applied to the final exams given in our Calculus I and II classes over multiple semesters.

104. HOW PHYSICS CAN BE INCORPORATED IN VIDEO GAMES

Presenter(s): Gloria, Joy; Williams, Kendrick*Authors: Gloria, Joy; Williams, Kendrick; Reagan, Ryan; Estrada, James; Lipe, Travis*

This project involves discovering how a Unity Game or video games in general can use and apply the forces of physics within the game to create obstacles and other such design features to force the player to determine the best way to complete the level. The team will conduct research by creating a game that incorporates the fundamental principles of dynamics (Newton's Law of motion) as well as various traps and obstacles that attempt to prohibit the player's movement. Such traps include but are not limited to fire, flying cannon balls, trapdoors and a key and lock mechanism. The game entails of a ball in a maze that is filled with different types of obstacles aforementioned. Physics can be incorporated in these traps to show the realistic behaviors of how a ball would act when faced with such obstacles and also possible scenarios or how the ball could overcome these obstacles. The movement of the ball and the traps in the maze will utilize physics forces to create a more immersive experience for the user and allow for a more realistic and dynamic play through.

105. MOLECULAR MODELING OF ASPHALTENE FLOCCULATION

Presenter(s): Gullied, Mohamed-Gani*Authors: Chapman, Walter*

Asphaltene are a polydisperse mixture of the heaviest and most polarizable fraction of oil. Asphaltene constitute a potential problem in oil production due to its tendency to precipitate and deposit with changes in temperature, pressure and composition. The precipitation and deposition of asphaltene can occur at different stages during petroleum production. This causes damage to the reservoir formation and plugs the pipelines or production equipment. Currently, the software used to predict asphaltene behavior during oil production is the Statistical Associating Fluid Theory (SAFT). SAFT was developed to predict polymer development and has some utility in predicting the development of asphaltenes. SAFT is based on the molecular theory of liquids. In order to apply a SAFT like solution to the asphaltene phenomena, a similar approach is needed. Since asphaltenes are the most polar molecules in oil/gas systems, it is believed that it is their charge distributions that are central to understanding their behavior. Using SAFT as a template, we are trying to develop a model for asphaltene flocculation (and software) specifically incorporating this feature of asphaltenes. By achieving this, we may be able to better predict the behavior of asphaltenes which in turn will help the petroleum industry detect asphaltene precipitation and development before it occurs. This will save petroleum companies the cost of having to stop production in order to clear the asphaltene precipitates.

106. WORM SIMULATOR, A UNITY GAME

Presenter(s): Heath, Alexander; Turner, Austin*Authors: Stroud, Trevor; Heath, Alexander; Le, Samantha; Nolte, David; Turner, Austin*

Worm Simulator is a traditional 3-D platformer developed using the game creation tool Unity. It has a focus on fun and difficult gameplay that challenges and involves the player. The player takes control of a worm that must navigate dangerous underground lairs in order to return to its home. The object of the game will be to progress through the various levels. Each level will have different challenges to overcome, however each level will have a linear path from start to finish that the player must follow. The challenges come in the form of avoiding obstacles such as automated turrets and precarious terrain. While the environments will be generally hostile, players will be challenged to use the environment to their advantage, e.g. hiding behind moving blocks in order to avoid enemy fire. The player's reflexes, dexterity, and ability to carefully observe their surroundings will be put to the test in the dangerous world of Worm Simulator.

107. EXPLORATION OF THE ITERATION OF COMPLEX FUNCTIONS

Presenter(s): Jackson, Sarah*Authors: Jackson, Sarah*

Complex functions, including logarithmic and rational functions, are iterated using Newton's method. Interesting symmetries and patterns of convergence to specific roots are observed. Fixed points are classified as attracting or repelling. The basins of attraction exhibit interesting geometric properties for different values of specified parameters. These properties are verified for some special cases of the parameters.



108. HOW INDUSTRIAL ENGINEERING DISCIPLINE CAN BE APPLIED TO IMPROVE OUR CURRENT HEALTHCARE SYSTEM

Presenter(s): Kim, Dong Yeob (Dk)*Authors: Kim, Dk (Dong Yeob)*

This presentation involves three projects that were part of the Healthcare Systems Engineering Institute at Northeastern University. Two out of the three projects were applied projects while the other project was a research project. The two applied projects were on delivery system logistics and patient flow, specifically perioperative supply chain and exam room consolidation respectively. The research project was on quality & patient safety as it had to do with understanding the spread of improvements across healthcare quality improvement networks.

109. DEVELOPMENT OF A MINIATURIZED TENSIOMETER FOR MEASUREMENT OF INTERFACIAL TENSION

Presenter(s): Kim, Yungjee*Authors: Kim, Yungjee; Bitih, Swastika; Vanapalli, Siva*

Interfacial tension (IFT) is the physical property of two immiscible fluids, and plays an important role in a variety of areas including oil recovery, air transport in lungs, and inkjet printing. As a result, accurate measurement of IFT is a key component in understanding the behavior of these systems. Traditional methods of determining IFT include direct measurement using a microbalance, measurement of capillary pressure, and analysis of capillary-gravity forces. While these methods can be accurate, they are often time, cost, and labor intensive the experimental technical requirements demand meticulous attention to detail over a longer timeframe. They also have limited suitability for the IFT measurement of surfactant solutions, fluid-fluid systems, or viscous liquids. Here we describe a user-friendly microtensiometer which yields quick and accurate results. A droplet of water is trapped inside a microfluidic static drop array. The array consists of interconnected loops; each loop has a trap and bypass channel. The oil mixture is transported through the channel using a constant pressure source to determine the pressure at which the water droplet begins to squeeze out of the constriction. Equating this squeezing pressure to the Laplace pressure drop across the trapped drop (using Young-Laplace equation), we are able to determine interfacial tension of fluid-fluid interfaces. Different concentrations of Span 80-mineral oil and Tween 20-water mixtures will be tested and compared to tabulated values to check the accuracy of the microtensiometer. We will also test the possibility of multiple IFT measurements by multiplexing the system.

110. ULTRAVIOLET AND ENVIRONMENT DEGRADATION OF POLYMERIC FABRICS

Presenter(s): Logan, April*Authors: Logan, April*

Although it is qualitatively understood and accepted that the mechanical integrity of polymeric webbings materials, such as those used for backpacks or tree stands, deteriorates due to outdoor exposure to sun's UV radiation, heat and moisture. Quantitative studies of these effects have been rare and primarily performed via accelerated tests conducted in laboratory settings. The purpose of this study was to develop a quantitative understanding of the effect of exposure to outdoor environment, including solar radiation, heat, cold, wet and dry cycles. As such, three different common webbing materials, namely, polypropylene, polyester and nylon were selected and subjected to up to 24 months of outdoor exposure, at one month increments. Following the environmental exposure, each material was tested via a standard tensile test to determine the load-deflection behavior of each material for different exposure periods and then the results were compared with that of the unexposed materials. It is postulated that the results of this research can capture the outdoor degradation rate of each type of webbing material and can be used as a guideline for design engineers seeking to determine the useful life of the webbing materials tested, as well as selection of the most suitable webbing material for outdoor usage.

111. EVALUATING THE IMPACT OF CLIMATE CHANGE ON DYNAMICS OF HOUSE INSURANCE CLAIMS

Presenter(s): Naser, Danna*Authors: Naser, Danna; Soliman, Marwah; Lyubchich, Vyacheslav; Gel, Yulia; Esterby, Sylvia*

The adverse effects of climate change bring increasingly more alterations into all aspects of human life and welfare, and one of the sectors that is particularly affected is insurance industry. Indeed, the year 2013 brought a record amount of claims and losses due to weather related damages, which in the USA and Canada alone cost to insurers more than \$3 billion. We aim to provide a statistical data-driven insight into (non)linear relationship between weather-related house insurance claims and atmospheric variables, and to predict future claim dynamics accounting for changes in extreme weather. We propose to employ a flexible Generalized Autoregressive Moving Average (GARMA) model for count time series of insurance claims, develop a new method to compare tails of the observed and projected extreme precipitation and evaluate its impact on number of claims in the GARMA framework. We illustrate our approach by studying house insurance claims in three North American cities.

112. MODELING HANTAVIRUS CYTOKINE ACTIVITY WITH STOCHASTIC DIFFERENTIAL EQUATIONS

Presenter(s): Offer, Annabel*Authors: Offer, Annabel; Allen, Linda J.S.*

Over twenty-one Hantaviruses, rodent-borne viruses with high lethality in humans, have been identified around the world. These viruses cause illness, Hantavirus cardiopulmonary syndrome (HCPS), and Hemorrhagic fever with renal syndrome (HFRS) when transmitted from their rodent reservoirs to humans. Hantavirus is known to have three different effects dependent on the human or rodent host. In the rodent reservoir, the virus will persist with no disease. In the nonreservoir rodent, the virus causes an infection but is eventually cleared. In the human host, the virus causes severe pathology and disease, usually leading to death. This poster will model the body's responses to Hantaviruses



using stochastic differential equations, focusing on the pro-inflammatory and anti-inflammatory cytokine responses and their effect on the persistence or clearance of the virus. By creating models that accurately represent the possible effects of the virus and studying the behavior of the models, we gain a greater understanding of Hantaviruses and move closer to finding a vaccine.

113. CIRCLE PACKING RANDOM TRIANGULATIONS**Presenter(s): Orrantia-Kotowski, Olivia***Authors: Orrantia-Kotowski, Olivia; Williams, Brock*

The deep connection between conformal maps and discrete maps from one circle packing to another have been an object study since Thurston's pioneering work in the 1980's. Far less well understood is the nature of maps from a random triangulation to a circle packing for that triangulation. We will describe our work analyzing such maps. We expect there to be a normal distribution of point relations as they move from a random triangulation to a circle packing. Our research will serve to help validate our current hypothesis.

114. AN ANALYSIS OF HUMAN CAPABILITY TO SOLVE LOGIC BASED PUZZLES**Presenter(s): Oyewole, Feyi; Chen, Victor***Authors: Oyewole, Feyi; Chen, Victor; Sanchez, Eric; Khalaf, Ahmed; Mathew, Cyril*

Our aim is to create a puzzle video game that is highly interactive. We seek to challenge the player by having them solve a series of logic-based questions in order for them to progress through and clear the game, in addition to problem-solving questions players will also have to interact with and gain the favor with enemies in the game in order to ensure their freedom and complete the game. Our research will be to see how many people can solve our questions within a given amount of time. There will be three difficulty settings that pose harder questions (Beginner/Moderate/Expert). The game is set in Berlin in the year 1945, the player is an American spy who has been captured by the Bundesnachrichtendienst (German Secret Service) and is being interrogated and tortured to reveal secrets that could bring down the missile defense system leaving the United States of America vulnerable to an attack from Axis forces. For every question the player gets wrong, their health bar or vitality will be reduced until they have no more health upon which they would receive a Game Over. Successfully answering the question will lead to a little bit of extended time on the next question. Answering the questions correctly is only a part of beating the game; players must also attempt to develop a bond with their captor in order to escape capture. For example, a player could answer all questions correctly but have not gained the favor of their captor which would result in a Game Over.

115. ANALYZING AND ALLEVIATING HUMAN SOUND SENSITIVITY THROUGH DIGITAL SIGNAL PROCESSING**Presenter(s): Waters, Graham***Authors: Waters, Graham; Seaquist, Carl*

Many people report having aversions to particular sounds such as the commonly known "fingernails on the chalkboard" or the "stealth tone". Our research goals are to identify specific forms of sound waves that cause many people to feel annoyed or irritable and secondly, to identify a means by which these specific aural sensitivities can be eased or eliminated using filtering. Initially the effectiveness of this approach will be explored using digital signal processing, audio frequency analysis, and algorithmic filtering in programs such as Audacity, Audition, MatLab and Xcode. Early observations indicate that frequencies of sound in the ranges of 3000Hz and 5000Hz (respectively) are high irritators to subjects when encountered in high stress environments. The challenge will be to develop real time algorithms that can filter the offending frequencies without destroying intelligibility of normal speech.

116. SMARTX: AN EMBEDDED PROXIMITY DETECTION SYSTEM FOR REDUCING COLLISIONS**Presenter(s): Williams, Joshua***Authors: Beasley, Clinton; Brasuell, Zachary; Lim, Sunho; Shin, Michael; Williams, Joshua*

In 2012, a total of 726 bicycle riders died in the U.S., or 2% of all traffic fatalities during the year. Fifty-six bicycle rider fatalities occurred in Texas, which was the third highest in the nation. Almost 30% of all cyclists' injuries are caused when bicycle riders are hit by a vehicle. This project aims to provide a way for cyclists to alert nearby drivers of their presence to avoid any potential collision using an embedded proximity detection system. In the proposed system, a bicycle rider periodically broadcast a beacon message. Then all nearby drivers will receive the message on his/her smartphone, which will alert the driver of the cyclists' nearby presence. Here, interaction between drivers and their smartphones is eliminated to remove any distractions while driving. We are developing a proof-of-concept and envision a significant reduction in vehicle/bicycle collisions.

117. IGNITION AND EXPLOSION CHARACTERISTICS OF ALUMINUM NANO-PARTICLES**Presenter(s): Zepper, Ethan***Authors: Zepper, Ethan; Pantoya, Michelle; Marston, Jermey*

Aluminum (Al) nano-particles burn in an oxygen rich environment but observation of this process at high speeds and for high resolutions has not ever been documented. With new, advanced technology, a high-speed imaging camera at frame rates of 310,000 frames per second and pixel resolution on the order of 100 microns has enabled new observations of the explosive behavior of aluminum particles when subjected to electrostatic discharge (ESD) stimuli. The ESD source provides at least 0.1 mJ to spur ignition at heating rates on the order of 10^8 K/s.



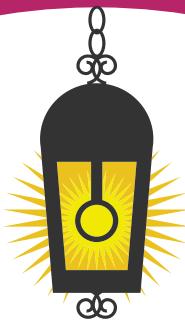
Results show that Al particles exhibit 5 stages of heating and combustion. The stages are marked by an initial heating, followed by liftoff and pulsations that promote explosions within the particle clusters that propel fragments on the order of 20 m/s. These results provide experimental evidence of current theoretical models for nano-Al particle ignition and combustion.

118. MEASUREMENT OF BLACK HOLE MASS IN ACTIVE GALACTIC NUCLEI

Presenter(s): Zhelyeznyakov, Maksym

Authors: Zhelyeznyakov, Maksym

Active galactic nuclei (AGN) are compact regions near the center of ~10% of all galaxies that exhibit higher than normal brightness, probably due to the active accretion of a central supermassive black hole. In our experiment, we attempt to measure the masses of the supermassive black holes through a technique called 'reverberation mapping'. To do this we use a series of telescopes located across the world to collect the images of specific AGN Mrk1048 and Mrk926. These images allow us to infer the rate of change of flux of an AGN relative to other objects in the sky and determine emission-line lags over a period of time. From the line width of the emission lines, as well as the inferred reverberation radius we can then determine the mass of the central black hole.



SOCIAL SCIENCES

abstracts #119-135

POSTER
PRESENTATIONS

Anthropology/Archaeology
Economics
Psychology
Social Work
Sociology





119. DRINKING AND SEX MOTIVES: ASSOCIATIONS WITH ALCOHOL PROBLEMS AND RISKY SEX

Presenter(s): Acosta, Ileana*Authors: Acosta, Ileana; Blanchard, Brittany; Littlefield, Andrew; Talley, Amelia; Brown, Jennifer*

Extant literature identifies four primary motives to consume alcohol (i.e., enhancement, social, coping, and conformity). Previous studies have also identified motivations for having sex (i.e., enhancement of pleasure, to achieve intimacy, and coping, which includes self-affirmation, partner approval, and peer approval). Existing research suggests these motives relate to negative health outcomes; however, there is limited research examining the relation among motives and risky behaviors simultaneously. Thus, the present study examined associations between drinking and sex motives, and the relation of these constructs with the number of alcohol problems and number of sexual partners. Participants consisted of 434 undergraduates, who reported at least one lifetime occasion of drinking and one sexual experience. Participants completed demographic questions, Young Adult Alcohol Problems Screening Test (YAAPST), the Drinking Motives Questionnaire - Revised (DMQ-R), and the Sexual Motives Scale. Results indicated a significant association between several drinking and sex motives, and that both motives for alcohol use and sex additively (and super additively) predicted higher levels of sex partners and alcohol-related problems (e.g., individuals with higher scores in partner approval sex motives and higher scores in drinking to conform had more alcohol-related problems). Overall, these findings suggest alcohol and sex motives should both be considered in models that seek to predict risky behaviors among college students and highlight the utility of linking motivations with behavioral outcomes.

120. EVALUATING THE TELEVISION SHOW DANIEL TIGER'S NEIGHBORHOOD AS A VIDEO-BASED MODEL TO TEACH SOCIAL SKILLS TO CHILDREN WITH AUTISM

Presenter(s): Alonzo, Marisol*Authors: Alonzo, Marisol; Brewer, Adam; Dotson, Wesley*

Deficits in social communication results in abnormal social exchanges in social participation and social relationships in children with Autism Spectrum Disorder (ASD). Children with ASD do not follow typical patterns when developing social skills and are unable to predict or understand other people's actions, leading to a failure to develop positive relationships. The purpose of this study was to evaluate whether watching Daniel Tiger's Neighborhood episodes can help children with ASD learn social skills taught in the show. Targeted social skills include sharing, time to stop playing, and trying new foods. Skills were taught through direct instruction provided by the cartoon characters, along with a facilitator such as a teacher or parent. The percent of each skill performed correctly was measured using a multiple baseline across skills design replicated across participants. The study included three phases: baseline, intervention, and maintenance. The results suggest that Daniel Tiger's Neighborhood episodes can help children with ASD learn social skills. Additional participants continue to be run through the protocol.

121. ABNORMAL HEALING OF A FEMORAL SPIRAL FRACTURE AND ITS FUNCTIONALITY IN A CYPRIOU GERIATRICIAN

Presenter(s): Assefa, Sewasew*Authors: Haileselassie, Sewasew; Paine, Robert; Kyriakou, Xenia*

While the study of exhumed burial remains from the St. Nicholas cemetery of Cyprus was undertaken by the 2014 field school held by Texas Tech University a very unusual fracture pattern to the left femur was identified in burial number 14. The purpose of this presentation is to share information specific to this unique fracture. In addition to this fracture, the individual showed numerous skeletal traumas including: a dislocated left shoulder joint, fractured radius, multiple blunt force traumas to the skull and an unhealed le fort III fracture of the splanocranum. Unique to this project, demographic records kept at the cemetery are available and the records show that the decedent lived to be 100 years old. Similar to most of the injuries seen on the individual, the break of the femoral neck from the shaft did not receive medical attention and the healing was not set in normal anatomical position. To accommodate continued use, skeletal features show that he developed a pseudo-joint replacing the hip joint by utilizing the posterior surface of the femoral head and the posterior surface of the lesser trochanter. Eburnation on both of these surfaces indicates that this pseudo-joint was functional. This paper will discuss the skeletal structures that have been affected by this modification and bio-mechanical functionality.

122. SUICIDE RISK IN STUDENTS WHO ARE ATHLETES: THE ASSOCIATION BETWEEN PARTICIPATION IN SPORTS, SPORT-RELATED INJURIES, AND THE ACQUIRED CAPABILITY FOR SUICIDE

Presenter(s): Boyd, Kristin; Hamlin, Lacey*Authors: Boyd, Kristin; Roush, Jared; Guidry, Evan; Cukrowicz, Kelly; Hamlin, Lacey*

Most athletes are between the ages of 15 and 24 (Baum, 2005), which is a period of increased risk for suicide ideation and suicidal behavior (Drapeau & McIntosh, 2014). Participation in sports includes exposure to pain (Smith & Cukrowicz, 2010), which may increase acquired capability (ACS; Joiner, 2005; Van Orden et al., 2010). The current study will examine the association between participation in sports, sport-related injuries (SRI's), and ACS. We hypothesize that the frequency of SRI's will moderate the association between participation in sports and ACS, such that the association will be greater for those who experience more SRI's and weaker for those who experience fewer SRI's. Participants will be Texas Tech University undergraduate students (projected N = 100+) with varying experience with sports. Participants will complete self-report measures of fear of death (ACSS-FAD; Ribeiro et al., 2013), engagement in painful and provocative events (PPES; Bender et al., 2011), history of sports participation, and history of sport-related injuries. A measure of participants' pain tolerance will also be administered using a pain algometer. Results consistent with our hypotheses would suggest that individuals with a history of engaging in sports more frequently have greater scores on ACS than individuals who have engaged in sports less frequently, and that this association would be moderated by the frequency of SRI's. This information has clear clinical implications given some collegiate athletes experience psychological stressors (e.g., suffering a career-ending injury) that may contribute to suicidal desire and exacerbate suicide risk in the presence of ACS.



123. DEVELOPMENT OF A COMMUNITY-BASED FAMILY COOKING & NUTRITION EDUCATION INTERVENTION IN EAST LUBBOCK: A PILOT STUDY

Presenter(s): Bunting, Kari; Moreno Jaramillo, Alejandra

Authors: Bunting, Kari; Park, Oak-Hee; Hoover, Linda

For underserved, low socioeconomic populations, like in East Lubbock, there is a lack of community based family cooking programs. The Let's Cook, Eat, and Talk (LCET) program was created as a part of the East Lubbock Promise Neighborhood program to help East Lubbock residents improve nutritional quality in the home environment. The objectives of the program are: to examine the impact of nutrition education and practical cooking skills, to increase consumption of fruits and vegetables, and to investigate the influence of family meal time interactions. Forty-five families were recruited through the community, however 4 families with at least 1 child (N= 13) were invited to the pilot study (4 week Sunday program). After the pilot study, each family member was invited for interview sessions to assess satisfaction and improvement of the program. Results from the post interviews suggest providing cultural variety in the weekly menus. Survey results showed 95 percent of participants were satisfied with the LCET program with increased positive communication and more frequent meal preparation in the home environment. A six month follow-up survey will also be distributed and analyzed to assess the long-term effects of this intervention. As proven in our pilot study, LCET will help the East Lubbock residents develop and improve healthy eating practices and increase family connectedness. This community-based family nutrition intervention for underserved populations may serve as a model template for future tailored community nutrition programs in the United States.

124. A NARRATIVE HISTORY OF NURSES IN NEONATAL INTENSIVE CARE UNITS

Presenter(s): Floyd, Keely

Authors: Floyd, Keely; McCarty, Michael

Newborn babies who need specialized medical attention are admitted into Neonatal Intensive Care Units (NICU), which specialize in the care of ill or premature newborn infants. NICU's have existed since the 1960s, and have a vital role in reducing infant mortality rates and increasing quality-of-life outcomes in at-risk babies. The purpose of this study is to gather and synthesize information from nurses with years of experience in the NICU. We plan to conduct structured interviews with experienced NICU nurses and analyze these interviews for common themes. Expected emergent themes include that this field undergoes rapid change which has a strong impact on the nurse's professional life and on society in general. With respect to rapid changes in the NICU, the focus will be on the development of new equipment and techniques for caring for infants, changes in the standards of care over time, and changes in outcomes for vulnerable infants. With respect to the impact on the nurse's professional life, they will have experienced increasing demands for higher-education and specialized knowledge which may affect stress levels and morale. The impact for society-at-large is a greater awareness of NICUs and changing expectations of outcomes for babies born prematurely.

125. ANALYSIS OF FOOD SECURITY IN GUATEMALA

Presenter(s): Garcia, Manuel

Authors: Garcia, Manuel

The first of the Millennium Development Goals 2015 was to eradicate extreme poverty and hunger. However, this goal has not been fulfilled in several countries including Guatemala (ELCSA, 2011). The main objective of this study is to assess the situation of food security in Guatemala using data on food expenditures obtained from the last Survey of Living Conditions (ENCONVI, 2011). The assessment of food security will follow a three-step approach. In the first step we will categorize households' food security by comparing the amount of calories available and the recommended calories intakes (FAO/WHO/UNU, 2001). In the second step we will calculate basic summary statistics in order to provide a quantitative description of the situation of food security in the country. In the third step we will use more advanced statistical methods to (e.g., Propensity Score Matching) to analyze the impact of factors affecting food security. The factors to be analyze include location of the household (rural versus urban), access to land and gender. Data management and statistical analyses will be conducted using the statistical software SAS. We expect to generate information that can be useful for policy makers and other organizations working to reduce poverty and hunger in Guatemala.

126. AN ANALYSIS OF THE BROKEN WINDOWS THEORY

Presenter(s): Geddes, Thomas

Authors: Geddes, Thomas

Introduced in 1982 by James Q. Wilson and George Kelling, the "Broken Windows Theory" has been an important, yet, controversial part of law enforcement strategy since its inception. The principle behind it is that in an environment that has order and is well maintained, criminal behavior will not be tolerated. However if an environment is lacking order and not maintained (broken windows, graffiti), it shows that is an area where criminal behavior will not stop. The authors believed that the "broken window" by itself is not important. But the message that multiple "broken windows" send to a would be criminal is. That message is that this neighborhood is vulnerable and shows that community will not take a stand against criminal acts. The testing group for the theory is the New York City area, it is where Wilson and Kelling started their research and where Mayor Rudy Giuliani first implemented as policy, by cracking down on "quality of life" such as public urination, graffiti, and is believed to be a main catalyst in the 56% drop in crime from 1990-1999. However it led to the controversial "Stop question and frisk program" and its detractors believe that theory is incorrect and attacks minorities. In my opinion the theory is correct and fixing those problems will help stop crime but to what extent I am uncertain. To find the answer a larger sample size must be taken by looking at the places in Texas, Mexico, the United States, and Internationally.



127. THE EFFECT OF VIOLENCE RISK EDUCATION ON JUROR PERCEPTION OF VIOLENCE

Presenter(s): Hoeffner, Camden*Authors: Hoeffner, Camden; Morgan, Robert*

The study of violence risk assessments has evolved substantially over the past several decades. As the research has increased, clinicians' abilities to assess a person's propensity for future risk has grown substantially, and consequently, so has the need for empirical research regarding how to best communicate the results of these assessments to jurors. The present study examined whether providing jurors with additional information about expert testimony, such as education about the crime statistics that are often presented during trials, is an effective means of mediating negative perceptions of a defendant. Participants ($N = 199$) were asked to assume the roles of jury members and provided a de-identified case vignette about a defendant in a criminal trial. Participants were randomly assigned to one of three groups: (1) No Explanation (control group), (2) Written Narrative Explanation, and (3) Written Narrative and Visual Explanation. They were then instructed to judge the defendant's risk of violence, dangerousness, sentencing, and overall perception of the defendant based on the vignette and the education they received. The results of this study indicate that added education about statistics and base rates does not help mitigate negative juror perception of defendant risk.

128. ENDURING EFFECTS OF MULTIPLE AND SEVERE CONCUSSIONS ON COGNITIVE FUNCTION

Presenter(s): John, Joshua*Authors: John, Joshua*

A concussion is a form of traumatic brain injury arising from a blow to the head resulting in an impairment of cognitive function. This study examines the relationship between the number of concussions and the duration of the concussion (severity) and its affect on cognitive function. Study participants were drawn from the Project FRONTIER data set. Project FRONTIER is a longitudinal community-based, participatory, epidemiological study of individuals forty years and older residing in three West Texas rural counties. The current Project FRONTIER data consists of 1209 individuals ranging from 40 to 96 years old including the following ethnicities: Hispanic, non-Hispanic White, Black/African American, and other. We will record the amount of times each individual has been knocked unconscious and for how long they were unconscious (in minutes). The R-BANS Test, consisting of neurocognitive test paradigms testing memory, attention, language, and visuospatial ability, will be used to compare the number of concussions and duration of the concussion and measure cognitive function. Regression, the statistical tool for this project, will measure the cognitive function based off the results of the RBANS test. We hypothesize that those who experience concussions will have poorer cognitive function than those who have not experienced any concussions. Likewise, those with a greater number and duration of concussions will have poorer cognitive function compared to those with a fewer number and duration of concussions.

129. INGOLD'S LINE

Presenter(s): Lightfoot, Caleb*Authors: Lightfoot, Caleb*

Timothy Ingold, through a comparative anthropology of the line, categorizes human line making into a taxonomy consisting of two principle categories: threads and traces. Threads are any strands capable of being manipulated in three dimensional space, whereas traces exist as any enduring mark left in or on a solid surface by a continuous movement (Ingold 2007). Additionally Ingold's theories further identifies distinctions between wayfaring and transport: two ways of line interactions. For societies like the Walbiri Aborigines, wayfaring is a mode of operating along meandering lines (Ingold 2007). Noted by Bruce Chatwin, the Walbiri people make no semantic difference for country and lines; an interesting comparison that demonstrates a woven connection between perception and environment (Chatwin 1970). Borrowing the theoretical premise of line defined by Ingold, this research focuses on evaluating the 21st century megalopolis as constructions of such interactions. The complexity of current conditions in the built environment make reductive models of design theory inert in their application. How can Ingold's notion of wayfaring, generally applied to pre modern societies, establish useful frameworks for understanding life in the Post Modern city? This proposal will filter the writings of Ingold through the architectural projects of thinkers such as Enric Miralles and Giambattista Piranesi and will establish an intricate connection between lines and the development of the contemporary megalopolis.

130. DISMEMBERMENT IN SOUTH AND CENTRAL AMERICA: MACHETE CUT MARK ANALYSIS

Presenter(s): Mitchell, Samantha*Authors: Mitchell, Samantha*

In the field of forensic sciences, dismemberment of the human body via sharp force trauma is analyzed by examining the specific cut marks that the saw or blade leaves behind on the bone. Each tool utilized leaves a specific mark or cut that is unique to the blade and consequently can be linked to the manufacturer. Cutmark analysis in the United States primarily focuses upon tools that are manufactured and sold locally in the United States. Cases of dismemberment are not uncommon in international violations of human rights, specifically, in South and Central American countries. Current cutmark analysis studies exclude tools sold and utilized in South and Central America. In modern cases of international human rights violations the tools utilized are not generally manufactured or purchased in the United States. This study addresses this gap, and attempts to provide a method of standardized cutmark analysis, focusing specifically on machetes manufactured in Honduras, Central America. In addition to an in-depth literature review, tools manufactured in Honduras, Central America will be utilized on faunal bones and then subsequently analyzed. The purpose of this study is to lay a foundation for cutmark analysis that is specifically applicable to cases involving the violation of human rights.



131. SEX TRAFFICKING: PROTOCOLS FOR HOTEL EMPLOYEES AND LAW ENFORCEMENT

Presenter(s): Overbeck, Ashton*Authors: Overbeck, Ashton*

Sex trafficking (defined as a form of modern day slavery where minors and adults are enticed, solicited, forced and coerced into the commercialization of paid sexual encounters) is an exponentially growing problem in the United States. Hotels play a large role in this crime, both as harbors of victims and as the setting where criminal transactions often take place. This issue extends beyond large, urban cities, reaching into suburbia's such as Lubbock, Texas (population = 239,538). Two separate sex trafficking instances have occurred in the past three years: one at Lubbock's most prestigious hotel, and the other at a budget friendly Inn. In response, I am proposing a study to closely examine protocols related to awareness training and mechanisms of handling suspicious behaviors linked to sex trafficking. In this research, I seek to collect survey data from a large number of hotel employees in Lubbock and I will conduct qualitative interview managers, concierge and housekeepers and other personnel and law enforcement who were directly involved with the prior instances in Lubbock. Not only is it imperative for hotel establishments to be prepared for the fastest growing enterprise of organized crime, law enforcement should also have a universal protocol to recognize warning signs and respond to suspicious behavior. My end goal would be to push informed legislation and create policy for a nation wide protocol for combating sex trafficking.

132. ASSESSMENT OF STUDENTS INTER-CULTURAL SENSITIVITY AFTER A SHORT-TERM STUDY ABROAD PROGRAM

Presenter(s): Quijada, Rafael*Authors: Quijada, Rafael; Brenes, Baleshka; Morales, Sarabi; Boren, Amy; Brashears, Todd*

In October 2014, forty-six students from the National Agricultural University of Honduras participated in a short-term study abroad for two weeks hosted at Texas Tech University by the International Center for Food Excellence (ICFIE). The main purpose was to expose Honduran students to the United States culture, technology and opportunities in their field (Spillane, personal communication, April 29, 2014). Authorities in agricultural academia consider study abroad an important tool to internationalize students' curriculum (Brooks et al, 2006). According to Brooks et al. (2006) study abroad experiences are the most effective way to teach undergraduate students about international agriculture. The purpose of this research study is to assess students' inter-cultural sensitivity as a result of their experience abroad in the United States, aiming to evaluate the efficacy of short-term study programs and the impacts on students' cultural sensitivity. The instrument used for data collection was the Intercultural Sensitivity Index (ISI) (Olson & Kroeger, 2001). The research methodology for the study is a one-group pretest-posttest design. Data will be analyzed by conducting a dependent t-test to compare two means (pretest and posttest). Preliminary analysis suggests there was an increase in participant's inter-cultural sensitivity after a short-term study abroad. This reflects a positive impact of student's perceptions towards a new culture.

133. VISUAL COLOR CUES AND HEALTH COMMUNICATION: INVESTIGATING THE PERSUASIVENESS OF MESSAGE DESIGN FEATURES

Presenter(s): Sirgo, Matthew*Authors: Sirgo, Matt; King, Andy*

There has been increased consideration by researchers and practitioners about design considerations when presenting health information through strategic messaging outlets (e.g., public service announcements, web sites, printed/digital information pamphlets). One aspect that has been under researched thus far in the area of health communication is the function of color cues. Previous research in psychology has demonstrated that certain colors promote or hinder knowledge gain, as well as result in messages being more or less persuasive. The present study examines the interaction of visual color primes (red vs. gray) and message type (narrative vs. statistical) to determine if colors prime differential emotional responses that in turn influence the perceived effectiveness of the messages. The study uses experimental methods and a 2 x 2 factorial design (color prime x message type) to explore this possibility. Hypotheses predict that the use of a red color prime will result in greater affective response by participants than any other color/message combination and in turn be perceived as the most effective message. The use of a gray color prime with a dominantly statistically-oriented message is predicted to be perceived as the least effective message. Implications for message design in the area of strategic health communication will be discussed.

134. CHANGES IN BODY WEIGHT AND HEALTH MARKERS FROM A SHORT-TERM VACATION

Presenter(s): Tokar, Theresa*Authors: Tokar, Theresa; Cooper, Jamie*

Background: 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:** To determine the effects of short-term vacations on changes in body weight and health. **Methods:** One hundred and six adults (41 Men, 65 Women, Age=33±13yrs) who went on a 1-3 week vacation completed 3 visits. Visit 1 (V1) and 2 (V2) occurred 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 weight, blood pressure (BP), body composition, physical activity and stress levels. **Results:** Weight increased from V1 to V2 ($75.2 \pm 17.3\text{kg}$ vs. $75.5 \pm 17.5\text{kg}$ for V1 vs. V2, respectively, $p<0.05$); however, weight at V3 was not different than V1 or V2. BMI showed a trend for increasing from V1 to V2 and V3 ($26.0 \pm 5.3\text{kg/m}^2$ vs. $26.2 \pm 5.3\text{kg/m}^2$ and $26.7 \pm 6.6\text{kg/m}^2$, for V1 vs. V2 and V3, respectively, $p<0.09$). Both stress and systolic BP were higher at V1 compared to V2 and V3 (stress: 17 ± 6 vs. 16 ± 6 and 15 ± 6 for V1 vs. V2 and V3, respectively, $p<0.05$) and systolic BP: 117 ± 1 vs. 115 ± 1 and 115 ± 1 for V1 vs. V2 and V3 respectively, $p<0.05$). There were no differences in body composition or physical activity between visits. **Conclusions:** Short-term vacations result in significant weight gain. However, that weight gain does not persist 5-weeks post-vacation. Stress levels and BP were higher prior to the vacation, but had decreased at both post-vacation time points.

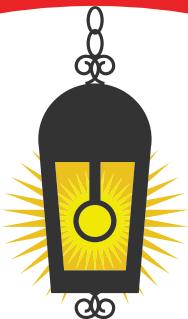


135. THE INFLUENCE OF TONIC ANXIETY LEVEL AND PFC EMOTIONAL REACTIVITY

Presenter(s): Wagner, Alison

Authors: Wagner, Alison; Herrera, Caleb; Bradshaw, Spencer; Dempsey, Jared

We conducted an exploratory analysis to investigate the relationship between level of anxiety and prefrontal cortex activation to emotional cues. Anxiety has long been identified as disrupting cognitive ability and processing. The prefrontal cortex is the region identified to be critical in executive function and attention. Thus, it was expected that tonic anxiety level would also be associated with prefrontal cortex activation during the viewing of standardized emotional images. A total of 15 participants were recruited for the present investigation. Tonic anxiety levels were measured through subjective report of the Penn State Worry Questionnaire. Participants viewed standardized emotional images gathered from the International Affective Picture System. Participants viewed each emotional image for a total of 10 seconds, during which time Functional Near Infrared Spectroscopy was utilized to determine prefrontal cortex activation patterns. The results indicated that level of tonic anxiety was positively correlated with increased activation in the left superior frontal gyrus when viewing negative images. In addition, the results suggest that individuals with high levels of tonic anxiety may perseverate more on negative stimuli.



ARTS

abstracts #136-139

ORAL
PRESENTATIONS

Art History
Dance
Music
Theatre
Visual Arts





136. SAINTE-CHAPELLE: KING LOUIS IX'S SPIRITUAL VISION AND POLITICAL CAMPAIGN

Presenter(s): Jones, Sarah*Authors: Jones, Sarah*

This presentation will demonstrate how the stained-glass windows of Sainte-Chapelle in Paris, dated 1239, represent King Louis IX's desire to live up to the spiritual and political achievements of his ancestors. Louis IX exemplifies the models of kingship and sainthood, and indeed was canonized in 1297. In seeking to make Paris the new Holy Land, he purchased the crown of thorns and pieces of the true cross from Baldwin II in 1238 and commissioned Sainte-Chapelle to appear as a giant reliquary to house these Passion relics. Furthermore, Louis IX wished for Sainte-Chapelle to be an equal and successor to Solomon's ancient temple in Jerusalem. After giving a brief background on the reputation of Louis IX, Rayonnant architectural style, and a description of the chapel, I will explore the design of Sainte-Chapelle as an expression of Scholastic thought. Within the concept of Scholasticism, I will more specifically analyze the influence of literary amplification, political propaganda, and biblical typology in the stained-glass windows. As king and pious promoter of the religious orders, Louis saw himself as God's earthly agent. Therefore, he felt justified in leading the Seventh Crusade in 1248. King Louis IX glorified not only himself, but also his mother, wife, and the Crusaders in Sainte-Chapelle as part of his grand agenda. The balance between the faith and self-promotion, saintly and administrative, is accomplished successfully within Sainte-Chapelle.

137. COPING WITH REALITY - LIVING WITH A CHRONIC DISEASE

Presenter(s): Parr, Eric*Authors: Parr, Eric*

Every day 35,000 plus students show up to class in a variety of states, and for some of us just showing up is the hardest part of the whole day. Sometimes I wish I could show everyone how much effort it took just to get out of bed in the morning, and make my professors understand that the reason I seem absent is because I'm in more pain than I can bear. Thus the purpose of this research will be to shed light on the struggles of students living with a chronic disease. This will be done in a three steps. First, I will start by interviewing students currently at Tech who have a chronic disease like myself and recording their experiences, past thoughts, and current outlook. Next I will prepare artworks based directly off my research that reflect the struggles we face day to day both in the physical and mental realms. Lastly, I will present my research to the university in the hopes that it will create an environment where people like myself with a chronic disease will feel more confident knowing that their fellow students and faculty stand behind them and there are others out there like themselves.

138. URBAN STAGE: STUDYING TRANSDISCIPLINARY RESEARCH

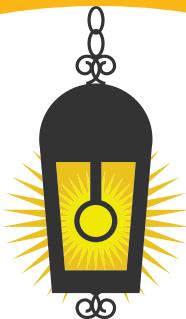
Presenter(s): Rubio, Juan Raymon*Authors: Rubio, Juan Raymon*

Collaboration between disciplines offers a wider range of resources and viewpoints. "Urban Stage" began as a Texas Tech Transdisciplinary research demonstration project for environmental, cultural, economic and social sustainability in downtown Lubbock. The goal is to study their insertions and impacts of such a project that only comes alive when open collaboration is possible. Findings are still in process and include the following; public surveys, interviews, and economic impact. The wide range of producers and contributors involved will show the benefit of this transdisciplinary research that has untapped potential to break down communication barriers and create a cohesive body within Texas Tech and the city of Lubbock. This will set a precedent for how different entities will work together to achieve an end product.

139. WHY STRASBOURG: REASONS BEHIND A GERMAN MOVEMENT DEVELOPING IN FRANCE

Presenter(s): Stranahan, Teresa*Authors: Stranahan, Teresa*

Sturm und Drang was a German theatrical movement that occurred between 1770 and 1776. Sturm und Drang, or "Storm and Stress", though founded by a group of young German men and considered a mainly German movement, was not developed in Germany but in Strasbourg, France. I will explore the reasons why a predominantly German movement was developed in France and why it could not have been developed in Germany. Because of Germany's lack of political unification, the necessary job security of artists and writers, and the threat of imprisonment, Germany was not a place for intellectual or literary endeavors to bloom into existence. Therefore, the main scholars of Sturm Und Drang went somewhere that would be a safe and comfortable place to develop their ideas, theoretical and creative alike.



BIOLOGICAL & CHEMICAL SCIENCES

abstracts #140-150

ORAL
PRESENTATIONS

Biology/Biochemistry
Chemistry/Biochemistry
Environmental Studies
Health Professions





140. NUTRITIONAL ASSESSMENT OF GRAIN SORGHUM HYBRIDS CROP RESIDUES GROWN UNDER CHALLENGING WATER CONDITION

Presenter(s): Campanili, Pedro

Authors: Campanili, Pedro; Sarturi, Jhones; Trojan, Sara; Davis, Tyler; Tabke, Melissa

Agronomic parameters and nutritional composition of two hybrid cultivars and respective crop residues were evaluated. Cultivars used were originally from Sorghum Partners®: a) NK7829 (Traditional); b) NK8416 (Stay-green). Hybrids were grown under subsurface drip irrigation system at the Plant and Soil Science Research Station, Texas Tech University, located in Idalou, TX for 147 d. Cultivars were randomly assigned within blocks ($n = 6$) to zones ($n = 12$; 2.63 ha each) in a RCBD. Whole plant samples (3; 0.91m 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 sorted ($n = 1$ per zone) for the following yield components: grain (GY), stem (SY) and leaf (LY). For harvested grain yield (HGY) a commercial combine equipped with truck scale was used. Plant components were analyzed for crude protein, neutral detergent fiber, acid detergent fiber and in vitro digestibility. Leaf/stem ratio (L:S) and grain/plant ratio (G:P) were also calculated. Data were analyzed using the GLIMMIX procedure of SAS, using zone as experimental unit and random effect of block. Greater SY (2129 vs. 1497 kg DM/ha; $P < 0.02$), GY (4861 vs. 3265 kg DM/ha; $P = 0.02$) were observed for Stay-green hybrid than Traditional. Conversely, greater L:S was observed for Traditional hybrid. Stay-green cultivar evaluated showed greater overall digestible residue yield. Stay-green cultivar appears to better attend agronomic parameters for forage production purpose compared to traditional cultivar.

141. RUMINAL DEGRADATION KINETICS OF NUTRITIONAL COMPONENTS OF GRAIN SORGHUM HYBRIDS CROP RESIDUES GROWN UNDER CHALLENGING WATER CONDITIONS

Presenter(s): Campanili, Pedro

Authors: Campanili, Pedro; Sarturi, Jhones; Trojan, Sara; Vargas, Fernando; Schmidt, Tanner

Ruminal kinetics of crop residues nutritional components crucial for cattle feeding from two grain sorghum hybrids were evaluated. Two hybrid cultivars were used from Sorghum Partners: a) NK7829 (Traditional); b) NK8416 (Stay-green). Sorghum was grown under subsurface drip irrigation system (230 mm of rainfall plus 100 mm of irrigation) at the Plant and Soil Science Research Station, Texas Tech University, Idalou, TX for 147 d (June/2013 to November/2013). Cultivars were randomly assigned within blocks ($n = 6$) to zones ($n = 12$; 2.63 ha each) in a RCBD. After harvesting, crop residue bales from each respective hybrid were commercially contracted. A composite sample was generated from sub-samples from each respective treatment hybrid zone ($n = 6$). Composited sample was ground in a Wiley Mill with a 2 mm screen. Samples were weighed (5 g) in Ankom bags and prepared for in situ degradability approach. Bags reversely incubated in duplicate at 0, 3, 6, 12, 24, 36, 48 or 72 hours in the rumen of three ruminally-cannulated steers ($n = 6$; BW \pm 722 kg). A cross-over design was used, where 3 steers received each respective treatment during the trial periods ($n = 2$). Incubation residues were analyzed for ash, crude protein, neutral detergent fiber and acid detergent fiber. Preliminary results has shown crop residues from Stay-green hybrid provides greater fiber components and digestible yields (in vitro data) compared to the Traditional hybrid. However, ruminal degradation kinetics of nutrients need to be considered when predicting the feeding value of material.

142. HDIA1 KNOCKDOWN IN HUMAN NATURAL KILLER CELLS GREATLY REDUCES CYTOTOXICITY

Presenter(s): Cotton, Sarah

Authors: Cotton, Sarah; Kitten, Erin; Butler, Boyd

Natural killer cells are an integral component of the innate immune system and their function is to find stressed, infected or cancerous cells and destroy them effectively using lytic granules. The lytic synapse is the junction or interface of the NK cell and the target cell that requires a rearrangement in the cytoskeleton. This is created when transporting the lytic granules to the target cell for its destruction. The lytic synapse requires precise coordination between actin, microtubules, and countless signaling molecules. Actin is responsible for the rearrangement of the cytoskeleton to form the synapse, while the microtubules are responsible for the transport of the lytic granules across the lytic synapse. In this study, hDia, a formin that interacts in the lytic synapse, was knocked down to determine what role it plays in the structure and function of the lytic synapse. The result was that the lytic synapse was still formed correctly however, cytotoxicity was greatly decreased. This indicates that hDia is integral in the transport of the lytic granules across the lytic synapse rather than establishing the structure of the synapse.

143. GALECTIN-3C INHIBITS MURINE BREAST CANCER CELL GROWTH AND MAY INCREASE THE ANTICANCER ACTIVITY OF PACLITAXEL

Presenter(s): Kim, Eunjee

Authors: Kim, Eunjee; Mirandola, Leonardo; Chiriva-Internati, Maurizio

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.



144. HIDDEN DANGERS OF HYDRAULIC FRACTURE DRILLING: INCREASED LEUKEMIA RATES IN NORTH TEXAS

Presenter(s): Lanza, Jessica*Authors: Lanza, Jessica*

Is there a relationship between leukemia clusters in North Texas and fracture drilling? Fracture drilling injects millions of gallons of water, sand and chemicals underground. Only 15–60% of this fluid is actually recovered and then stored in open ponds or injection wells. This toxic fluid is often leaked due to worker negligence, faulty equipment, blowouts, cracks in well casings and intentional disposal of wastewater in water wells and creeks. Many of the drilling sites are located within neighborhoods, which have shown increases in leukemia and lymphoma cases since widespread fracture drilling began, possibly due to benzene contamination. Benzene has been identified as a leading chemical cause of leukemia. This study will compare leukemia and lymphoma cases and proximity of drilling pads. Water samples from households in close proximity to pad sites are currently being tested for benzene, arsenic, and other heavy metal contamination.

145. CLIMATE CHANGE AND ECOSYSTEM SERVICES

Presenter(s): Norton, Alexander*Authors: Norton, Alexander*

Anthropogenic emissions of greenhouse gases have immense and devastating impacts on the environment. Some of these ecological impacts include increasing global average surface temperature, rising sea levels, ocean acidification, major changes in precipitation patterns, and more frequent and extreme storms. Current and future impacts that climate change may have on the earth's ecology also may impact local, national, and global economies. As scientists begin to better understand climate change, it is becoming increasingly important to relate its ecological implications with economic perspectives. I hypothesize that by relating the effects of climate change with economic principles, humanity may better understand the financial importance of reducing greenhouse gas emissions and supporting alternative energy sources. In order to test my hypothesis, my thesis project will consist of reviewing and synthesizing existing literature between climate change and ecosystem services in order to increase our understanding of the numerous complex relationships that exist between the environment and the economy.

146. EXPRESSION PROFILING OF COTTON GHMYB25LIKE GENE A AND D ALLELES USING ARABIDOPSIS AS A MODEL SYSTEM

Presenter(s): Person, Taylor*Authors: Person, Taylor; Pang, Mingxiong; Mendum, Venugopal*

Cotton produces a valuable natural fiber for the textile industry. Understanding the cotton fiber initiation and development is essential to improve the cotton fiber yield and quality, but the genes underlying cotton seed fiber initiation and development have yet to be elucidated. GhMYB25L is one of the fiber initiation genes which, when silenced, inhibits fiber production. Cotton fiber initiation is comparable to Arabidopsis trichome initiation. Proper expression of genes is essential to initiate the trichome formation. Here, we employed Arabidopsis model system to study the expression pattern of cotton alleles of MYB25L gene. This project will compare the GhMYB25Like expression specificity using the promoters from A and D alleles (A and D subgenomes of tetraploid cotton-AADD) driving GUS expression. The results will show the similarity between Arabidopsis trichome and cotton seed fiber initiation.

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

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

Parasite infections and water temperature increases may negatively impact estuarine fish such as Atlantic croaker. Our objective was to investigate the impact of rising water temperatures and parasite infection by *Cymothoae excisa*, a common macro-parasite, on the immune system of croaker. Since wild fish are exposed to both changing water temperatures and parasite infection simultaneously, we tested the individual and interactive effects of these stressors. We predicted that fish infected by *C. excisa* would have an increased number of eosinophils to combat the parasites. We predicted that that the change in water temperature would trigger lower immune responses at lower temperatures and vice versa (<http://jeb.biologists.org/content/201/2/165.full.pdf>). Fish were acquired from a live bait facility in Corpus Christi, TX and were acclimated to the lab for 30 days. Fish were randomly assigned to one of four treatment groups: 29°C-Parasite infected (n=9), 29°C-Non-Parasite (n=6), 21°C-Parasite infected (n=9), and 21°C-Non-Parasite (n=6). Fish were acclimated in individual 20 L tanks for seven days. After a 14-day treatment period, 0.1 ml of blood was collected from the peripheral vasculature. Blood smears were created and stained using Wright's stain. Differential counts of white blood cells (WBCs) were conducted. No WBCs of any type were identified from any fish tested. Therefore, we could not address our original hypotheses on whether the parasites or temperature affect WBC counts. Improper procedures with handling the blood along with high levels of stress in the fish may have led to these results.

148. BETA-ADRENERGIC RECEPTOR SUBTYPE DISTRIBUTIONS DIFFER ACROSS CARCASS AND NON-CARCASS TISSUES IN FEEDLOT STEERS AND HEIFERS

Presenter(s): Riedel, Bailey*Authors: Riedel, Bailey; Burson, William; Baggerman, Jessica; Johnson, Bradley; Rathmann, Ryan*

Insight into the distribution of beta-adrenergic receptor (β -AR) subtypes across tissues in bovine is needed to more readily understand the ubiquitous influence of beta-adrenergic agonists beyond the carcass. English x Continental feedlot steers and heifers (n = 20; 10 per gender) were harvested at a commercial abattoir. Within 10 min post-mortem, 10-g biopsies of longissimus dorsi muscle (LM), heart, liver, lung, and kidney tissue were collected and transported to Texas Tech University. The relative mRNA and protein abundance of three β -AR subtypes (β 1-, β 2-, and β 3-AR) were determined by real-time quantitative PCR and western blotting, respectively. β 2-AR mRNA and protein



were differentially expressed across tissues, but were more pronounced in LM and less in the liver ($P < 0.01$). $\hat{\text{I}}22\text{-AR}$ mRNA and protein differed across tissues, being more pronounced in the kidney, and less in the liver (mRNA) and LM (protein) ($P < 0.01$). Protein abundance of the $\hat{\text{I}}23\text{-AR}$ did differ ($P < 0.01$), with a more pronounced concentration in the heart and less in the liver ($P < 0.01$). Within the LM, heart, liver, and lung the $\hat{\text{I}}22\text{-AR}$ was the densest $\hat{\text{I}}2\text{-AR}$ subtype present based on protein abundance ($P < 0.01$), and tended to be the greatest in the kidney ($P = 0.06$). Collectively, these data suggest that gender does not affect the distribution of $\hat{\text{I}}2\text{-AR}$ subtypes; however, the relative proportion of $\hat{\text{I}}2\text{-AR}$ subtypes is highly tissue dependent. Nevertheless, the $\hat{\text{I}}22\text{-AR}$ was the most populated within each carcass and non-carcass tissue evaluated.

149. FINDING A NOVEL TREATMENT FOR THE BIOLOGICAL WEAPON THREAT OF EPIDEMIC TYPHUS
BY TARGETING BETA-KETOACYL-ACP-REDUCTASE IN RICKETTSIA PROWAZEKII

Presenter(s): Villarreal, Oscar

Authors: Villarreal, Oscar

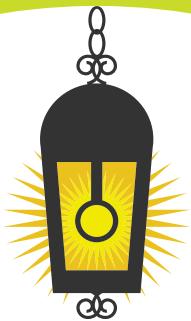
Epidemic typhus is a menacing disease world wide, which the NTI lists as one of America's greatest biological weapons threats and is caused by the bacterial pathogen *Rickettsia prowazekii*. This research focuses on finding novel inhibitors against beta-ketoacyl-ACP-reductase (FabG), which is an enzyme that catalyzes a reaction in the fatty acid synthesis type II system in bacteria. This fatty acid pathway is essential for survival; the FabG enzyme uses NADPH as one of its substrates, which facilitates the binding of acetoacetyl-ACP into the active site and is reduced into beta-hydroxyacyl-ACP. High throughput molecular docking software (GOLD) was used to screen a commercial library of ligands against the active site. The ligands with the best GOLD scores were selected to be tested in vitro using inhibition assays to investigate their ability to inhibit RpFabG. The coding DNA sequence for the RpFabG protein was cloned into a pNIC vector and transformed into *E.coli* BL21(DE3), then the protein was expressed with IPTG, isolated and purified using various chromatography methods. Spectrophotometric enzyme assays were performed to determine the ability of the drugs to inhibit RpFabG. Chlorogenic acid, a previously known inhibitor of homologous FabGs, was tested along with the other inhibitors, and was determined to have inhibitory effects on RpFabG. Co-crystallization of the RpFabG protein was carried out in order to obtain a structure, but only non-diffracting crystals resulted. More inhibition assays and crystallography trials are being performed in order to continue the search for a novel inhibitor of RpFabG.

150. PHOTO-INDUCED TOXICITY AND INTERACTION OF TITANIUM DIOXIDE NANOPARTICLES
WITH NATURAL ORGANIC MATTER IN AQUATIC SYSTEMS

Presenter(s): Wormington, Alexis

Authors: Wormington, Alexis; Overturf, Carmen; Roberts, Aaron

Titanium dioxide nanoparticles (TiO₂ NPs) are the most widely used nanoparticles in commercial industry, and come in two main forms: rutile and anatase. Rutile TiO₂ NPs are stable and are most commonly used as a pigment in paints and a UVR-blocking agent in cosmetics and sunblock. Anatase TiO₂ NPs have a surface defect that makes them photoreactive, and thus have applications as a photocatalyst in water treatment, self-sterilizing surfaces, environmental remediation, and energy production. These nanoparticles are present in our waterways, with a predicted high range concentration of TiO₂ NPs in the wastewater effluent of the San Francisco Bay in 2014 of 0.05-0.08 mg/L. Toxicity data regarding TiO₂ NPs towards aquatic organisms is inconsistent, with LC₅₀ values ranging from as low as 0.139 mg/L to undetectable in the freshwater zooplankton *Daphnia magna*. This is likely due to poor characterization of TiO₂ NPs (rutile-anatase mixtures, particle sonication, particle size, etc.) and test conditions (laboratory light versus UVR exposure). All natural freshwater contains varying amounts of natural organic matter (NOM) and UVR exposure, which many toxicity assays do not take into account. I would like to characterize the interactions of photoreactive anatase TiO₂ NPs with NOM, UVR, and *D. magna* through various exposure assays. I hope to obtain concise, quantitative data that provides a clear picture regarding the effect of TiO₂ NPs to natural aquatic systems.



BUSINESS EMPHASIS

abstract #151-152

ORAL
PRESENTATIONS

Business





151. FINANCIAL PROCESSES: THE COMPLETE AUTOMATION

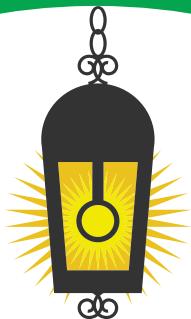
Presenter(s): *Alexandrov, Olzhas**Authors:* *Alexandrov, Olzhas*

Financial processes is a broad topic that covers investing, borrowing, planning, calculating, and merging with other companies. Nowadays, every company has to deal with financial processes because it optimizes the work of a company. Depending on a company, it might take hours, days, and sometimes months to complete a financial operation. Optimization is an infinite process and all workers have a limit beyond which they cannot complete more operations. Therefore, the next step in optimizing financial processes is the automation. When we look around, almost everything relies on the help of a computer. This research evaluates and describes the possible and already implemented features of automatization in financial processes using software. To date, it is still unclear what financial operations can be automatized. There are many reasons why this has not been described. There is a wide range of financial processes as well as the relatively new programming languages developed by Microsoft, such as F# and C#, that make creating financial software convenient for programmers. The idea of this research is to take a look at financial processes from a software prospective to find out what operations do not require use of logic and to analyze what can be done as pure mathematical solutions. This research is based on experimentation with software and several case studies. The goal is to provide society with a clear understanding of what financial processes can be automatized, with the hopes that future researchers will build on this work.

152. AN ANALYSIS OF PRODUCT PACKAGING AND INCONGRUITY

Presenter(s): *Cook, Amanda**Authors:* *Cook, Amanda; Rinaldo, Shannon*

When product packaging is congruent with consumer product perceptions, consumers are able to accurately and confidently evaluate products. However, when product packaging is incongruent (i.e., packaging is inconsistent with contents) consumers may become frustrated and unable to evaluate contents. The level of consumer knowledge moderates the relationship between incongruity and frustration where knowledgeable consumers experience less frustration than unknowledgeable consumers when product labeling is incongruent with contents. Previous research has suggested that moderate incongruity increases product evaluation for both groups, while extreme incongruity has detrimental effects for unknowledgeable consumers. The objective of this experiment is to determine at what levels of incongruity consumers' expectations shift. Product packaging incongruity will be tested with skin care products presented in packaging that is consistent or inconsistent with consumer product expectations in a 2 (Type of product) X 2 (congruent/incongruent packaging) design. Traditional skincare products (i.e., no scientific results) versus cosmeceuticals (i.e., lab tested) will represent two product categories within skin care. One-hundred (N = 100) undergraduate students will be pretested to determine knowledge of versus no knowledge of product category. Participants will then view products with congruent versus incongruent packaging via computer screen. Packaging congruent with traditional includes all natural claims. Packaging congruent with cosmeceuticals includes scientifically proven claims. Participants will rate perceptions of products via questionnaire. Higher knowledge individuals are expected to tolerate higher levels of incongruity than individuals who have no knowledge of the product category.



HUMANITIES & THE ARTS

abstracts #153-161

ORAL
PRESENTATIONS

Cultural Studies
Gender Studies
Literature
Media & Communications





153. CREATING, DOCUMENTING, AND ANALYZING A DATABASE OF NUPM PUBLIC SERVICE ANNOUNCEMENTS

Presenter(s): Adams, Robyn*Authors: Adams, Robyn*

The Non-medical Use of Prescription Medications (NUPM) is becoming a greater concern on college campuses every semester. Attempts by national organizations to create effective prevention and cessation campaigns have only begun, and research into the effectiveness of these campaigns is still in its formative stages. The project reported here attempted to create, document and analyze an initial database of the existing NUPM Public Service Announcement (PSA) messages. The collected messages were coded by 6 researchers (3 graduate and 3 undergraduate) for several factors. First, the researchers coded the messages for emotional trajectory. PSA messages have been shown to group into five trajectories (increasingly pleasant, increasingly unpleasant, increasingly pleasant and unpleasant simultaneously, increasingly pleasant then increasingly unpleasant, increasingly unpleasant then increasingly pleasant). These trajectories have been shown to result in different cognitive processing and emotional reactions over time. Second, the researchers coded the messages for how positive, negative, and arousing the messages were overall. These post-hoc emotional ratings will be used as a method of intercoder reliability. Lastly, the researchers coded what organization or foundation created the message. This will allow for messages to be grouped into campaigns and then have the messages in a single campaign compared across emotional trajectory. Initial results indicate that the five predicted emotional trajectories are present in the existing data base, and that there are enough of each emotional trajectory for further psychophysiological experiments to utilize the messages as stimuli going forward.

154. AMERICA'S TEAM

Presenter(s): Benn, Mark*Authors: Benn, Mark*

Why are the Dallas Cowboys called America's team? The Dallas Cowboys are not just popular in their home city and state of Texas. Their fans are nationwide. They are by far the most popular and recognizable team in the NFL. The Cowboys were first called America's team in a NFL season highlight film in 1978 by Bob Ryan. Since then the name has stuck. With five championship out of eight super bowl appearances it is now wonder why the team would be so popular. But just what make the Dallas Cowboys America's Team? Could it be the mascot the American cowboy? Could it be the close to center location America's Team?

155. THE IMPORTANCE OF NONVERBAL BEHAVIOR IN THE TEACHING OF FOREIGN LANGUAGE

Presenter(s): Carlton, Chelsea*Authors: Carlton, Chelsea*

As a dual degree candidate in Communication Studies and Spanish I have noticed that foreign language professors are often very animated and depend heavily on nonverbal communication to convey meaning. My hypothesis is that foreign language professors are more reliant upon nonverbal communication than professors teaching in the official language of the institution. This is due to the natural interruption in the flow of communication when learning a new language. While nonverbal communication is a key aspect of effective communication I wish to observe just how heavily it is utilized when introducing a new language. An important condition of being able to learn a new language is immersion. Foreign language professors strive to refrain from speaking English in the classroom as much as possible to afford this immersion experience for their students. In accordance to my hypothesis I believe that nonverbal communication is imperative to such immersive strategies and to keep a mutual level of understanding in the classroom when the shared knowledge of a language is not fully developed. Observations will take place in classrooms that are conducted in English and in classrooms that are taught in a foreign language. Classes in an array of languages and subjects will be analyzed to minimize cultural influences on nonverbal behavior. The research data will be provided by filming classroom interactions without sound to analyze the rate of nonverbal communication utilized by the instructor.

156. THE EFFECTS OF CODE-SWITCHING ON PREPOSITION STRANDING IN SPANISH-ENGLISH BILINGUALS

Presenter(s): Mihalyov, Grace*Authors: Mihalyov, Grace*

Code-switching (CS), alternating between two languages, is a common practice amongst bilingual individuals. Although CS may seem wrong and ungrammatical, the underlying rules of the two languages involved still apply. In this study I examine the effects of CS on preposition stranding (PS) among Spanish-English bilinguals residing in the US. English allows for preposition stranding, leaving a preposition at the end of a sentence, while Spanish does not. It has been shown that when compared to monolingual Spanish speakers, HSs are more accepting of preposition stranding. The goal of this experiment is to determine the degree of acceptance of preposition stranding in relative clauses in Spanish-English code-switching. A total of 34 participants were tested in three language-modes: Spanish only, English only, and English/Spanish CS. Participants were given a Qualtrics survey that contained nine items from each of the three environments discussed above as well as twelve distractor sentences. As expected, the data shows a high degree of acceptance of preposition stranding in code-switching mode. However, it was somewhat surprising that there was also a high acceptance rate of PS in Spanish mode, a construction that is highly ungrammatical in Spanish.



157. [R]EDDIT: A GLOBAL PLATFORM FOR INSTANTANEOUS ANONYMOUS ONLINE INTERACTION

Presenter(s): Padron, Ronnie

Authors: Padron, Ronnie

[R]edit is a website with millions of unique users. The website is a forum where people all across the world post ideas, news, and other interesting topics every second. It has been anecdotally suggested that news actually travels faster through such online message boards than through traditional news outlets. It is the purpose of this proposal to compare the dates of recent events listed on traditional news websites with the dates of the release of the same information on [R]edit. Events such as an airplane crashing, NSA reports, and the Ferguson Missouri incident will be checked. Then, the goal of this research will be to see where the information showed up first. I hypothesize that [R]edit is faster at relaying information than traditional news outlets such as CNN, FOX, and NBC.

158. SURVIVOR STORIES: DOES PERSONAL RELEVANCE INCREASE WILLINGNESS TO ADVOCATE AGAINST SEX TRAFFICKING

Presenter(s): Reynolds, Britney

Authors: Reynolds, Britney

The National Center for Missing and Exploited Children estimates that 1-in-7 endangered runaways reported in 2013 were likely child sex trafficking victims (PolarisProject.org, 2014). In recent years, nearly every state in the nation has enacted harsher criminal laws seeking to punish sex traffickers. Unfortunately, even though work in legislation to enforce tougher laws and harsher prosecution of perpetrators has seen progress, less progress has been made towards the education of the public about the presence and impact of sex trafficking in the U.S. Also lacking is support for victims through health and human services. There has been increasing news coverage of sex trafficking and development of public outreach campaigns over the past decade and they have attempted to raise domestic awareness of this issue. Stories about sex trafficking victims and their experiences are often used in efforts to educate and activate the public and increase support for victims. Yet little, if any, research has examined the effects of these stories and what types of story features best motivate audience members to take action in support of sex trafficking victims. Using a 2 (story/concrete example) X 2 (victim cause portrayal) between-subjects experiment, this study will look at the key outcome variables (e.g., support for sex trafficking victims services, willingness to engage in related advocacy) and the potential for sympathy towards victims and personal relevance to explain how this effect occurs. Anticipated results will provide insight for mediums producing stories and articles to better inform the audience and encourage action amongst them.

159. A COMPARISON OF JOHN GARDNER'S GRENDEL AND OSCAR WILDE'S THE PICTURE OF DORIAN GRAY

Presenter(s): Smith, Cavyn

Authors: Smith, Cavyn

This paper compares John Gardner's Grendel with Oscar Wilde's The Picture of Dorian Gray, furthering my argument that nihilism and aestheticism, as presented in these two novels, are essentially the same. This also means that Gardner's novel, known for its originality, is not as original as some claim it to be. The purpose of this paper is to draw attention to the parallels between the two works of literature. This paper compares and contrasts the characters in both novels, ultimately revealing the similarities between aestheticism and existential nihilism. This paper also compares the authors of the works. To better understand the authors and their respective philosophies, the paper references outside works from the authors of the compared literature and also references works about the authors.

160. DEVELOPMENT AND CREATION OF A BIG BEND COLLECTION IN THE ENCYCLOPEDIA OF EARTH WEBSITE

Presenter(s): Thogmartin, Kaitlin

Authors: Thogmartin, Kaitlin

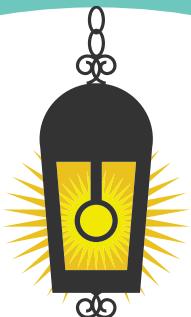
In environmental education and the online world, information on various areas can constantly be updated and conveyed through various platforms. The objective of this research is to create a Big Bend National Park collection within the Encyclopedia of Earth website with collaboration from park staff, Texas Tech experts and students. This collection would relay information on all different areas of the park to the public in a relatable manner. To accomplish this, an outline will be drawn up detailing what articles about the park were already on the website and where other information could be pulled from. Then a content agreement will be set up between the park, Texas Tech University, and Encyclopedia of Earth. Contacting the superintendent of Big Bend National Park, this agreement will work so that all text within the park website could be used within Encyclopedia of Earth, with authorship credit given back to the park. Throughout this process, Encyclopedia of Earth articles will be written about the park using current resources. While it can be seen that a collection is possible this is something that will be ever evolving, taking constant work and supervision.

161. TEXAS STORIES: THE MYTHICAL BECOMES REALITY

Presenter(s): White, Sheridan

Authors: White, Sheridan; Baake, Ken

Songs about Texas culture and lifestyle show it to be a state that tested the character of all who came. Texas often has been portrayed in mythic and exaggerated grandeur as a land of great opportunity and great challenges, both a heaven and hell. It is a land of cowboys and tough homesteading women, of outlaws and the lawmen Texas Rangers who chased them. The common theme is that all the characters, whether good or bad, are larger than life. In this presentation we explore the grand myths of Texas by analyzing the characters portrayed in songs such as "Hell in Texas," "The Texas Rangers," "Texian Boys," and "Sam Bass." We present these songs accompanied by a PowerPoint illustrations to show how the image of Texas toughness came to be so powerful and enduring.



LAW, PUBLIC POLICY & EDUCATION

abstract #162

ORAL
PRESENTATIONS

Education
Legal Studies
History
Philosophy
Political Science



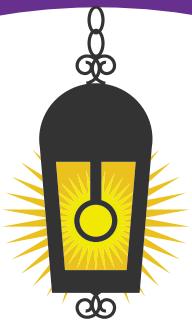


162. THE INSANITY DEFENSE IN TEXAS

Presenter(s): Navarrete, Ana

Authors: Navarrete, Ana

The Insanity Defense has always been a controversial one. People have very different opinions, claiming, "it doesn't provide justice", or "the insanity defense is too constricted", and "it has the potential to fail the people who truly need it." The Insanity Defense is one of the most misunderstood parts of the justice system. Every state has their own insanity defense, with some of the states including components that other states don't agree with. The states have the ability to change what makes up their insanity defense, and most do make changes as time passes. Texas is one of the states whose insanity defense has not changed since it was implemented in 1843, designed after the M'Naghten test. Texas's Insanity Defense is incredibly narrow, with a main component, volition, taken out after a very controversial case. I will be arguing for the volition component and the reasons it should be implemented in the Texas insanity defense once again. I will be using scholars who have experience in the field of mental illness, essays, and statistics to be better able to provide a reason why it is not only beneficial, but also necessary for the volition component to be reinstated in Texas.



PHYSICAL SCIENCES

abstracts #163-167

Computer Science
Engineering
Geosciences
Mathematics
Physics/Astronomy

ORAL
PRESENTATIONS





163. SIMULATING COSMIC AIR SHOWERS FOR THE HELADO COSMIC RAY OBSERVATORY

Presenter(s): Hefele, John*Authors: Hefele, John; Akchurin, Nural; Cowden, Christopher; Mason, Connor; Mills, Casey*

A realistic cosmic ray simulation was created using the GEANT4 package where electrons or gammas were aimed at a 10-kilometer block of air to investigate particle distributions on the earth's surface. The simulation is properly tuned to account for the earth's magnetic field locally and Lubbock's altitude. Simulations show that the number of optical photons increases linearly with the energy of the cosmic rays and the local light pollution sets a lower limit on the detection of these particles. Currently techniques are being investigated to enhance the signal over the background noise using the polarization of the Cherenkov light. These results serve as a guide in the design of HELADO experiment in West Texas.

164. A NEW VISCOSITY EXPRESSION FOR AQUEOUS ELECTROLYTE SOLUTIONS

Presenter(s): Kovalski, Matt*Authors: Kovalski, Matt*

Viscosity is an important transport property for chemical systems, especially in terms of heat and mass transfer calculations and process simulation. Accurate engineering viscosity models for aqueous electrolyte solutions are of high interest to scientists and engineers tasked with development of desalination and treatment of high salinity produced water from oil and gas productions. Such viscosity models should cover multicomponent, high solute concentration, and high temperature conditions. / Methods exist to calculate the viscosity of electrolyte solutions, however many of these methods have drawbacks undesirable to engineering calculations. These issues can include not being developed with a diverse range of electrolytes in mind, such as limiting testing to alkali halides; complex calculations requiring large numbers of parameters, as is with the Jiang-Sandler model; or lack of theoretical explanation, making calculations impossible when experimental data sets are not available, such as is with the original Jones-Dole and Andrade equations. / Here we propose an expression based on the Andrade expression for liquid viscosity to calculate the viscosity of aqueous solutions. The expression is based on structure making and breaking behavior, where calculations are based on the charge of the solute ions and also their size relative to the solvent. This expression requires only two parameters from physical properties for binary systems. Furthermore, this expression keeps in mind the relevance of industrial conditions by incorporating a mixing rule for multiple electrolytes, temperature effects, high concentrations of solutes, and applications for a broad range of electrolytes solutions.

165. THE COCKROFT-WALTON VOLTAGE MULTIPLIER DESIGN FOR POWERING PHOTOMULTIPLIER TUBES

Presenter(s): Mason, Connor*Authors: Mason, Connor*

The paper describes the development of a compact Cockcroft-Walton (C-W) high voltage power supply to bias a photomultiplier tube. With a design goal of -2000 V and 2 W maximum, the generator must be robust and affordable for the future goal of producing a few thousand units for the HELADO experiment, an observatory of cosmic rays. A prototype C-W board was designed and tested for field use.

166. STAR FORMATION IN THE ZW1400+09 POOR CLUSTER GALAXIES

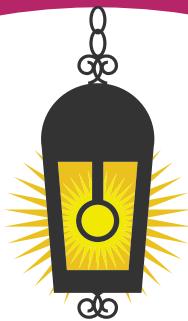
Presenter(s): Mcelroy, Alyssa*Authors: Mcelroy, Alyssa*

Galaxies in dense clusters are known to have less gas and star formation, likely due to environmental interactions within the clusters. Less is known about the properties of galaxies in lower density poor clusters and group environments. In this project, star formation properties of galaxies in the Zwicky 1400+09 (NRGb282, NGC 5416) poor cluster were found by reducing and analyzing narrowband H-alpha and broadband R images taken with the WIYN 0.9m MOSAIC camera at Kitt Peak National Observatory. Surface photometry and total star formation rates and extents are presented for a sample of galaxies within the cluster. This work is supported by NSF AST-0725267 and AST-1211005 and is a part of an Undergraduate ALFALFA (Arecibo Legacy Fast ALFA) Team study of the star forming and gas properties of 16 nearby groups of galaxies.

167. CHERENKOV RING FINDING ALGORITHM FOR COSMIC RAY OBSERVATORY (HELADO)

Presenter(s): Mills, Casey*Authors: Mills, Casey; Akchurin, Nural; Cowden, Christopher; Hefele, John; Mason, Connor*

The HELADO cosmic ray observatory intends to use flat planar surfaces as sensitive elements in order to maximize the acceptance. Methods to extract characteristic features of air showers induced by cosmic rays are needed to identify properties of the initial particle. We present here some preliminary studies leading to the development of a Monte Carlo based method to identify the characteristic light rings of the Cherenkov radiation emitted by particles produced in the air shower. Various toy Monte Carlo simulations were performed to tune the feature extraction methods. Next we plan to incorporate more detailed simulation results.



SOCIAL SCIENCES

abstracts #168-172

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168. COMPARING GRADED STRUCTURE IN FEATURE-BASED AND SAME-DIFFERENT CATEGORY LEARNING

Presenter(s): Giron, Josue*Authors: Giron, Josue; Goldwater, Micah; Davis, Tyler*

Category learning is an essential capacity that allows us to group stimuli together to make generalizations about future events. There are two basic types of categories; categories defined by their features, and categories defined by relations. In this research we target feature-based (FB) categories and same-different (SD) discrimination, a type of relational category. Previous research has suggested that FB categories have a graded structure such that category members vary in terms of how typical they are of their categories. Currently there is debate about whether relational categories like "same" and "different" also have a graded structure. Logically, SD categories are dichotomous, opposite ends of a spectrum and should not exhibit a graded structure, but research so far has been mixed. Results from experiments on visual arrays containing differing quantities of matching ("same") or non-matching ("different") elements supported the notion that "same" does not have a graded structure, but different may be graded such that increasing the number of non-matching elements increases people's categorization of the array as an example of "different". Here, we introduce typicality ratings as an additional measure of graded structure for SD categorization. We argue that whereas the choice and reaction time measures used in previous studies are measures of the relative evidence for choosing one category over another, typicality ratings are measures of the relationship between an item and a single category and may be more sensitive to graded within-category differences. Accordingly, we find evidence of graded structure in both SD and FB categories.

169. DOES THE SIZE OF COLLEGE REALLY MATTER? A CASE STUDY FOR UNDERSTANDING WHICH FACTORS DETERMINE THE ENROLLMENT OF ACADEMIC INSTITUTIONS

Presenter(s): Ijeb, Michael*Authors: Ijeb, Michael*

Economists, academic professionals, and government officials alike seem to understand that rising tuition rates for public universities are primarily due to the steady decreases in state government funding over the past few years. In the state of Texas, one way academic institutions attempt to increase state funding is by becoming a National Research University (NRU) and receive funding from other sources. For Texas Tech University, the strategy for becoming a NRU is based around increasing their student enrollment on both the graduate and undergraduate level. In this study, I will examine if certain characteristics of an institution affect student enrollment for universities in Texas and surrounding states. I will also investigate whether the size of an institution influence which characteristics are important. I plan on using regression analysis on variables that are used as criteria for becoming a National Research University , in hopes of finding factors that Texas Tech can use to meet their goal of reaching 40,000 students by the year 2020.

170. THE EFFECTS OF RACE ON RECENT IMMIGRANT SECONDARY STUDENTS

Presenter(s): Ortegon, April*Authors: Ortegon, April; Maloney, Patricia*

There is a great deal of previous research studying the separate effects of race and recent immigrant status on the educational trajectories of secondary students. However, little work has been done on the compound effect of these identities, particularly in immigrant-destination cities like Houston, New York, and San Francisco. Since Houston in particular is dealing with a massive influx of minor-age immigrants since 2011 that threatens to overwhelm the public school system, any research that can provide insight into how the school system may better personalize their services to these underprivileged children is much needed. Thus, we ask the question: how do the racial and cultural backgrounds of recent immigrant students (those who were born outside the United States) affect their perceptions of and trajectories within the public school system at the secondary level? This research, which focuses on Houston, is part of a larger national study, which also encompasses New York City and San Francisco. Specifically, it is a qualitative study that includes interviews with students, teachers, and administrators, as well as fieldwork in Houston high schools. Preliminary results suggest that the students' racial backgrounds (Hispanic, black, or Asian) matter a great deal in terms of how they are perceived by and perceive their teachers and fellow students. More nuanced data are currently being collected and will be presented at the conference.

171. EXAMINATION OF (RE)INTEGRATION PROCESS OF (SEX) TRAFFICKED WOMEN

Presenter(s): Rodriguez, Rocio*Authors: 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 the 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 life long 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.

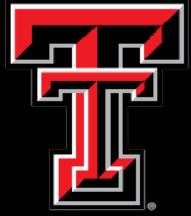


172. NEW CLOTHING DESIGNS TO ALLEVIATE SENSORY ISSUES.

Presenter(s): Smith, Brianna Rae

Authors: Smith, Brianna Rae

Children with Autism Spectrum Disorders (ASD) show common impairments with communication, social interactions, and sensory processing issues and skills. Sensory issues include: oversensitivity to loud noises and touching. Typical behaviors associated with the overstimulations are: withdrawing to avoid the uncontrollable sensation, throwing temper tantrums, screaming, and running away. The purpose of this study is to investigate current therapy clothing for children with ASD and suggest options for sensory clothing design that can alleviate sensory issues by looking at existing companies information. Utilizing literature reviews and commercially available clothing products online for children with ASD some sensory issues were proven to help, overall the evidence neither confirmed or denied current products success rates. Within the current clothing products available, topics analyzed were design, fit, size, fabric, and color. For the analysis process, we used a database that links the idea of sensory design elements (ie. sound, texture) to the characteristics of ASD (ie. hyper and hypo). The sensory issues most children face were found such as: irritation of the skin because of the seam placement and seam finishes, sound the fabric makes, and the flexibility the garment allows. Seamless sensory clothing will be developed and suggested for the prototype sensory clothing for the children to alleviate sensory issues for most types of ASD.



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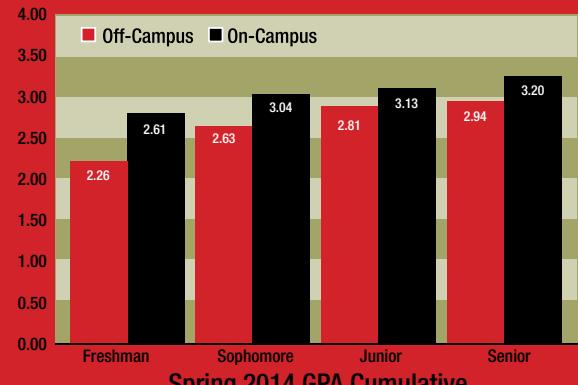
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