

Sixth Annual  
**UNDERGRADUATE  
RESEARCH SYMPOSIUM**

04.01.2016



**DISTINCTION**  
THROUGH **DISCOVERY**

April 1st, 2016

Live Oak Pavilion and  
Grand Palm Room  
Boca Raton Campus

# WELCOME

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Welcome to the 6th Annual Undergraduate Research Symposium, which showcases undergraduate students at FAU who are engaged in research, scholarship and creative activities. Students present their findings through poster or visual and oral or performing arts presentations, and represent all disciplines, all colleges, and all campuses of FAU.

Few activities are as rewarding intellectually as research and inquiry. In addition to the acquisition of invaluable research skills, students learn how knowledge is created and how that knowledge can be overturned with new evidence or new perspectives. Such scholarly activities engage students in working independently, overcoming obstacles, and learning the importance of ethics and personal conduct in the research process.

The Office of Undergraduate Research and Inquiry (OURI) serves as a centralized support office of both faculty and students who are engaged in undergraduate research and inquiry. We offer and support university wide programs such as undergraduate research grants, annual undergraduate research symposia, and undergraduate research journals, to name a few. We also support all departments and all colleges across all campuses in their undergraduate research and inquiry initiatives.

**The Undergraduate Research Symposium is part of our University's Quality Enhancement Plan (QEP) efforts aimed at expanding a culture of undergraduate research and inquiry at FAU.**

For more information on how OURI can help you, please visit our website at [www.fau.edu/our](http://www.fau.edu/our)

# SPECIAL THANKS TO:

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Council for Scholarship and Inquiry (CSI)

Distinction through Discovery committee members

Distinction through Discovery Peer Mentors

Division of Research

Division of Student Affairs

Faculty judges

Faculty mentors/advisors

Graduate and Professional Student Association (GPSA)

Graduate College

Graduate student judges

Student Government

Student volunteers

Undergraduate Studies

University Communications - Marketing and Creative Services

University Libraries

# ARTIST STATEMENT

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**Emilio Matthews**

**Major: BFA Graphic Design**

I have always found art to be fascinating. It has allowed me to take images in my mind and make them tangible as well as convert my imagination into reality. This has allowed me to see everything different than others around me. Therefore, this has sparked my creativity. I knew design was what I wanted to do and that confidence was vital, because without it you would not allow yourself to take risks and experiment. I feel as students we need to take risks outside the classroom to further educate ourselves.

Human beings are biological art forms. We are all walking expressions of art. From our heart and brain to our cells and atoms we are all intimately intertwined. The image on the cover is a illustration of an abstract brain. The abstract brain symbolizes the exquisite intricacies of the human mind, emanating creativity and newly found ideas.

I believe science and design are one in the same. You need both to intergrate creativity and problem solving.

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# AGENDA

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<b>Time</b>	<b>Event</b>	<b>Location</b>
8:00 a.m.- 2:00 p.m.	On-going Registration	Outside of Live Oak Pavilion
7:30 a.m.- 8:30 p.m.	Light Breakfast	Live Oak Pavilion D
8:30 a.m.- 12:00 p.m.	Oral Presentations	Live Oak Pavilion A, B, C
12:00 p.m.- 1:15 p.m.	Lunch  Welcome Message Provost Gary Perry President John Kelly  Keynote Speaker: Becky Woodridge Professional Speaker  CSI and FAURJ Representatives	Live Oak Pavilion A-D
1:30 p.m.- 3:30 p.m.	Poster Presentations	Grand Palm Room
4:00 p.m.- 7:00 p.m.	Awards Ceremony and Social hosted by by the Council for Scholarship and Inquiry	Live Oak Pavilion A-D

# KEYNOTE SPEAKER

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## Becky Woodbridge

### **An Idea Worth Considering**

Becky Woodbridge



As a Professional Speaker, Trainer and Coach, Becky has a unique viewpoint from the stage as well as behind the scenes as the Organizer of TEDxBocaRaton, An independently organized TED event. Becky has spent the past 4 years working with over 75 speakers bringing out the Idea Worth Spreading to foster new learning and conversation throughout the world. Prior to working in

the speaking industry, Becky Woodbridge was the former president and founder of a highly rated South Florida real estate company, and as a 27-year major airline Flight Attendant. In two distinctly different work environments, Woodbridge saw commonality in the way that customer service is highly affected by poor moods and ineffective communication which can limit successful results both personally and professionally. Co- Author of Contagious Optimism, 10 Habits of Truly Optimistic People. Author of upcoming book Plane Speaking: Why Mood Matters. Originally from Bangor, Maine, Woodbridge migrated down the coast and has become an active participant in the South Florida business community. Becky is also the founder of One Penny At A Time, a nonprofit that supports children in need with scholarships for educational programs. She resides in Boca Raton with her daughter EJ.

# ORAL PRESENTATION SCHEDULE

Session I  
8:30 a.m. - 9:40 a.m.

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## **LIVE OAK A**

Music, Art, Literature, Theater  
History & Philosophy

**Behind Shoji Screens and Pages: Heian Women  
Writers and Japanese Religions**

*Maria Theodosiou*

**Faculty Mentor: Kenneth Holloway**

**Self-Realization to Self-Sacrifice: A Gender Based  
Shift in Adolescent Search for Identity Within  
Young Adult Fantasy Literature**

*Jodi Weismann*

**Faculty Mentor: Elizabeth Swantrom**

**A Disabled Morality: Disability Studies and the Fic-  
tion of Flannery O'Connor**

*Nicholas Morano*

**Faculty Mentor: Oliver Buckton**

**Performing Shakespeare in Original Pronunciation**

*Lydia Nigro*

**Faculty Mentor: Kathryn Johnston**

**Deconstructing the Socialization of Sex in Virginia  
Woolf's "Orlando"**

*Daniela Barbieri*

**Faculty Mentor: Oliver Buckton**

## **LIVE OAK B**

Environmental, Ecological  
& Marine Sciences

**A Comparative Survey of Gopherus Polyphemus  
Hemoparasites in Four Different South Florida  
Habitats**

*Brian Cooney*

**Faculty Mentor: Evelyn Frazier**

**Differences in Submerged Walking and Swimming  
Kinematics of the Epaulette Shark (*Hemiscyllium  
ocellatum*)**

*Andrea Hernandez*

**Faculty Mentor: Marianne Porter**

**Seven-Year Manatee Survey Looking at Seasonal  
Patterns of Frequently Observed Individuals in the  
Harbor Branch Channel Using Photo-Identification  
Techniques**

*Lauren Goldsworthy*

**Faculty Mentor: Jon Moore**

**Investigating Ground Penetrating Radar (GPR) Lim-  
itations and Potential for Subsurface Nest Detec-  
tion in South Florida**

*Sarah Mitchell*

**Faculty Mentor: Evelyn Frazier, Jessica Huffman,  
Xavier Comas**

# ORAL PRESENTATION SCHEDULE

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Session I  
8:30 a.m. - 9:40 a.m.

## **LIVE OAK C**

Behavioral, Educational &  
Social Sciences

### **The Relationship Between Birth Order and College Students' Perceived Levels of Extraversion**

*Hannah Baker*

**Faculty Mentor: Julie Earles**

### **The Effects of Situations on Emotion and Personali- ty Expression**

*Andrew Blake*

**Faculty Mentor: Ryne Sherman, Nicolas Brown**

### **Effects of Bilingualism and Language Dominance on the Production and Perception of Speech Sounds**

*Brandy McElroy-Wright*

**Faculty Mentor: Viktor Kharlamov**

### **Why Leave when I Have Friends: The Perception of Interpersonal Relations and the Role of Peer Sup- port on Retention**

*Brian Pennington*

**Faculty Mentor: Julie Earles**

# ORAL PRESENTATION SCHEDULE

Session II  
9:50 a.m. - 11:00 a.m.

## LIVE OAK A

Health and Medical Sciences

**Identification of SRSF1 Gene Regulation Functions in T-Cell Activation Through Analysis and Validation of High-Throughput RNA Sequencing Data**

*Evan Clark*

**Faculty Mentor: Massimo Caputi**

**Increased CHI3L1 Levels due to Pre-Existing Pulmonary Inflammation Accelerates Breast Cancer Metastasis by Establishing a Pre-Metastatic Niche in the Lungs**

*Nathalia Gazaniga*

**Faculty Mentor: Vijaya Iragavarapu-Charyulu**

**Inhibition of Semaphorin7A Decreases Mammary Tumor Growth and Metastasis**

*Michael Simoes*

**Faculty Mentor: Vijaya Iragavarapu-Charyulu, Ramon Garcia-Areas**

**Electric Impedance Sensing for Study of Cell-Cell Interactions in an in-vitro Blood Vessel Model**

*Michael Mian*

**Faculty Mentor: E Du**

**Effects of Methionine Sulfoxide Reductase (Msr) on *Drosophila* *Melanogaster* Larval Development using RNAi**

*Tevin Ali*

**Faculty Mentor: David Binnerger**

## LIVE OAK B

Basics Sciences

**Optical Trapping Through the Motion of Micron-Sized Particles**

*Jennifer Hartwigs and*

*Wen-Chung Cheng*

**Faculty Mentor: Grigoriy Kreymerman**

**Advancing and Innovating the Nickel(II) Linkage Isomers Experiment for Inorganic Chemistry**

*Natalie Kershaw*

**Faculty Mentor: Evonne Rezler, Satu Hyvarinen**

**Optimizing Instrument Parameters for Obtaining Spectra on a Portable Raman Spectrometer**

*Stephanie Nauth*

**Faculty Mentor: Jerome E. Haky**

**Progress Toward Synthesis of Glycopeptide Libraries Based on MUC1 Protein**

*Eric Patino*

**Faculty Mentor: Mare Cudic**

**Innovating Organic Chemistry Laboratory Course with Cutting-edge Raman Spectroscopy**

*Kimberly Quinn and Aqiyl Mills*

**Faculty Mentor: Evonne Rezler, Maciej Stawikowski**

**Lanthanide Induced Aggregation of Mercaptobenzoic Acid-Functionalized Gold Nanoparticles**

*Alexander Santana*

**Faculty Mentor: Daniel de Lill**

# ORAL PRESENTATION SCHEDULE

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Session II  
9:50 a.m. - 11:00 a.m.

## **LIVE OAK C**

Behavioral, Educational &  
Social Sciences II

### **Polarized Poll Responses: Telephones vs Internet**

*Ryan Gondek and Monique Hall*

**Faculty Mentor: Monica Escaleras**

### **A Student-Driven Approach to Assessing Computer Engineering Students**

*Nadeen Saleh*

**Faculty Mentor: Lofton Bullard**

### **Learning to Learn: What Machine Learning Can Tell Us About the Brain**

*Michael Teti*

**Faculty Mentor: Elan Barenholtz, William Hahn**

# ORAL PRESENTATION SCHEDULE

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Session III  
11:10 a.m. - 12:00 p.m.

## **LIVE OAK A**

Music, Art, Literature, Theater  
History & Philosophy II

### **Responsive Design: All Scales Considered**

*Heather Akers*

**Faculty Mentor: Emmanouil Vermisso,  
Mate Thitisawat**

### **Disneyland: Embodying American Mythology and Cultural Values from 1955 to the Present**

*Erin Fee*

**Faculty Mentor: Michael Harrawood**

### **Historical Memory and the Past: The Civil War in Current-Day Spain**

*Melanie Oates*

**Faculty Mentor: Carmen Cañete-Quesada**

### **The Allegory of The Giving Tree: A Looking Glass into the 2008 Financial Crisis**

*Derek Vaughn*

**Faculty Mentor: Athena Murray**

# POSTER PRESENTATION SCHEDULE

## Music, Art, Literature, Theater, History & Philosophy

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- 1. Frog Alley Community Garden**  
*Lauren Lightbody*  
**Sharon Hart**
- 2. Interactions with Resonators: How Can Resonate Sound Bring Change Within or on the Body?**  
*Nicole Brodkin*  
**Julie Ward**
- 3. Kreative Visuals: Perspectives of a Graphic Artist**  
**Emilio Matthews**  
*Eric Landes*
- 4. Photo Documentary: Equine Assisted Therapies of South Florida**  
*Charles Pratt*  
**Sharon Hart**
- 5. Queer Images: Photographs of LGBTQ Americans**  
*Charles Pratt*  
**Barclay Barrios**
- 6. Arabian Women of the Jahiliyya and Early Islamic Times**  
*Nora Douglas*  
**Douglas Kanter**
- 7. Linnaeus and Buffon's Ornithological Methodology During the Age of Enlightenment**  
*Siddharth Satishchandran*  
**Sandra Norman**

**GRAND PALM ROOM**  
**1:30 p.m. - 3:30 p.m.**

## Basic Sciences

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- 8. Effects of Methionine Sulfoxide Reductase (Msr) on *Drosophila Melanogaster* Larval Development using RNAi**  
*Tevin Ali*  
Sharon Hart
- 9. On the Expected Increase of Mobile Transactions Authenticated Through Biometrics**  
*Loren Barcenas*  
Koray Karabina
- 10. Community Structure of the Human Skin Microbiome and Evaluation of its Forensic Match to Bacteria from Mobile Phones**  
*Jessica Brandwein, Marina Shehata, Adrienne Dias*  
Nwadiuto Esiobu
- 11. Developing a New Chemosensor for the Facile Spectroscopic Detection of Metal Ions in Solution**  
*Spencer Brown, Melyse Laud*  
Daniel de Lill
- 12. Impact of Glutamate In ALS**  
*Rajesh Jaiprashad, Dianabell Maldonado*  
Patricia Snyder
- 13. Genetic Engineering of Tomato Plants Expressing  $\beta$ -Glucuronidase Through Agrobacterium-Mediated Transformation**  
*Adriana Justs*  
Xing-Hai Zhang
- 14. 2-Hydroxychalcone as a Unique Luminescent wProbe (ESIPT) for Peptides Labeling**  
*Thomas Kempton*  
Stéphane Roche
- 15. A Theoretical and Experimental Approach is Used to Investigate the Excited States of Isobutene**  
*Jeffery McLachaln*  
Patricia Synder
- 16. Synthesis and Characterization of Polyesters**  
Francesca Mosca, Paul Slawek  
Charles Carraher
- 17. The Effect of 3-Bromopyruvate on the “Warburg Effect” displayed in 4-T1 Metastatic Breast Cancer Cell Lines**  
*Mostafizur Rahman, Youssef Motii*  
James Hartmann
- 18. Methionine Sulfoxide Reductase Expression in Response to Anoxic Stress Conditions in *D. melanogaster***  
*Evgeniya Rakitina*  
David Binninger
- 19. Discovery of Non-Electrophilic Agonists of the Nrf2-Mediated Antioxidant Response Pathway**  
*Michael Rohr*  
Paul Kirchman
- 20. Three-Dimensional Anatomical and Functional Analysis of Individual Layer 5 Thalamic Projecting Excitatory Neurons in the Rat Somatosensory Cortex**  
*Trina Rudeski*  
Julie Earles

- 21. Chemopreventive Effects of Rosemary Spice Phytonutrients(Rosemarinus officinalis) and Vitamin D in Human Prostate Cancer in vitro.**  
*Carla Ruiz, Lucyia Ellis, Veronica Leonard*  
**James Kumi-Diaka**
- 22. Characterization of Peptides from the Venom of Conus Purpurascens, an Eastern Pacific Fish-Hunting Cone Snail Species**  
*Anthony Singer*  
**Tanja Godenschwege**
- 23. Creation of Bacteria Surrogates for Accelerating Research on the Ebola Virus Zaire**  
*Reen Varghese*  
**Nwadiuto Esiobu**
- 24. Characterization of Unknown Peptides from the Venom of the Conus Purpurascens**  
*Eber Vazquez*  
**Tanja Godenschwege**
- 25. Regulatory Pattern of PUN Promoter for Gene Expression**  
*Stephanie Velez, Justin Kirke*  
**Xing-Hai Zhang**
- 26. Increasing Comprehension Levels Through Content Vocabulary**  
*Chandani Alexandre*  
**Lori Dassa**
- 28. Adult Age Differences in Event Memory for Events**  
*Joanna Beazley*  
**Julie Earles**
- 29. Should Public Assistance For Refugees End If They Regularly Travel Back to Cuba?**  
*Shannon-Lee Bowie*  
**Monica Escaleras**
- 30. Examining Faces: Transgender and Subconscious Perceptions**  
*Danielle Brady, Denise Garcia, Israel Salcedo, Charley Barker*  
**Tammy Knipp**
- 31. Potential Influences of Rape Myth Acceptance on Police Decision Making: Does Rape Myth Acceptance Effect Cases being Recommended for Further Action in the Criminal Justice System?**  
*Caralin Branscum*  
**Gina Carreño-Lukasik**
- 32. Multilateral Trade Agreements and Their Implications**  
*Renzo` Broggi*  
**Cheryl Arflin**
- 33. Steroid Usage Among College Athletes: A Comparison of Public and Private Four-year Institutions**  
*Daniel Castilla*  
**Frankie Santos Laanan**

## **Behavioral, Educational & Social Sciences**

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- 27. The Psychology Behind Nonprofit Organizations**  
*Hannah Bauduin*  
**Julie Earles**

**34. Healthcare and Hispanics: The Disparity in Healthcare Coverage and Affordability Between Genders**  
*Jonathan Chavez, Erik Rodriguez*  
**Monica Escaleras**

**35. Traffic Sign Effectiveness**  
*Ashley Chozas, Talk Kamholtz, Luis Duitama*  
**Tammy Knipp**

**36. Alcohol Consumption Habits Among Acculturated Latin Americans**  
*Debora Ferrato*  
**Monica Rosselli**

**37. Preparation and Coping Strategies of Medical Practitioners Dealing With Terminal Patients**  
*Sarah Gomez*  
**Gina Carreño-Lukasik**

**38. The Effects Whole Brain Learning has on Students' Academics in an Urban School Setting**  
*Christina Hernandez*  
**Lori Dassa**

**39. The Effect of Inactivation of the Nucleus Reuniens on Spatial Working Memory**  
*Macarena Martinez Rey, Christopher Minnerly*  
**Robert P. Vertes**

**40. Exploring Social Stigma Related to Vaping on the College Campus**  
*Katherine Mesa*  
**Jennifer Attonito**

**41. Increasing Language Development Through Rhythm**  
*Morgan Miller*  
**Lori Dassa**

**42. Game On! Increasing Science Content Knowledge through Competitive Instruction**  
*Chelsea Osborne*  
**Lori Dassa**

**43. Constructing Adulthood in Contemporary Societies**  
*Ashley Ostroot*  
**Ann Branaman**

**44. Does Having a Muslim Connection Affect Voting Stances?**  
*Seema Patel, Jonathan Chavez*  
**Monica Escaleras**

**45. Levels of Involvement in Greek Organizations: A Comparative Study of Alcohol Use of Students Attending Four-Year Institutions**  
*David Thompson*  
**Frankie Santos Laanan**

**46. Flying into Code: Computer Science Education Through Unmanned Aerial Vehicles**  
*Janet Weinthal, Benjamin Coleman*  
**Tricia Meredith**

## **Business, Marketing, Public Administration & Finance**

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**47. Is Social Media Influencing Hispanics Voting Behavior?**  
*Marina Giral Lores, Ryan Clukey*  
**Monica Escaleras**

## Classroom Research Project/ Assignment

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**48. Consumer Motivation: The Craft Beer Boom**

*Devon Harris, Taylor Boone, Sofia Mendiola,  
Henry Sly*

**Allen Smith**

**49. The Legalities of Accepting or Refusing  
Refugees and Asylum Seekers in International  
Law**

*Sama Kahook, Caitlin Cichoracki*

**Cheryl Arflin**

**50. Death Spiral Financing**

*Alina Marian*

**Cheryl Arflin**

**51. What Marketing Techniques/Strategies Would  
Best Entice Consumers to Purchase a“Tile”?**

*Alexander Potenza, Linda Hill, Roman Cenizal*

**Allen Smith**

**52. Taxation and the Separation of Church and  
State**

*Abel Roman*

**Cheryl Arlin**

**53. Aesthetic, Functional, Symbolic, and Ergonomic  
Impressions: Implications for Hoverboard  
Product Design Form**

*Hunter Smith, Katherine Llanos,*

*Danielle Gordon*

**Allen Smith**

**54. Snake Oil in the 21st Century**

*Asya Yanchinova*

**Cheryl Arflin**

**55. The Importance of Roles, Power and Ethical  
Standards of Drug Court Officials**

*Sondra Andrews*

**Lincoln Sloas**

**56. Graphic Novels: Comprehension of Text an  
Image**

*Angel Bermudez, Nicolle Donado,*

*Amanda Taylor, Ana Duenas, Oscar Rodriguez*

**Tammy Knipp**

**57. An Examination of Wildlife Crime on the  
Treasure Coast: Do Crime Detection Rates  
Differ on “Conservation Lands”?**

*Kelsey Doyle*

**Tobin Hindle**

**58. Laboratory Industry Research**

*Ed Estripet, Jr.*

**Allen Smith**

**59. Application of Calculus in the Real World**

*Danielle Gray*

**Daniela Nikolova-Popova**

**60. The Causes of Terrorism**

*Issa Hamad*

**Gina Carreño-Lukasik**

**61. The Effect of Time on Visual Search Patterns**

*Bonnie Higgen, Daniel Tamir*

**Tammy Knipp**

**62. Treatment Options for Mesial Temporal Lobe Epilepsy**  
*Blanca Melero*  
**Angelica Nevin**

**63. Should Sole Proprietors be Treated Differently Under the Tax Laws than Corporations?**  
*Gregory Point Du Jour*  
**Cheryl Arflin**

**64. Does the Use of Hydraulic Fracturing Violate the Statutes Implemented to Preserve the Environment?**  
*Annelle Ulysse*  
**Cheryl Arflin**

**65. Proving the Infinite Gravity of a Black Hole**  
*Mark Younan*  
**Daniela Nikolova-Popova**

## **Engineering**

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**66. Removing Body Heat Through A Finned Wristband During Exercise**  
*David Adejunmobi, Garret Wolfe*  
**Tsung-Chow Su**

**67. Presentation/Project Title Development of Control Tension System for Open Source 3D Printed Bionic Hand**  
*Daniel Allison, Jacob Sherbondy, Justin Cooke*  
**Erik Engeberg**

**68. Formulating Different Detection Algorithms to Eradicate Invasive Red Lionfish Using an Autonomous Underwater Vehicle in South Florida and the Bahamas.**  
*Alexis Base*  
**Allan Phipps**

**69. Crashworthiness of Low Speed Vehicles**  
*Sherwin Francis*  
**Oren Masory**

**70. Utilizing OpenCV for Q-Learning State Space Reduction in Re-Purposed Off-The-Shelf FPV Rovers**  
*Washington Garcia, Nicolas Tutuianu, Paul Morris, Marcus McGuire, Shawn Martin*  
**Elan Barenholtz, William Hahn**

**71. Improvement of Solar Energy Conversion Efficiency by Solar Tracking**  
*Joshua Griffin*  
**Myeongsub Kim**

**72. Improvement of Cooling Efficiency for Data Centers using Heat Pipes**  
*Stephan Hoo-Fatt, Danielle Stepien, Ahmed Ashfaq, Patrick Hawkins*  
**Myeongsub Kim**

**73. Rainwater Applications to Reduce the Waste of Purified Water**  
*Bertrand King, Jean Paul Figallo, Joshua Mesnick*  
**Tsung-Chow Su**

**74. Adaptive Individual Blade Pitch Control of an Ocean Current Turbine**  
*Louis Lee*  
**James VanZwieten**

**75. Integration and Implementation of the Quine-Mccluskey Simplification Algorithm in an Interactive Smartphone Game.**

*Kevin Lopez, Oleksii Levkovskyy*  
**Maria Petrie**

**76. Removing Methanol Additives from Fracking Fluids using Advance Oxidation Technology**

*Lisandre Meyer*  
**Daniel Meeroff**

**77. Numerical Simulation of Two Ocean Current Turbine Design Types**

*Isabella Pinos*  
**James VanZwieten**

**78. T-shirt Projectile Firing Mechanism**

*Christopher Quinones, Craig Jordan,*  
*Devon Miller, Alyssa Correa*  
**Javad Hashemi**

**79. Marine Aerial Survey Technology (MAST)**

*Andrew Silverstein*  
**Allan Phipps**

**Environmental, Ecological  
& Marine Sciences**

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**80. The Impact of Rainfall and Temperature on the Green Turtle (*Chelonia mydas*) Sex Determination**

*Marianna Calvet*  
**Jeanette Wyneken**

**81. Quantifying Wading Bird Activity in Drying Wetlands Using Time Lapse Imagery.**

*Hannah Campbell*  
**Nathan Dorn**

**82. An Overview of the Re-development of Ocean Mall and Beach Park, Riviera Beach to Prevent Marine Turtles Disorientation**

*Simoni Castro*  
**Tobin Hindle**

**83. Identification of Fauna Associated with Gopherus Polyphemus Burrows**

*Laura De Souza*  
**Evelyn Frazier**

**84. Wetland Soil Greenhouse Gas Production Potential Under Aerobic and Anaerobic Conditions**

*Michael Eunson*  
**Brian Benscoter**

**85. Seven-Year Manatee Survey Looking at Seasonal Patterns of Frequently Observed Individuals in the Harbor Branch Channel Using Photo-Identification Techniques**

*Lauren Goldsworthy*  
**Jon Moore**

**86. Identification of Gopherus Polyphemus Intestinal Parasites in Four South Florida Populations**

*Kent Haizlett*  
**Evelyn Frazier**

**87. Improving Fractionation Methods of Marine Natural Products for High-Throughput Screening**

*Patricia Le, Joubin Jebelli, Walter Pierre*  
**Lyndon West**

**88. Everglades Apple Snail Density**

*Zara Mansoor*  
**Dale Gawlik**

**89. Pathogenic Vibrio Bacteria in Mangrove Snapper Meat**  
*Brandon McHenry*  
**Peter McCarthy**

**90. Male-male Aggressive Function of “Whisper Song” in the Bachman’s Sparrow (Peucaea Aestivalis)**  
*Caitlyn Montero, Sabah Ali*  
**Rindy Anderson**

**91. Genetic Diversity of Florida Populations of Invasive Apple Snails**  
*Estevao Santos, Maria Rivera*  
**John Baldwin**

**92. Diet and Temporal Partitioning by the Common Octopus and the Atlantic Longarm Octopus in a South Florida Habitat**  
*Rachel Shanker*  
**Randy Brooks**

**93. Do You Even Lift: A Comparative Study on the Lift Contribution of Shark Head Morphology**  
*Steven Warren*  
**Marianne Porter**

## **Health and Medical Sciences**

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**94. Selected TLR Agonists Act in Synergy to Reprogram DC-NK Cross-talk and Generate Effector T cells in Nicotinic Environment**  
*Emily Abu-Nuwar*  
**Mahyar Nouri-Shirazi**

**95. SMaRTlyMotivate: Self-management Support Motivational Statements for Behavioral Change in Diabetic Kidney Disease (DKD) Populations**  
*Coral Bajbek*  
**Teresa Sakraida**

**96. Identification of SRSF1 Gene Regulation Functions in T-Cell Activation Through Analysis and Validation of High-Throughput RNA Sequencing Data**  
*Evan Clark*  
**Massimo Caputi**

**97. Identifying a Mechanism to Reverse Immunosuppressive Tumor-Associated Macrophages**  
*Stephen Clements, Alexander Ruiz*  
**James Hartmann**

**98. C1q/TNF-Related Protein 9 Expression to Acute Aerobic Exercise in Obesity**  
*Katelyn Dodge*  
**Chun-Jung Huang**

**99. Mechanisms of Enhanced Cell Adhesion Between Stimulated T Lymphocytes and Endothelial Receptors**  
*Belinda Gerard*  
**Ewa Wojcikiewicz**

**100. Synthesis of Lanthanide Nano-sized Metal-organic Frameworks for Biomedical Applications**  
*Aida Sarita Gonzalez, Xiu Mei*  
**Daniel T. de Lill**

**101. RNA Damage and Modification on Protein Synthesis**  
*Giovana Jaen*  
**Zhongwei Li**

**102. Community Based Research to Address Dementia and Parkinson's Disease in Older Adults**

*Yolanda Madera Ramos, Jaclyn Sonin,  
Jessica Martini*  
**Patricia Liehr**

**103. Self-care for Nurse Leaders in Acute Care Environment Reduces Perceived Stress: A Pilot Study**

*Doren-Elyse Marquit*  
**Susan Dyess**

**104. The Development of Thermosensitive Hydrogels for Endothelial Cell Growth**

*Kathryn Moschouris*  
**Yunqing Kang**

**105. Angiographic Changes of Blood Vessels in the Photoreceptor Degenerative Mouse Retina**

*Matthew Nguyen*  
**Wen Shen**

**106. Advancing Oral Health with Stable Microbiome: the Search for Potential Oral Probiotic Bacteria**

*Roberto Ramirez*  
**Nwadiuto Esiobu**

**107. Mechanisms of Neuronal Survival Under Conditions of Oxidative Stress**

*Howard Retz*  
**Howard Prentice**

**108. Behavioral Sensitization Induced by Cathinones (Bath Salts) in Rats**

*Connor Shields, Marni Schlanger*  
**Rui Tao**

**109. Characterization of Plasmodium Falciparum-infected Erythrocyte and Host Interaction**

*Nethania Thelemaque*  
**Ewa Wojcikiewicz**

**110. Vulnerability to Seizure is Mediated by a Shift in the Gating Properties of Hippocampal Granule Neurons in Transgenic Mice Over-Expressing the Brain-Derived Neurotrophic Factor**

*Wei Hui Zhou, Mary Laquerre*  
**Ceylan Isgor**

# ABSTRACTS

## I. Oral Presentation Abstracts II. Poster Abstracts (alphabetical by students' last name)

### **Responsive Design: All Scales Considered**

Heather Akers

**Emmanouil Vermisso**, Mate Thitisawat  
College of Design and Social Inquiry  
Architecture

This research, titled Responsive Design: All Scales Considered, aims to identify, explore, and create various methods in which the built environment can respond to climatic conditions, urban necessities or biological inputs. This research is an attempt to understand how technology can increase human comfort, starting with the clothes we wear and leading to the way in which our comfort can have a more global impact by optimizing typical building systems. This work investigates the coexistence of the pedestrian and the vehicle, and how technology can reintroduce safety into an environment that was once built for the car. The projects presented utilize microprocessors, digital simulations, and 3D printing technologies in order to increase efficiency in prototyping and fabrication.

### **Effects of Methionine Sulfoxide Reductase (Msr) on Drosophila Melanogaster Larval Development using RNAi**

Tevin Ali

**David Binner**

Charles E. Schmidt College of Science  
Biological Sciences

Oxidative damage to macromolecules within cells plays a role in the aging process and age-associated neurodegenerative diseases such as Alzheimer's disease. Methionine, a common amino acid in proteins, is readily oxidized to methionine sulfoxide, which often results in the loss of protein activity. Methionine Sulfoxide Reductases (Msr) are a family of enzymes that repair oxidized methionine and restore its biological function. Msr is also thought to play a role in reg-

ulation of some protein activities as well as function as an intracellular antioxidant. Previous studies in our lab found that the absence of any Msr activity leads to a slower rate of growth during the third larval instar of *Drosophila*. My experiments involve the use of tissue-specific RNA interference (RNAi) knockdown of Msr to help delineate which tissues require the Msr activity for normal larval development. Ultimately, the results of these experiments should lend insight into the underlying molecular mechanism.

### **The Relationship Between Birth Order and College Students' Perceived Levels of Extraversion**

Hannah Baker

**Julie Earles**

Harriet L. Wilkes Honors College  
Psychology

Family composition is a potential contributor to one's personality, including how extraverted one is in social contexts. In this research we seek to discern the relationship between college students' perceived level of extraversion and their ordinal birth order in their family, as well as whether students' ratings of themselves correlate with their ratings of their siblings. It is anticipated that there is a correlation between people's perception of themselves and their perception of their siblings. We hypothesize that children who are born last of all their siblings are more likely to be socially extraverted, whereas children who are born the first of their siblings are more likely to be dominantly extraverted. As a result, it is expected that participants who report being born last are likely to agree with statements such as "I see myself as someone who is talkative/is full of energy/is outgoing, sociable..."

### **Deconstructing the Socialization of Sex in Virginia Woolf's "Orlando"**

Daniela Barbieri

**Oliver Buckton**

Dorothy F. Schmidt College of Arts & Letters  
English

Using Virginia Woolf's 1928 novel, *Orlando*, as the primary text, the concern of this research is on how sex informs gender; how presentation informs gender; how the body functions as a narrative; the relationship between perceiver/perceived, and how both sides dictate moments of gender revelation in *Orlando*. In doing so, sex/gender will be revealed as a social system in which the biological, hormonal, anatomical and psychological nuances of sex are overlooked. When biological bodies must be filtered through social paradigms to be understood, can the sides to this binary be fairly treated as separate entities? As opposed to trying to ground *Orlando* as a character who functions beyond the gender binary, I will examine how the text uses gender intelligibility to emphasize and undermine gender coherence as a prerequisite to being human; focusing on Woolf's depiction of *Orlando*'s gender through psychological/internal consciousness and performative/communicative acts.

### **The Effects of Situations on Emotion and Personality Expression**

Andrew Blake

**Ryne Sherman, Nicolas Brown**

Charles E. Schmidt College of Science  
Psychology

Situations are thought to importantly impact human emotion and behavior. This study uses a specially designed Narrative camera (about the size of a sugar packet) to automatically capture images from a participant's daily life experiences every 30 seconds. Participants later organized these images into situation

segments and rated them on the DIAMONDS (Duty, Intellect, Adversity, Mating, pOsitivity, Negativity, Deception, and Sociality) dimensions of situations — a psychometrically validated model of important situation characteristics. Participants also rated their emotions (happiness, self-esteem, and authenticity), and their behavior (Openness, Conscientiousness, Agreeableness, Extraversion, and Neuroticism) during that situation. Multilevel modeling was used to determine the relationship between situation characteristics, behavior, and emotion. The results demonstrate DIAMONDS situation characteristics are related to emotion and personality expression in theoretically meaningful ways.

### **Identification of SRSF1 Gene Regulation Functions in T-Cell Activation Through Analysis and Validation of High-Throughput RNA Sequencing Data**

Evan Clark

**Massimo Caputi**

Charles E. Schmidt College of Science  
Biology

We are interested in understanding the role of the human splicing and transcription factor SRSF1 in the biological process of T-Cell activation. Our approach is based on next generation RNA sequencing technology. HEK293 cells transfected with SRSF1 and a control GFP over-expression vectors had RNA extracted and sequenced to generate 40 million paired-end reads per sample. Using cutting-edge bioinformatics toolsets, we have performed expression and splicing analysis on this sequencing data to identify genes regulated by SRSF1 that have a minimum 3 fold change in expression or that show a major change in splicing patterns. In addition, we performed peak analysis on publicly available CLIP-Seq data from the ENCODE project to identify the mRNA sequences that are bound by SRSF1. We will then be performing gene enrichment and other analysis on these results to characterize the functional role of SRSF1 in T-Cell activation.meaningful ways.

2016 Undergraduate Research Symposium

### **A Comparative Survey of Gopherus Polyphemus Hemoparasites in Four Different South Florida Habitats**

Brain Cooney, Dana Elhassani

**Evelyn Frazier**

Charles E. Schmidt College of Science  
Biology

The gopher tortoise (*Gopherus polyphemus*) is a keystone species which houses over 300 species in its burrow. Habitat destruction and fragmentation have led to a decline in gopher tortoise populations. High levels of blood parasitaemia have shown to be a potential indication of stress within reptiles. Hemogregarines (Apicomplexa: Adeleiori) are intraerythrocytic parasites that have previously been identified in blood of gopher tortoises. Goals of this study are: (1) characterize hemoparasite species from tortoise blood samples and the ticks attached to tortoises (2) determine if tortoises that live in two poorly maintained habitats (Blazing Star Preserve, Florida Atlantic University Preserve) exhibit higher prevalence and parasitaemia levels within their blood when compared to tortoises inhabiting two better maintained habitats (Pine Jog Preserve and Jonathan Dickinson State Park). Preliminary results show parasitaemia levels to be highest in FAUP and JDSP. This study will benefit conservation practices for gopher tortoises in South Florida.

### **Disney: Embodying American Mythology and Cultural Values from 1955 to the Present**

Erin Fee

**Michael Harrawood**

Harriet L. Wilkes Honors College  
English

Disneyland Park, which opened in Anaheim, California on July 17, 1955, has been a fixture of American culture for over sixty years. Each of its themed “lands” are constructed to embody the popular perceptions

of an abstract idea, such as the frontier, tomorrow, and adventure. Even areas based on specific locations, such as New Orleans Square, are most occupied with representing places as they exist in the American imagination. Culture is dynamic, however, and public sensibilities evolve. The constant struggle to maintain societal relevancy and resonance has revised nearly every aspect of Disneyland's narrative since its opening, in ways both subtle and substantial.

### **Increased CHI3L1 Levels due to Pre-Existing Pulmonary Inflammation Accelerates Breast Cancer Metastasis by Establishing a Pre-Metastatic Niche in the Lungs**

Nathalia Gazaniga, Stephanie Libreros,  
Camilla Castro, Ramon Garcia-Areas  
**Vijaya Iragavarapu-Charyulu**  
Charles E. Schmidt College of Science  
Biology

Chitinase-3-like-1 glycoprotein (CHI3L1) is a pro-inflammatory molecule unregulated during inflammation and cancer. Our laboratory has shown that CHI3L1 knockout mice (KO) with pulmonary inflammation have decreased pulmonary metastasis compared to allergic wildtype (WT) mice. In addition, we found a significant decrease in monocyte and macrophage populations and pro-inflammatory mediators in allergic CHI3L1 KO mice compared to WT mice. These differences also occurred in the presence of a tumor. Monocytes and macrophages are the main populations to express CHI3L1. Depletion of macrophages and monocytes showed a significant decrease in pulmonary metastasis, CHI3L1 and pro-inflammatory mediators, similar to CHI3L1 KO tumor bearing mice. These results suggest that monocytes/macrophages and CHI3L1 may be driving the establishment of a pre-metastatic milieu in the lungs that aids in the establishment of metastasis. By understanding mechanisms of how inflammatory related diseases affect tumor progression, we can develop new therapies

for breast cancer treatment. be highest in FAUP and JDSP. This study will benefit conservation practices for gopher tortoises in South Florida.

### **Seven-Year Manatee Survey Looking at Seasonal Patterns of Frequently Observed Individuals in the Harbor Branch Channel Using Photo-Identification Techniques**

Lauren Goldsworthy  
**Jon Moore**  
Harriet L. Wilkes Honors College  
Marine Biology

The manatee project at Harbor Branch Oceanographic Institute was established in 2009. Land-based observations and photo-identification techniques have been used over the last seven years. This has allowed observers to recognize specific resident manatees that visit this location season after season. The photographs have been shared with the Manatee Photo-Identification System database and several matches were found, indicating some of the manatees are migrants. This project focuses on the seasonal patterns of frequently observed manatees in the Harbor Branch Oceanographic Institute channel. Knowing which manatees are residents allows observers to preliminarily identify specific individuals that will be part of a future acoustic tagging project.

### **Polarized Poll Responses: Telephones vs Internet**

Ryan Gondek, Monique Hall  
**Monica Escaleras**  
College of Business  
Economics

Does the mode of data collection affect respondent's behavior? Specifically, do telephone interviews or online surveys lead to more extreme responses? Many

may assume that there is no difference in survey responses conducted online or over the phone. However, prior research suggests that respondents give more extreme responses over the telephone than in an online survey. We would like to test if previous findings hold for the Hispanic population as they are the fastest growing ethnic minority in the United States Hispanics and are having an increasing impact on the culture, the marketplace, and politics of the country and so gathering accurate data on their sentiments is essential. Our findings show there is a statistically significant difference in responses between modes. It is also important to know whether with one particular method, the results can be skewed towards either a more positive or negative outcome.

### **Optical Trapping Through the Motion of Micron-Sized Particles**

Jennifer Hartwigs, Wen-Chung Cheng

**Grigoriy Kreymerman**

Charles E. Schmidt College of Science  
Physics

Optical trapping occurs when a dielectric particle that is near a focused laser beam experiences a force due to the transfer of momentum from the incident photons. We explore the optical trapping of micron-sized polystyrene spheres, submersed in water, through a trapping apparatus and a solid-state laser. In order to measure the trapping force while the micro-spheres move towards the trap, we track the motion with video recordings. After calibration of the optical apparatus, we measure the positions of the Brownian particles (micro-spheres) as a function of time to verify the Langevin equation experimentally, i.e. when inertia of the particle can be neglected. This is done instead of the more common approximation of a harmonic oscillator by the Equipartition method or Hooke's Law. Thus, obtaining the trapping force as a function of distance away from the center of the trap for the range of micro-spheres with diameters from 1 $\mu$ m-6 $\mu$ m.

### **Differences in Submerged Walking and Swimming Kinematics of the Epaulette Shark (*Hemiscyllium ocellatum*)**

Andrea Hernandez, Connor Gervais, Jodie Rummer

**Marianne Porter**

Charles E. Schmidt College of Science  
Biology

In addition to swimming, the epaulette shark (*Hemiscyllium ocellatum*) can walk in and out of water. We described kinematic differences between three aquatic gaits in six neonate and six juvenile sharks hatched and reared in the laboratory. Neonates retain nutrition from an internal yolk until they develop a consistent feeding schedule (~35d post-hatch). They are then classified as juveniles, foraging for worms, crustaceans, and small fish. We hypothesized that changes in diet and feeding habits would affect gait performance between neonates and juveniles. Using video tracking software and 13 anatomical landmarks along the fins, girdles, and body mid-line, kinematic variables were calculated to identify characteristic gait movements for each shark. Neonates were less coordinated than juveniles when synchronizing girdle and body mid-line movements, which are needed to produce stable walking gaits. This species is a model for understanding animal adaptations to climate change and ocean acidification.

### **Advancing and Innovating the Nickel(II) Linkage Isomers Experiment for Inorganic Chemistry**

Natalie Kershaw, Jerome Haky, Andrew Terentis

**Evonne Rezler**, Satu Hyvarinen

Charles E. Schmidt College of Science  
Chemistry

The purpose of this project is to advance and innovate the Nickel(II) Linkage Isomers Experiment for Inorganic Chemistry lab. This will be done by utilizing advanced methods such as Infrared and Raman

Spectroscopy. Students will be able to characterize their four complexes as well as be able to investigate the actions of thermochromism. Thermochromism is the action of a complex to change color in reaction to a change in temperature. Using these more advanced methods of obtaining spectra the students will be able to obtain deeper insight into the interpretation of data and better understanding of each of their complexes.

### **Effects of Bilingualism and Language Dominance on the Production and Perception of Speech Sounds**

Brandy McElroy-Wright, Ana Galdamez

**Viktor Kharlamov**

Dorothy F. Schmidt College of Arts & Letters  
Linguistics

This project sought to explore how Spanish-English bilingual speakers perceive and produce the sounds [p,b,t,d,k,g]. These sounds exist in both Spanish and English but they are produced with different characteristics in each language, including differences between male and female speakers. Our research team investigated the ways in which bilingual speakers are sensitive to these differences and how they produce them themselves. We conducted a perception experiment in which participants were asked to identify which sounds they heard, followed by a production tasks in which they were asked to produce sequences such as 'pah' or 'tah'. Our results from the perception experiment show that speakers gender plays an important role in how listeners identify speech sounds, and analysis of the production experiment results is ongoing.

### **Electric Impedance Sensing for Study of Cell-Cell Interactions in an in-vitro Blood Vessel Model**

Michael Mian

**E Du**

College of Engineering & Computer Science  
Mechanical Engineering

The experiment seeks to obtain statistically significant, distinct impedance spectra as a quantitative characterization of specific phenomena relating to cell-cell and cell-substrate interactions in an in-vitro model of an endothelial cell monolayer. The model to be used is a microfluidic channel within which is a microelectrode array for impedance sensing of an above-cultured endothelial cell monolayer. Two specific phenomenal interactions will be studied. The first, is the characterization of the junctional detachment interactions between adjacent endothelial cells and between endothelial cells and their substrate. This is accomplished by examining the impedance spectra obtained when a confluent monolayer is acted upon by a protease that cleaves the proteins in cell adhesion. The characterization of relatively chaotic interactions between erythrocytes and endothelial cells, such as adhesions, rolling motions, and proximate approaches. This information provides a novel way to study the vasoocclusive crisis experienced by sufferers of sickle-cell disease.

### **Investigating Ground Penetrating Radar (GPR) Limitations and Potential for Subsurface Nest Detection in South Florida**

Sarah Mitchell

**Evelyn Frazier**, Jessica Huffman, Xavier Comas  
Charles E. Schmidt College of Science  
Geology

This project sought to explore how Spanish-English Gopherus polyphemus is a keystone burrowing species endemic to the southeastern U.S. and is classi-

fied as threatened throughout its range. Declining populations are creating a need to improve ability of locating nests to assess clutch survival. Recent studies have shown potential in non-invasive methods (ground penetrating radar, GPR). Our work is focused within the FAU Preserve (FAUP), a fragmented habitat with 80-100 tortoises. Past FAUP studies suggest disproportionate age distributions and inability to detect nests using wire probe methodology. Utilizing GPR, we imaged an active burrow to detect chicken eggs in a mock nest buried near the opening. The eggs acted as point reflectors, as expected, allowing for characterization of burial extent and depth. Mock nests were also set in differing soils types with various saturation degrees to explore GPR's shallow imaging limitations. This study has the potential to improve nest detection, understand tortoise reproduction, and better understanding GPR limitations.

### **A Disabled Morality: Disability Studies and the Fiction of Flannery O'Connor**

Nicholas Morano

**Oliver Buckton**

Dorothy F. Schmidt College of Arts & Letters  
English

My project is a research paper that interprets representations of physical and mental disablement in the fiction of Flannery O'Connor from the perspective of disability studies. My paper argues how O'Connor's fiction exposes and critiques the enveloping social structures which stigmatize physical and mental embodiments that fall outside the socially constructed parameters of ideal bodies and minds. I do this first by tracing the history of the social construction of disability in the United States to show its existence as hegemony still present in our culture. I then show how this hegemony affected O'Connor's own life through her experiences living with Lupus Erythematosus. Finally, with these contexts in mind, I engage in a close

analysis of representations of disability in her fiction to argue how her work exposes and critiques the social structures that stigmatize and oppress people with living with disabilities.

### **Optimizing Instrument Parameters for Obtaining Spectra on a Portable Raman Spectrometer**

Stephanie Nauth

**Jerome E. Haky**

Charles E. Schmidt College of Science  
Chemistry

An integral part of chemistry is spectroscopy. It allows quantum events that would normally go unseen by the human eye to have an identifiable fingerprint that can be used to support many theories. Raman spectroscopy uses the scattering of light to identify certain aspects of molecules such as structural data. The Ramulaser by StellarNet is a portable Raman spectrometer. When running samples using the conditions recommended by the manufacturer, interferences by the sample holder, a glass vial provided, result in a combination spectrum. This spectrum is the summation of the glass vial spectrum and the sample spectrum, which is difficult to interpret. To counter this problem, an apparatus was designed to analyze the sample directly, without using the glass vial. Once the proper distance between the sample and the spectrometer probe was determined, other factors were optimized, including the time for each scan and how many scans were averaged.

### **Perfroming Shakespear in Original Pronunciation**

Lydia Nigro

**Kathryn Johnston**

Dorothy F. Schmidt College of Arts & Letters  
Liberal Arts and Sciences

Original Pronunciation is a dialect formed from the

research of linguist David Crystal and his son, Ben Crystal. The use of Original Pronunciation in the performance of Shakespeare aids the actor in clarity of the text, since many rhymes, rhythms, puns, and scansion within the piece only play more clearly while pronouncing it the way we think it was originally written. Original Pronunciation also assists in making the stakes higher and the circumstances more present in a scene, since it grounds the actor and puts them in a more primal, truthful place than we normally think of when presenting Shakespeare.

### **Historical Memory and the Past: The Civil War in Current-Day Spain**

Melanie Oates

**Carmen Cañete-Quesada**

Dorothy F. Schmidt College of Arts & Letters  
Liberal Arts and Sciences

The legacy of the Spanish Civil War (1936-39) and its implications have stipulated a major point of contention in contemporary Spanish society. While the historical accuracies of the war had been silenced during General Francisco Franco's dictatorship (1939-75), the exhumation of mass graves in recent years has revived a general interest in rescuing the historical memory of those who lost the war. Accordingly, in 2007, the Historical Memory Law ("Ley de la memoria histórica") was passed. However, while there are many Spaniards who strongly support the recovering of the historical memory of this tragic period in Spain, there are others who find it unnecessary to reopen old wounds. This historical episode of the Spanish Civil War remains a stringent controversy in today's Spanish society. Through observing both historical and present-day rationales, this research project analyzes how the contending political ideologies in Spain today ("las dos Españas") are rooted in its past conflict.

### **Progress Toward Synthesis of Glycopeptide Libraries Based on MUC1 Protein**

Eric Patino

**Mare Cudic**

Charles E. Schmidt College of Science  
Biology

Although death rates for all cancers combined continued to decline in recent years, metastatic cancers remain a major public health problem and new and efficient therapies are still needed. One of the novel therapeutic approaches involves targeting heavily glycosylated cell-surface mucin protein (MUC1), of which the expression and glycosylation patterns change with progression of cancer. These glycosylation changes from long to short-chained carbohydrates, also called tumor associated antigens (TACA), are usually associated with poor prognosis. Due to the random arrangement of TACAs on extracellular portions of aberrant MUC1, we hypothesize that replicating the variety of glycosylation patterns present on the surface of cancer cells will allow us to study the role of altered glycosylation of cancer cells in tumor progression and metastasis. Our approach involves solid-state synthesis of the MUC1-derived glycopeptide library carrying TACAs at typical glycosylation sites at serine (Ser) or threonine (Thr) within the MUC1 20-mer repeat. A key component in the preparation of this library is the determination of isokinetic ratios of glycosylated to non-glycosylated amino acids necessary for equimolar coupling at each possible glycosylation site. We have established protocol for the simple mixture of two components and determined the isokinetic ratios for coupling to the neighboring amino acids and/or glycosylated amino acid. Future studies will involve determination of isokinetic ratios for four component mixtures incorporating three TACAs and non-glycosylated amino acid. The proposed MUC1-derived glycopeptide library will be an invaluable tool for increasing our understanding of the role of MUC1 in cancer cell biology and immunology.

## **Why Leave When I Have Friends: The Perception of Interpersonal Relations and the Role of Peer Support on Retention**

Brian Pennington

**Julie Earles**

Harriet L. Wilkes Honors College

Psychology

We examined the relationship between the interpersonal connectedness of college students and facets of retention to develop a better understanding of student retention and student success. Through examining student's perceptions of the quantity and quality of peer relationships, we were able to analyze the relationship between connectedness and differing facets of the construct of retention (e.g. academic success, stress, satisfaction, etc.). Participants were 65 students from Florida Atlantic University who answered questions about college satisfaction, life satisfaction, stress, and personality. We then categorized a list of all enrolled Honors College students into five categories of relationships (i.e. close friend, friend, acquaintance, know of, and do not know). We found a strong correlation between college satisfaction and meaningful peer relationships. Our results may help us to better understand how to organize the university in a manner that optimizes students' interpersonal relations.

## **Innovating Organic Chemistry Laboratory Course with Cutting-edge Raman Spectroscopy**

Kimberly Quinn, Adiyi Mills

**Evonne Rezler**, Maciej Stawikowski

Charles E. Schmidt College of Science

Chemistry

Students currently enrolled in the Organic Chemistry Laboratory course at FAU are exposed to top-notch educational tools and laboratory experiments. To

continually enhance student learning, and innovative experimental techniques and analytical methods, we have developed a novel laboratory experiment that incorporates Raman spectroscopy concepts in this lab's curriculum. Our goal was to apply Raman spectroscopy to characterize the product of the reaction of benzaldehyde with aniline as an example of nucleophilic addition reaction. The product belongs to a family of compounds called Schiff bases possessing many interesting properties. Raman spectroscopy will complement other methods used to characterize organic compounds such as melting point analysis, infrared and NMR spectroscopies. The developed experiment will be incorporated into Organic Chemistry Laboratory curriculum in Fall 2016 semester.

## **A Student-Driven Approach to Assessing Computer Science and Computer Engineering Students**

Nadeen Saleh

**Lofton Bullard**

College of Engineering & Computer Science

Computer Science

The purpose of this investigation was to present a student-driven approach to assessing the knowledge of Computer Science and Computer Engineering students about their degree requirements. Student's already have access to their curriculums' advising flowchart, thus our approach tests their knowledge of this material and fills in the gaps in the case that the original information was not clear. Rather than an advisor-driven approach, our student-driven approach dives into the application of their acquired knowledge of their degree program towards graduating on time. Blackboard Communities were used to survey the students about their degree requirements and the results of the study showed that more than 70% of the

students who participated in the study knew and understood the requirements of their degree program. These results demonstrate that data collected from students can be used effectively to guide the allocation of valuable departmental resources.

### **Lanthanide Induced Aggregation of Mercaptobenzoic Acid-Functionalized Gold Nanoparticles**

Alexander Santana, Luizetta Navrazhnykh,  
Maria Martinez, Aida Sarita Gonzalez, Xiu Mei-Chu  
**Daniel de Lill**  
Charles E. Schmidt College of Science  
Chemistry

Functional hybrid nanomaterial systems are currently of great interest in the area of molecular recognition. Nanoparticles functionalized with various ligands have been widely used to induce self-assembly, enhance molecular recognition, and to detect ions. Gold nanoparticles in particular are desirable substrates due to their high extinction coefficients, photostability and ease of functionalization. Gold nanoparticles can address the need for improved detection methods of lanthanide ions, as lanthanides have become more ubiquitous in a variety of industrial applications. Current methods for the detection of lanthanides involves expensive spectroscopic equipment not suitable for the field, or colorimetric detection procedures that can only be performed in organic solutions. A facile synthesis for a mercaptobenzoic acid-functionalized gold nanoparticle that can selectively and colorimetrically detect trivalent lanthanide ions in aqueous solutions has been designed and synthesized. The synthesis of this system and its ability to selectively detect lanthanide ions will be presented.

### **Inhibition of Semaphorin7A Decreases Mammary Tumor Growth and Metastasis**

Michael Simoes, Ramon Garcia-Areas,  
Nathalia Gazaniga  
**Vijaya Iragavarapu-Charyulu**, Ramon Garcia-Areas  
Charles E. Schmidt College of Science  
Biology

Developing an understanding of the tumor micro-environment is critical for developing treatments for breast cancer patients. Poorly differentiated blood vessels can fashion an oxygen-deprived microenvironment that triggers the expression pro-tumorigenic proteins. We discovered that breast tumors express high levels of Semaphorin7A (SEMA7A). To study the role of SEMA7A we generated 4T1 and 4T07 murine mammary tumor cells that were either silenced for the SEMA7A or expressed a Renilla control vector. Using the SEMA7A-specific hairpin shRNA we achieved a greater than 10-fold knockdown in SEMA7A gene expression. Mice bearing 4T1 and 4T07 SEMA7A silenced tumor cells showed a decreased tumor growth rate, decreased metastasis, and increased survival. Primary tumors from mice bearing SEMA7A silenced tumors showed a decreased production of angiogenic molecules, less hypoxia-induced necrosis, and a large reduction in immune infiltrates. Our study shows that inhibition of tumor-derived SEMA7A can limit tumor-induced inflammation and improve prognosis.

### **Learning to Learn: What Machine Learning Can Tell Us About the Brain**

Michael Teti  
**Elan Barenholtz**, William Hahn  
Charles E. Schmidt College of Science  
Biology

The vibrant and interdisciplinary field of machine learning has increasingly impacted many different

fields of scientific study in the last 10-20 years. Current tools, such as neural networks, locally-competitive algorithms, and sparse coding have made it possible to gain insight into how the human brain analyzes and sorts the vast amounts of data it receives, as well as create machines that are capable of performing similarly, oftentimes better, than the human brain. In this simple demonstration inspired by the work of psychologist B.F. Skinner, we provide an illustration of the mechanism and power of machine learning by showing how, when implemented in an inexpensive rover with minimal hard-coding, they allow us to use operant conditioning to train the rover to perform certain behaviors in the presence of specific stimuli.

### **Behind Shoji Screens and Pages: Heian Women Writers and Japanese Religions**

Maria Theodosiou

**Kenneth Holloway**

Dorothy F. Schmidt College of Arts & Letters  
History/English

This paper shall study the diaries of five women from Heian Era Japan, analyzing the presence of Japanese Religions in their lives and the affects these religions had on them. This paper shall argue that these women used religion on personal and social levels to address problems and hardships in their lives. The lives of each of these women are unique and specific but through close readings of their personal thoughts and commonalities amongst them, a relationship between women of the time and religions can be extrapolated despite the fact that religious rhetoric at the time viewed women adversely.

### **The Allegory of The Giving Tree: A Looking Glass into the 2008 Financial Crisis**

Derek Vaughn

**Athena Murray**

Dorothy F. Schmidt College of Arts & Letters  
Communication Studies

Unethical financial practice resulting from corporate greed led to the unemployment of 30 million workers and the worst global financial crisis since The Great Depression. Ironically, the theme of personal gain at the expense of others is a cautionary tale first taught to children in bedtime stories that are reiterated throughout one's lifetime. The early introduction to this theme is seen in influential and award winning children's books such as The Giving Tree. This paper is a rhetorical criticism which will evaluate the ideology behind The Giving Tree, which I will then use as an allegory to draw connections and criticize the ideology that led to the 2008 financial collapse.

### **Self-Realization to Self-Sacrifice: A Gender Based Shift in Adolescent Search for Identity Within Young Adult Fantasy Literature**

Jodi Weissman

**Elizabeth Swanstrom**

Dorothy F. Schmidt College of Arts & Letters  
English

This research thesis investigated a gender shift in the identity search within Young Adult Fantasy novels between the mid-twentieth century and the contemporary period utilizing an emergent Structuralist pattern of four Emotional Discourses. The author argued that an adolescent's search for identity (within the context of the Young Adult Fantasy genre) during the mid-twentieth century focused on personal reflection and self-realization regardless of gender; whereas, the coming-of-age journey for self-discovery

ery in contemporary novels, or series of novels, (of the same genre) hinged on gender. Applying these discourses to the Earthsea and Twilight series texts, close readings were analyzed in light of the discourses (challenges and identifications) of both male and female characters to determine how each made decisions. Structuralist analysis showed that young adult females today gain identity through self-sacrificing means while contemporary male adolescents and teens of both sexes in the mid-twentieth century discovered identity through self-realization.

### **Selected TLR Agonists Act in Synergy to Reprogram DC-NK Cross-talk and Generate Effector T cells in Nicotinic Environment**

Emily Abu-Nuwar, Saba Tamjidi, Erika Nourishirazi  
**Mahyar Nouri-Shirazi**  
Charles E. Schmidt College of Science  
Biology

The magnitude of immune responses to vaccination is a critical factor in determining protection from diseases. We reported that nicotine disrupts the properties of DCs that are pivotal in the initiation of immune response to vaccines. Here we investigated whether TLR agonist(s) could overcome the effects of nicotine on human DC and DC-NK cross-talk essential for effector T cell generation. nicDC, nicDC-NK, and nicDC-NK-T cultures exposed to TLR agonists were evaluated for expression of costimulatory molecules, cytokines, and intracellular cytokine IFN-g using ELISA and flow cytometry. Our data shows that among the TLR agonists, TLR3 and TLR8/7 synergistically optimized nicDC maturation co-cultured NK cell activation. Importantly, similar to DC-NK, nicDC-NK treated with TLR3 and TLR8/7 and co-cultured with naïve T cells promoted a comparable number of effector T cells. Our data suggest that the addition of appropriate TLR agonist(s) to vaccine formulation could potentially improve the smokers' immune response to vaccination.

### **Removing Body Heat Through A Finned Wristband During Exercise**

David Adejunmobi  
**Tsung-Chow Su**  
College of Engineering & Computer Science  
Mechanical Engineering

The purpose of this research is to study the effects of a finned wristband on transferring body heat in order to provide the subject with cooling. A few applications of this project would include situations in sports or in the military operation, where the wearer is experiencing a rise in body temperature due to physical activity. We would be examine how the wristband cools the wearer through convection to lower their body heat. The material we are testing first is aluminum because of its high thermal conductivity and its light in weight; it will allow efficient heat transfer from the skin to the surroundings.

### **Increasing Comprehension Levels Through Content Vocabulary**

Chandani Alexandre  
**Lori Dassa**  
College of Education  
Elementary Education

The objective of my study is to determine if explicitly teaching content-specific vocabulary can increase reading comprehension in low expectancy students. I have created a pre/post assessment cycle design that tests reading comprehension and familiarity with vocabulary specific to the unit being taught. Participants include 26 fourth graders at Park Lakes Elementary. A pretest will be given, 5 lessons taught, and then a posttest. Pretest and posttest scores will be analyzed, to track learning gains and the validity of explicitly teaching vocabulary to increase comprehension. All 26 students are expected to earn a higher score on the posttest, compared to the pretest. After result analysis, I will report concluding results. My intent is

to evaluate this technique with the hope that it will be an effective teaching strategy that will improve low expectancy student scores on the ELA area of the Florida Standardized Assessments.

### **Effects of Methionine Sulfoxide Reductase (Msr) on Drosophila Melanogaster Larval Development using RNAi**

Tevin Ali

**David Binninger**

Charles E. Schmidt College of Science

Biology

Oxidative damage to macromolecules within cells plays a role in the aging process and age-associated neurodegenerative diseases such as Alzheimer's disease. Methionine, a common amino acid in proteins, is readily oxidized to methionine sulfoxide, which often results in the loss of protein activity. Methionine Sulfoxide Reductases (Msr) are a family of enzymes that repair oxidized methionine and restore its biological function. Msr is also thought to play a role in regulation of some protein activities as well as function as an intracellular antioxidant. Previous studies in our lab found that the absence of any Msr activity leads to a slower rate of growth during the third larval instar of *Drosophila*. My experiments involve the use of tissue-specific RNA interference (RNAi) knockdown of Msr to help delineate which tissues require the Msr activity for normal larval development. Ultimately, the results of these experiments should lend insight into the underlying molecular mechanism.

### **Development of Control Tension System for Open Source 3D Printed Bionic Hand**

Daniel Allison, Jacob Sherbondy, Justin Cooke, Perry Weinthal

**Erik Engeberg**, Chad Coarsey

College of Engineering & Computer Science

Mechanical Engineering

Current prostheses for treating hand anomalies and amputations are expensive and intricately developed. They tend to only accommodate one size and cannot account for anatomical changes such as growth. Through a series of rapidly prototyped 3D printed renderings, mechanical hands--or "bionic gloves" will be created to address this problem using cost-effective manufacturing techniques. This method allows for custom and adaptable changes necessary for patient outcomes. This project aims to advance existing models to offer superior accommodations for users with congenital hand deformations.

### **The Importance of Roles, Power and Ethical Standards of Drug Court Officials**

Sondra Andrews

**Lincoln Sloas**

College for Design & Social Inquiry

Criminal Justice

Often, in the traditional adversarial court system, prosecutors work to secure a conviction of drug offenders whereas the defense seeks dismissal of the charges or a less punishable sentence. The judge acts as a neutral entity hearing testimony and sustaining or overruling arguments made by opposing sides. In drug courts, which is a type of non-adversarial problem-solving court, these members of the courtroom work group work together to enhance the likelihood of drug offenders reducing their substance abuse and future criminal activity. With the growing incarceration rate in the United States, some states have opted to use drug courts as a way to divert of-

fenders away from prisons. In this poster, I present data collected via one drug court observation and film notes discussing the roles, power and ethical standards of drug court officials and how they differ from the traditional adversarial system.

### **SMaRTlyMotivate: Self-management Support Motivational Statements for Behavioral Change in Diabetic Kidney Disease (DKD) Populations**

Coral Bajbek

**Teresa Sakraida**

Christine E. Lynn College of Nursing  
Nursing

Diabetic kidney disease (DKD) can include type 2 diabetes mellitus; a staged kidney dysfunction found in 1 of 3 adults with diabetes. Motivating lifestyle self-management behaviors of healthy eating and physical activity can allay DKD disease burden. Delivery of self-management support (SMS) using motivational statements for behavioral change can readily occur with mobile applications (apps). Storyboard flowcharting and content validity were employed to systematically design a prototype android based application (app) titled SMaRTlyMotivate. The app's focus is to provide SMS as motivating statements for healthy eating and physical activity. Statements were developed and categorized using the following criteria: (a) five kinds of change talk, (b) change talk strategies of desire, ability, reasons, need, commitment, and taking steps, and (c) nine processes of change. Over 100 statements were generated. We have design considerations and motivating statements to use in community participatory research as we tailor the SMaRTlyMotivate app for personalized education.

### **On the Expected Increase of Mobile Transactions Authenticated Through Biometrics**

Loren Barcenas

**Koray Karabina**

Charles E. Schmidt College of Science  
Biology

Biometrics, the identification of specific individuals by unique physical characteristics – like fingerprints, irises, or facial features – promises greater convenience and security than traditional methods since physical features cannot be lost or forgotten. Our study explores practical implementations of biometrics, especially its projected growth in the field of mobile transactions. Our study supports the claim that usage of biometric systems, especially in the authentication of mobile transactions, will significantly increase despite security and privacy breaches. Because biometrics is a relatively new technology with little previous data, we circumvent this issue by correlating its usage to that of smart phones in order to analyze statistics to create regression analyses. According to our findings, the number of biometric users will increase from \$7.72 billion in 2014 to \$10.26 billion in 2019, thus it would be prudent to invest in biometrics by implementing more systems, and creating more reliable systems based on new standards.

### **Formulating Different Detection Algorithms to Eradicate Invasive Red Lionfish Using an Autonomous Underwater Vehicle in South Florida and the Bahamas.**

Alexis Base

**Allan Phipps**

College of Engineering & Computer Science  
Ocean Engineering

The Red Lionfish (*Pterosis Volitons*), which has invaded South Florida's coastal waters and is consuming native fish, must be eradicated. Lionfish are extreme-

ly difficult to eradicate using standard methods because they spawn rapidly and adapt to many ocean depths. The project focuses on identifying Lionfish via an image recognition software, CODE (Computer Operated Detection Environment), with an AUV (Autonomous Underwater Vehicle). The project tests which color space, YCrCb, or HSV, is the most effective for identifying lionfish using C++ programs. The programs were analyzed on their ability to correctly identify Lionfish with a minimum number of false-positives under harsh and normal lighting conditions. The YCrCb classifier performed with the highest overall accuracy and the raspberry pi processor averaged a processing rate of 2.7fps after running 7960 frames for 50 minutes. CODE will propose a faster, more feasible solution to the eradication of Lionfish.

### **The Psychology Behind Nonprofit Organizations**

Hannah Bauduin

**Julies Earles**, Jacqueline Fewkes  
Harriet L. Wilkes Honors College  
Psychology

There are currently around 1.5 million nonprofit organizations in the United States alone. These organizations play a huge role in addressing the needs of the world. Nonprofit organizations rely largely on passionate volunteers and intrinsic motivation. It is interesting to look at why some nonprofits are more successful than others, what drives people to want to help through donations and volunteering, and what types of work personalities are beneficial in making a nonprofit organization a successful one. Through an online survey, founders and CEOs of nonprofit organizations will give their opinions about what makes organizations successful. It is hypothesized that participants of this survey will highlight the importance of intrinsic motivation and altruism in the success of a nonprofit organization.

### **Adult Age Differences in Event Memory for Events**

Joanna Beazley

**Julies Earles**  
Harriet L. Wilkes Honors College  
Psychology

In order to remember an event, one must remember the participants in the event, the actions that are performed, and which people performed which actions. Often people make binding errors in memory in which they remember the people and the actions, but they incorrectly remember one person as the person who performed an action that was actually performed by someone else. Half of the participants in our study saw a series of actions with each action performed by one of two actors. The other half of the participants saw each action performed by a different actor. We found that older adults were more likely to make binding errors than were younger adults. Younger adults were equally likely to make binding errors in the two conditions. Older adults, however, made many fewer binding errors when they saw only two actors during encoding than when they saw many actors during encoding.

### **Graphic Novels: Comprehension of Text and Image**

Angel Bermudez

**Tammy Knipp**  
Dorothy F. Schmidt College of Arts & Letters  
Graphic Design

Research suggests that, instinctively, humans follow a Z-shaped pattern when reading graphic novels. Studies have also revealed that readers organize information through Gestalt's theory of proximity when the panel structure is altered. This paper explores the separation of text and image from the constraints of the traditional comic book format. Through the utilization of an eye-tracking system, this experiment will examine the limitations of the Gestalt theory and the

effectiveness of comprehension. The task of processing the plot of the novels relies heavily on the efficiency of the reader's ability to apply context by using the accompanying imagery and text via data collected from saccadic patterns, fixations, and gaze analysis. This study coincides with the idea of universal communication by acknowledging that there are multiple ways to comprehend information, with the expectation of gaining further insight on the conscious and subconscious methods of visual processing.

### **The Effects of Situations on Emotion and Personality Expression**

Andrew Blake

**Ryne Sherman**, Nicolas Brown

Charles E. Schmidt College of Science  
Psychology

Situations are thought to importantly impact human emotion and behavior. This study uses a specially designed Narrative camera (about the size of a sugar packet) to automatically capture images from a participant's daily life experiences every 30 seconds. Participants later organized these images into situation segments and rated them on the DIAMONDS (Duty, Intellect, Adversity, Mating, pOsitivity, Negativity, Deception, and Sociality) dimensions of situations — a psychometrically validated model of important situation characteristics. Participants also rated their emotions (happiness, self-esteem, and authenticity), and their behavior (Openness, Conscientiousness, Agreeableness, Extraversion, and Neuroticism) during that situation. Multilevel modeling was used to determine the relationship between situation characteristics, behavior, and emotion. The results demonstrate DIAMONDS situation characteristics are related to emotion and personality expression in theoretically meaningful ways.

### **Should Public Assistance For Refugees End If They Regularly Travel Back to Cuba?**

Shannon-Lee Bowie

**Monica Escaleras**

College of Business

International Business & Trade

The 'Wet Foot, Dry Foot' policy is acknowledged as a revision of the 1966 Cuban Adjustment Act, which was intended for political refugees of the Caribbean sovereign state, Cuba. Although the diplomatic relations of the United States of America and Cuba have recently been rekindled it calls into question the validity of the act's continued existence. The policy was initially implemented to assist Cubans fleeing the island due to political persecution. The purpose of this study is to identify if there is any association between political party affiliations and their support of public assistance for Cuban refugees who travel regularly back to Cuba. To examine this, I conducted a survey of 423 randomly selected Miami-Dade county residents of Cuban descent in December 2015. I discovered that there was a statistically significant relationship between the two.

### **Examining Faces: Transgender and Subconscious Perceptions**

Danielle Brady

**Tammy Knipp**

Dorothy F. Schmidt College of Arts & Letters

Graphic Design

Transgender women are a marginalized group in society. Research suggests there are specific parts of the brain, such as the fusiform face area, dedicated to recognizing faces. Subsequently, cisnormative facial structures are the standard by which attractiveness is determined. Studies have shown that the upper third region including the glabellar is a determining facial feature when recognizing gender. The

objective of this paper is to determine whether the glabellar serves as an indicator of social stigma via eye-tracking technology. Subjects will view portraits varying in transgender and cisgender women with a questionnaire to rate the models' attractiveness. The data acquired may provide insight to the differences in perception when comparing the faces of trans women and cis women.

### **Community Structure of the Human Skin Microbiome and Evaluation of its Forensic Match to Bacteria from Mobile Phones**

Jessica Brandwein

**Nwadiuto Esiobu**

Charles E. Schmidt College of Science  
Biology

Recently, forensic scientists have begun exploring the potential value of the diversity of skin bacteria in forensic identification of individuals. Meanwhile, the variance and stability of skin microbial communities is poorly understood since only a small fragment of human skin microbes have been cultured or sequenced. For this study, the 16S rDNA genes of bacterial metagenomic samples from the skin of volunteers and their mobile phones were sequenced using Illumina Mi-Seq protocols, and the data will be used to determine variations in bacterial taxa, total abundance, and relative composition of each microbe, and to attempt to blind match each cellphone to its owner by sequence analysis. Analysis of this data using QIIME software is currently in progress. The results of this study will help to fill the knowledge gaps on the community structure of human skin bacteria and their forensic value.

### **Potential Influences of Rape Myth Acceptance on Police Decision Making: Does Rape Myth Acceptance Effect Cases being Recommended for Further Action in the Criminal Justice System?**

Caralin Branscum

**Gina Carreño-Lukasik**

Dorothy F. Schmidt College of Arts & Letters  
Sociology

I explore the influence and potential effects of rape myth acceptance on police decision making, specifically the likelihood that an officer recommends that a case goes to court. From officers' perspectives, notable characteristics of "legitimate" cases are identified. Next, the relationship between a case's legitimacy and acceptance of specific rape myths are analyzed. A conclusion that can be drawn is that, police officers endorse few rape myths that affect their judgement in recommending cases. However, another study demonstrates that cases that do not go to court also correlate with negative experiences between the victim and officer. I explore a possible explanation that would suggest rape myth acceptance plays a more influential role in policing than previous studies suggest. Lastly, I conclude with general weaknesses in existing literature as well as potential areas of further study.

### **Interactions with Resonators: How Can Resonate Sound Bring Change Within or on the Body?**

Nicole Brodtkin

**Julie Ward**

Dorothy F. Schmidt College of Arts & Letters  
Studio Art/Sculpture

The purpose of this research is to investigate the implications of resonance on my body. To press a conch shell to your ear and hear what sounds like the ocean is resonance. In the instance of the conch, this sound

only exists when the conchs body is absent from its shell. Through my process I am formulating instances in which the body and resonance are present in the same moment. I create wearable devices that allow my voice to interact with the sonority of a hollow structure. A part of this act includes the ability to listen, feel, and see my voice by the vibrations that are reflecting within this containment. I audio record this manipulation of my voice to be played back in large resonant forms.

### **Multilateral Trade Agreements and Their Implications**

Renzó Broggi

**Cheryl Arflin**

Dorothy F. Schmidt College of Arts & Letters  
Political Science

The growing significance of multilateral trade agreements has called into question the scope of power presented by these deals. While many developing nations support these trade agreements, their impact on less developed countries creates conditions unfavorable to development. First, the history of multilateral trade agreements will be analyzed in order to understand their relationships to globalization. With globalization increasing the interconnectedness of global economies, multilateral trade deals are supposed to encourage the lowering of tariffs and promote the free flow of goods from one country to another. While this may be the case, stipulations and clauses added in many deals, such as the establishment of ad hoc courts and diminishing regulations, encourage the monopolization of industries by large multinational corporations and the outsourcing of jobs to countries with less regulations and lower wages.

### **Developing a New Chemosensor for the Facile Spectroscopic Detection of Metal Ions in Solution**

Spencer Brown

**Daniel de Lill**

Charles E. Schmidt College of Science  
Chemistry

Chemosensors are molecules that produce a unique response in the presence of specific chemical species, which can be used in its detection and identification. Detecting metal ions is one example where chemosensors are used, and showcases the applicability of chemosensors in real-world scenarios such as water treatment, environmental monitoring, and various biological applications. The chemosensor for this project: benzo[1,2-b:4,5-b']dithiophene-4,8-dione ("dione"), has shown promising results with numerous transition metal cations including  $\text{Cu}^{2+}$ ,  $\text{Fe}^{2+}$ , and  $\text{Hg}^{2+}$  through UV-Vis absorption spectroscopy. The chemosensor responds very strongly to the presence of various metal cations, even at immensely small concentrations. The behavior of the dione to act as a chemosensor for  $\text{Cu}^{2+}$  will be presented in detail, including supplementary computational, crystallographic, and fluorescence studies.

### **The Impact of Rainfall and Temperature on the Green Turtle (*Chelonia mydas*) Sex Determination**

Marianna Calvet

**Jeanette Wyneken**, Alexandra Lolavar

College of Education

Excise Science and Health Promotion

Green turtles are classified as endangered; thus a solid understanding of current sex ratios is critical for species recovery. All species of sea turtles have temperature dependent sex determination, in which higher incubation temperatures produce more females and lower temperatures produce males. This

study compares rainfall amounts, nest temperatures, and hatchling sex ratios throughout five years (2010 – 2014) to determine if rainfall affects hatchling sex ratios. Rainfall data indicated that 2010 and 2011 were dry and warm, while nests 2012-2014 experience cooler temperatures and more rainfall. Thus, nests in 2010 and 2011 had more females, while nests in 2012, 2013, and 2014 had more males. This highly suggests that when rainfall cools nest temperatures, ultimately more males are produced.

### **Quantifying Wading Bird Activity in Drying Wetlands Using Time Lapse Imagery**

Hannah Campbell

**Nathan Dorn**, Mark Cook

Charles E. Schmidt College of Science  
Biology

The purpose of this research was to quantify wading bird hourly and daily foraging activity in a drying wetland. We sought to determine the hours of peak activity and identify water depths that facilitate high foraging activity. Our results indicated that 56% of daily activity occurred between 0600 – 0800 h and >95% of the daily activity was found in images taken between 0600 and 1400 h. The wading bird activity showed little variation and no obvious correlation with water depth fluctuations (highest recorded density = 2.1 birds/ha at 14.9 cm depth; lowest recorded density = 0.05 birds/ha at 35.1 cm depth). The wading bird activity occurring between 0600 – 1400 h accounts for >95% of daily activity. We conclude that a study of water depth and average wading bird density earlier in the nesting season is needed for a clearer effect of water depth on wading bird foraging activity.

### **Steroid Usage Among College Athletes: A Comparison of Public and Private Four-year Institutions**

Daniel Castilla

**Frankie Santos Laanan**, Marlena Coco

Charles E. Schmidt College of Science  
Biology

The national dataset from the Core Institute was used to provide information from a survey on drugs and alcohol from four-year public and private institutions nationwide. The Core Institute national data set is one of the largest databases that collects and maintains information from college students on their consumption and behaviors of drug and alcohol use. The College Alcohol and Drug survey was used to assess the data focusing on the percentage of steroid use among athletes attending public and private four-year institutions in the U.S. Data analysis includes frequency tables, cross tabulation, t-tests, and multiple linear regressions. Bar graphs illustrate similarities and differences between the consumption of the drug in four-year public and private institutions. Implications for research and practice will inform programs and education for student athletes with drug usage of steroids.

### **An Overview of the Re-development of Ocean Mall and Beach Park, Riviera Beach to Prevent Marine Turtles Disorientation**

Simoni Castro

**Tobin Hindle**

Harriet L. Wilkes Honors College  
Geography

It is well known that nesting sea turtles and hatchlings are affected by light pollution. Artificial lighting near shore are related to disorientation and wandering of adult females and hatch-outs inland, where they often die of dehydration or predation. In 2006, the City

of Riviera Beach approved the redevelopment of the Ocean Mall plaza and the refurbishment of the municipal beach park with goals to restore the dune profile to improve sea turtle protection. The purpose of these study is to determine if the redevelopment/redesign of the Ocean Mall and Beach Park was effective in diminishing the impacts of light intrusion on sea turtles. Historic and the current disorientation event reports documenting whether a female or a hatchling exhibited a disrupted sea finding behavior will be analyzed to determine how successful the Ocean Mall was preventing disorientation of sea turtles.

### **Healthcare and Hispanics: The Disparity in Healthcare Coverage and Affordability Between Genders**

Jonathan Chavez  
**Monica Escaleras**, Eric Levy  
College of Business  
Economics

Hispanics are among millions of Americans at risk of lacking the opportunity for healthcare coverage. The Affordable Care Act seems to be working for many minorities, specifically Hispanics. However, we suspect that there is a gender gap in regards to healthcare coverage and affordability among Hispanics. To formally test the hypothesis of a gender gap in healthcare coverage and affordability we conducted two surveys in 2014 and 2015. A hybrid method of automated telephone calls and online surveys were used to collect our samples. There is evidence that overall Hispanics find it easier to afford healthcare overtime and that the percentage of females that are uninsured dropped. Still, a gender gap still exists between healthcare coverage and affordability. Potential reasons behind this imbalance could be the barriers obstructing expansion of health insurance for both Hispanic men and women under the Affordable Care Act.

### **Traffic Sign Effectiveness**

Ashley Chozas  
**Tammy Knipp**  
Dorothy F. Schmidt College of Arts & Letters  
Graphic Design

Visual salience is the perception that renders some objects in the world to stand out from its given environment and immediately grab our attention. For the design of road signs, visual salience plays a significant role. Studies reveal poor salience of traffic signs contribute to the increase of traffic violations. With the aid of eye-tracking technology (analyzing visual fixations and saccadic patterns of licensed drivers), this paper will examine the visual salience and effectiveness for the redesign of two specific road signs. We hypothesize remodeling the optical characteristics will improve visual attention for a given background and thus, reduce the number of traffic violations and ensure public safety.

### **Identification of SRSF1 Gene Regulation Functions in T-Cell Activation Through Analysis and Validation of High-Throughput RNA Sequencing Data**

Evan Clark  
**Massimo Caputi**  
Charles E. Schmidt College of Science  
Biology

We are interested in understanding the role of the human splicing and transcription factor SRSF1 in the biological process of T-Cell activation. Our approach is based on next generation RNA sequencing technology. HEK293 cells transfected with SRSF1 and a control GFP over-expression vectors had RNA extracted and sequenced to generate 40 million paired-end reads per sample. Using cutting-edge bioinformatics toolsets, we have performed expression and splicing analysis on this sequencing data to identify genes regulated by SRSF1 that have a minimum 3 fold

change in expression or that show a major change in splicing patterns. In addition, we performed peak analysis on publicly available CLIP-Seq data from the ENCODE project to identify the mRNA sequences that are bound by SRSF1. We will then be performing gene enrichment and other analysis on these results to characterize the functional role of SRSF1 in T-Cell activation.

### **Identifying a Mechanism to Reverse Immunosuppressive Tumor-Associated Macrophages**

Stephen Clements, Alexander Ruiz  
**James Hartman**, Geneieve Liddle  
Charles E. Schmidt College of Science  
Biology

Cancer immunotherapy uses the immune system to seek and destroy cancer cells. Initially, tumoricidal macrophages (M1) promote cancer cell destruction. However, immunosuppressive cytokines in the tumor microenvironment alters the M1 phenotype to an immunosuppressive tumor-associated macrophage (TAMs) that facilitates tumor progression. Additionally, TAMs are promoted to hypoxic areas of the tumor environment which aids in cancer growth and metastasis. A model for studying TAMs has been developed using the macrophage RAW 264.7 cells. RAW cells are added to highly metastatic 4T1 tumor-conditioned media causing a reversion of M1 to TAM phenotype. A foreign bacterial oligonucleotides such as CpG should reverse the TAM back to a M1 phenotype. Chitinase, a tumor promoting cytokine released by tumor cells and macrophages, will be measured via ELISA before and after CpG treatment. It is hypothesized that through receptor signaling, CpG will decrease Chitinase from macrophages and promote macrophage induced tumor destruction.

### **Identification of Fauna Associated with Gopherus Polyphemus Burrows**

Laura De Souza  
**Evelyn Frazier**, Jessica Huffman  
Charles E. Schmidt College of Science  
Biology

Gophers polyphemus is a burrowing chelonian species prevalent to the southeastern portion of the United States. This herbivorous reptile is a keystone species due to their extensive burrows which provide shelter for more than 350 commensal species. The gopher tortoise is classified as threatened due to diminishing populations caused by habitat destruction and fragmentation, leaving small isolated populations. Our preliminary work is focused within the Florida Atlantic University Preserve (FAUP), which is a 90 acre fragmented scrub habitat containing 80-100 tortoises. We are randomly setting up 10 cameras in the vegetation and 10 cameras in the grassland in order to identify fauna utilizing the gopher tortoise burrows here at FAUP. We hypothesize that animal species will use gopher tortoise burrows differently based on vegetation cover. This study will allow us to identify the species of animals associated with gopher tortoise burrows and the types of interactions that exist between them.

### **C1q/TNF-Related Protein 9 Expression to Acute Aerobic Exercise in Obesity**

Katelyn Dodge, Brandon Fico, Arun Maharaj, Aaron Slusher, Michael Whitehurst  
**Chun-Jung Huang**, Brandon Fico  
College of Education  
Exercise Science and Health Promotions

Due to the chronic inflammation associated with obesity, the measurement of endothelial dysfunction has become a critical predictor for the risk of cardiovascular disease, including atherosclerosis. A novel marker,

adipocytokine C1q-TNF-related protein-9 (CTRP9), has been associated with the upregulation of vasodilation. Importantly, lower CTRP9 levels are observed in patients with metabolic syndrome and elevated visceral fat. Therefore, the purpose of this study was to investigate the impact of obesity on plasma CTRP9 response following acute aerobic exercise. Twenty-four subjects (12 obese and 12 normal-weight) underwent 30 minutes of treadmill running at 75% of their maximal oxygen consumption (VO<sub>2</sub>max). A 10mL whole blood sample was obtained prior to, immediately following exercise, as well as 1 and 2 hours into recovery to assess circulating CTRP9.

### **Arabian Women of the Jahiliyya and Early Islamic Times**

Nora Douglas

**Douglas Kanter**

Dorothy F. Schmidt College of Arts & Letters  
Political Science

In the Jahiliyya (Pre- Islamic period), only women of the elite classes who were related to men of influence in the tribe were the women who had power in society. The men of the elite prized their prowess in defending their tribal pagan traditions, which defined their place in society. Once Islam was established, those who were most respected in pagan times, instead, became the ones who were most looked down upon because they were against the new order. Islam effectively shifted the center of power from those who were wealthy in the tribe, to those who embraced Islam first; who were disproportionately women and slaves. It is crucial to put early Islamic traditions under the lens of cultural continuity from Pre- Islamic tradition to understand the development of power in tribal society and how this affected gender relations and patriarchy.

### **An Examination of Wildlife Crime on the Treasure Coast: Do Crime Detection Rates Differ on “Conservation Lands?”**

Kelsey Doyle

**Tobin Hindle**

Charles E. Schmidt College of Science  
Biology

In 2015, the Florida Fish and Wildlife Conservation Commission Law Enforcement Division (FWC) recorded 11,869 criminal violations. A majority of these fall under the category of “wildlife crime”, or a crime committed against the environment. FWC is tasked with monitoring human-environment interactions and protecting the natural resources across this large and diverse area. South Florida’s warm temperature and unique habitats attract hunters and fishermen year-round. This creates more opportunities for crime to take place. The current study will examine the occurrences of poaching and conservation-related offenses in St. Lucie County, Florida. This study uses six sample sites to compare wildlife crime rates in “conservation lands” and non-managed lands. I expect the results to show a relationship between the presence or absence of managed areas and crime rates. The conclusions may be useful in future attempts to deter wildlife crime.

### **Laboratory Industry Research**

Ed Estriplet, Jr.

**Allen Smith**, Kevin Cox

College of Business  
Marketing

Laboratory testing has been significantly changed by the implementation of the Affordable Care Act (ACA) which has influenced reimbursements, patient choice, and direct access testing policies. However, the impact of the ACA on individual laboratory facilities is unclear. The focus of this research initiative is

to identify how this regulatory change has influenced laboratory facilities. We hypothesize that the ACA has had a positive impact on the healthcare system by providing more Americans access to care which increases patient laboratory testing services while reducing cost. All U.S. laboratories are required to have a Medical Director who is usually an MD, DO, or PhD. This research will directly survey key personnel in order to shed insight into how the ACA has directly influenced the industry. The questionnaire has already been deployed electronically using Qualtrics survey software. Preliminary findings suggest that the ACA has indeed influenced laboratory revenues, Medicare, and Insurance reimbursement.

### **Wetland Soil Greenhouse Gas Production Potential Under Aerobic and Anaerobic Conditions**

Michael Eunson  
**Brian Bencoter**  
Biology

The natural emissions of greenhouse gases, specifically methane and carbon dioxide, are becoming increasingly important as we continue to increase the anthropogenic production of greenhouse gases ultimately leading to global warming effects. The objective of this study is to quantify wetland soil greenhouse gas (GHG; specifically, methane and carbon dioxide) production potential under aerobic and anaerobic conditions using laboratory incubations. Additionally, I will compare soil GHG production between two wetland types; a short-hydroperiod wet prairie and a long-hydroperiod peatland marsh. The findings of this study will inform ecosystem models regarding potential GHG emissions and contribution to atmospheric radiative forcing of Florida wetlands under alternate hydrologic conditions. We anticipate greater total GHG-carbon emissions from the aerobic incubations, almost entirely as carbon dioxide, due to the greater efficiency of aerobic oxidation compared

to anaerobic fermentation pathways. Methane emissions will be greater from the anaerobic incubations

### **Alcohol Consumption Habits Among Acculturated Latin Americans**

Debora Ferrato  
**Monica Rosselli**  
Charles E. Schmidt College of Science  
Neuroscience and Behavior

To analyze how a population's cultural affiliation may influence their drinking behavior, this study relates acculturation among Latin American students and their alcohol consumption behaviors. In a sample of 212 alcohol-consuming college students, 65 Latin American participants, mean age 21.09, completed the Bicultural Involvement Questionnaire-Short Version. Acculturation was quantified by Hispanicism, Americanism, and Biculturalism. Correlations were calculated between the subjects' drinking behaviors and their acculturation scores. Analyses revealed a negative correlation among Hispanicism and their binge scores,  $r(63) = -.328$ ,  $p < .01$ , while a positive correlation among Americanism was found with age of first binge drinking occasion,  $r(63) = .280$ ,  $p < 0.05$ , and age of first regular binge drinking,  $r(63) = .342$ ,  $p < 0.05$ . Latin Americans that identified with Hispanicism obtained lower binge scores, and those with a higher American association will likely begin bingeing habits at a later age.

### **Crashworthiness of Low Speed Vehicles**

Sherwin Francis, Emma Cusano, Michael Pinto  
**Oren Masory**  
College of Engineering & Computer Science  
Mechanical Engineering

The Crashworthiness of Low Speed Vehicles is to be determined using a custom built crash testing apparatus. The safety of golf carts is often overlooked

because they are considered “low risk” vehicles. The danger of these vehicles lies in the fact that they aren’t mandated to have safety features outside of seatbelts. A test rig that sufficiently tested how these vehicles react under extreme conditions as well as the risk to the occupants was designed and operated through several iterations. The main components of the rig was be a motorized variable speed pulley system, concrete barrier, and a simple quick release mechanism to detach the cart, and crash dummies with sensors to record the experienced acceleration/deceleration and gyration. The main parameters that were studied in relation to crashworthiness are structural performance, injury measures and dummy movement. It was the goal of the experimenters to show just how important it is to design LSVs with higher safety standards.

### **Utilizing OpenCV for Q-Learning State Space Reduction in Re-Purposed Off-The-Shelf FPV Rovers**

Washington Garcia, Nicolas Tutuianu, Paul Morris,  
Marcus McGuire, Shawn Martin  
**Elan Barenholtz**, William Hahn  
College of Engineering & Computer Science  
Computer Engineering

Robotics researchers often require inexpensive hardware that is freely distributable to the public domain in large numbers, yet reliable enough for use in different applications without fear of the hardware itself becoming a burden. In the past, researchers have moved towards robot simulations, in favor of the lack of hardware and ease of replication. In this paper we introduce our low cost open-source robotic rover platform for educational and research purposes, as well as a method for implementing Q-Learning, a reinforcement learning technique, as a case study for the platform in machine learning research. We examine an implementation of Q-Learning utilizing OpenCV for the purpose of state-reduction, as well as its effectiveness in our rovers with a color-seeking task.

### **Mechanisms of Enhanced Cell Adhesion Between Stimulated T Lymphocytes and Endothelial Receptors**

Belinda Gerard

**Ewa Wojcikiewicz**, Shalondria Sears  
Charles E. Schmidt College of Science  
Biology

Atherosclerosis is a condition where plaque builds in the inner walls of arteries, and it is believed that excessive inflammation exacerbates the condition. The binding of white blood cells (WBCs) to endothelium plays a major role in the disease. Leukocyte binding is facilitated by increased expression of adhesion molecules on the surface of endothelium allowing more WBCs to bind as they flow through arteries. As they adhere, they are activated by cytokines. Transendothelial Migration (TEM) is a process by which cells cross between adjacent endothelial cells to travel to the site of infection. Our previous studies have shown that Junctional Adhesion Molecule-A (JAM-A) is involved in the early events of TEM. We hypothesize that stimulation of Jurkat T lymphocytes will further enhance their adhesion to JAM-A. We used single cell force spectroscopy to determine adhesion strength of unstimulated and stimulated Jurkat cells to JAM-A.

### **Is Social Media Influencing Hispanics Voting Behavior?**

Marina Giral Lores

**Monica Escaleras**  
College of Business  
Finance

Social media sites are becoming one of the biggest sources of information in the world. Particularly, political and economic news is being communicated widely on social media in real time with no costs incurred. The purpose of our research is to examine Hispanics

reliance on social media for political information in the United States. Our results show that the majority of younger Hispanic voters rely on social media for their political news. In fact, over 84 percent of those who are between 18 and 34 years old are more likely to get their information from social media than any other source. Furthermore, our findings indicate that the younger Hispanic population are the most likely to find the political news on the internet trustworthy. If political campaigns want to target Hispanics, a rapidly growing demographic, they should move their attention towards social media as a major platform for their political campaigns.

### **Seven-Year Manatee Survey Looking at Seasonal Patterns of Frequently Observed Individuals in the Harbor Branch Channel Using Photo-Identification Techniques**

Lauren Goldsworthy

**Jon Moore**

Harriet L. Wilkes Honors College  
Marine Biology

The manatee project at Harbor Branch Oceanographic Institute was established in 2009. Land-based observations and photo-identification techniques have been used over the last seven years. This has allowed observers to recognize specific resident manatees that visit this location season after season. The photographs have been shared with the Manatee Photo-Identification System database and several matches were found, indicating some of the manatees are migrants. This project focuses on the seasonal patterns of frequently observed manatees in the Harbor Branch Oceanographic Institute channel. Knowing which manatees are residents allows observers to preliminarily identify specific individuals that will be part of a future acoustic tagging project.

### **Preparation and Coping Strategies of Medical Practitioners Dealing With Terminal Patients**

Sarah Gomez

**Gina Carreño-Lukasik**

Charles E. Schmidt College of Science  
Neuroscience and Behavior

This paper will use various sociological publications based on research to investigate and analyze the relationship between medical practitioners and patients deemed terminal. Some topics the paper will include how prepared practitioners feel they are in terms of interacting with terminal patients, as well as the personal methods of coping with grief that practitioners implement into their private lives and their effects on the professional lives of practitioners. There will also be questions raised regarding how the preparation of practitioners both in and out of medical school can be improved or built on to ensure patient satisfaction and enhanced interactions between the practitioner and their patient.

### **Synthesis of Lanthanide Nano-sized Metal-organic Frameworks for Biomedical Applications**

Aida Sarita Gonzalez, Daniel de Lill

**Daniel de Lill**

Charles E. Schmidt College of Science  
Chemistry

Every 43 seconds someone suffers a heart attack, every 60 seconds someone dies from a cardiovascular related disease, and more people die annually from cardiovascular disease than from all combined cancer related deaths. Diagnosis of cardiovascular disease is usually at a late stage, and often accompanied with irreversible damage to cell tissue. New methods to diagnose and treat cardiovascular disease are of utmost urgency to public health, and metal organic frameworks (MOFs) hold great potential for such applications. These compounds can be tailored

for targeted diseases imaging and treatment. When constructed from lanthanide ions, unique optical and magnetic properties allow for multimodal imaging, while its surface can be modified and drugs loaded within for targeted imaging and drug delivery. To be viable for biomedical applications, these materials must be nano-sized. Efforts to control the size of the nano-MOFs will be presented, along with spectroscopic properties and details on surface modification.

### **Application of Calculus in the Real World**

Danielle Gray

**Daniela Nikolova-Popova**

College of Engineering & Computer Science  
Computer Engineering

Calculus is a division of mathematics that involves finding derivatives, integrals, and properties of functions. One subdivision of calculus is differential calculus which deals with continuous change and its applications. Another subdivision is differential calculus which deals with the rates at which quantities change. Although calculus was not discovered until the 1670's, by Sir Isaac Newton and Gottfried Leibniz, it still is relevant today and can be used in the "real world". For example, calculus can be applied to the physical interactions in the game of baseball, the shape and color of rainbows as well as finding the area under a bridge. This project will prove that calculus is not something that can be just learned in the classroom but can be applied to everyday life.

### **Improvement of Solar Energy Conversion Efficiency by Solar Tracking**

Joshua Griffin, Amine Rochd, Gillermo Rangel,  
Dawit Dereje

**Myeongsu Kim**

College of Engineering & Computer Science  
Mechanical Engineering

The goal of this research project is to increase the energy conversion efficiency of current commercial solar panels using an innovative solar tracking method. To maximize the solar conversion efficiency, three different control mechanisms were identified: 1) a conventional system with a fixed panel location, 2) a chronological tracking system with a fixed angular velocity, and 3) an active tracking system with an UV light sensor. All three panels were securely assembled into specially-designed PVC frames and installed on the roof of the Engineering West building. Fine control of the panels and output measurements were accomplished by an Arduino microcontroller and a voltmeter/ammeter breakout board, respectively. Field tests are currently on-going and photovoltaic conversion efficiencies of the three solar-panel systems will be compared on a daily as well as weekly basis. Outcomes of this project will be useful to design cost-effective solar panel installation, specifically applicable to locations in Florida.

### **Identification of Gopherus Polyphemus Intestinal Parasites in Four South Florida Populations**

Kent Haizlett

**Evelyn Frazier**

Charles E. Schmidt College of Science  
Biology

Gopherus polyphemus is a keystone species, benefiting 300+ commensal species that use its burrow. Populations are diminishing in South Florida mainly due to habitat fragmentation in urban areas. These fragments range from poorly managed to well-maintained. Fire is a natural factor that reduces canopy cover, promotes understory food for tortoises, and kills parasite eggs. Lack of fire can lead to overgrowth of vegetation, forcing tortoises to crowd where lower vegetation is found. Overcrowded populations are associated with higher disease transmission. Parasite roles within wild tortoise populations are largely unknown, despite growing evidence these pathogens may pose significant health risks. Tortoise fecal sam-

ples were taken from four SF habitats varying in size, population density, and degrees of management. The objective of this study is to establish a baseline of intestinal parasites in these four populations and determine prevalence. Results thus far reveal three distinct nematode species: Chapiniella spp., true Hookworms, and Pinworms. Acid fast stains revealed possible Cryptosporidium presence. Egg numbers seen thus far suggest fairly low worm burdens, with pinworms most abundant and prevalent..

### **The Causes of Terrorism**

Issa Hamad

**Gina Carreño-Lukasik**, Mahmoud Hamad  
Charles E. Schmidt College of Science  
Biology

With the growing trends in terrorist organizations and threats of attack, one must wonder why the people involved became terrorists in the first place. After researching the topic, the research paper will delve into why capitalism, political power, and religion are all involved in why terrorist organizations are formed and why people may join them. The capitalism argument involves the correlation between its rise and terrorism's ride, and how the battle for resources may cause some to resort to terrorism. Political power's argument will involve how protesters and debaters of how someone may lead their country, may lead them to resort to terrorism. Religion's argument involves belief that they are being discriminated against because of their religion, and they want to be heard. Then, I will introduce a study where I will identify people who publicly identify as Muslim, or Arabic.

### **Consumer Motivation: The Craft Beer Boom**

Devon Harris,  
**Allen Smith**  
College of Business  
Marketing

In the world of business, advertising is essential to success. With all of the technological clutter that consumers face every day, creating impact can only be achieved through deep understanding of what the target audience's motivation for purchasing is. Our research team has been watching a monumental rise in demand for craft beer, and to reach that market successfully, we have set out to find what the emotional motivation behind this surge is. We have come to the educated belief that it is driven by a generational desire for new experiences. Using a systematic research method, we set out to answer our question. We began with secondary research in the form of descriptive statistics, and using these we ran a focus group to develop qualitative research. In complying with ethical research standards, consent, privacy, and right-to-record forms were used. Lastly, results are pending for our inferential statistics questionnaire.

### **The Effects Whole Brain Learning has on Students' Academics in an Urban School Setting**

Christina Hernandez  
**Lori Dassa**  
College of Education  
Elementary Education

The objective of my research was to determine if whole brain teaching strategies could help increase students' academic scores in an urban elementary classroom. To test this hypothesis, I created a pre/post assessment cycle design focusing on whole brain chants and gestures taught during a science unit on the states of matter. Participants included 20 first grade ELL students at Park Lakes Elementa-

ry school. Students took a pretest, were involved in 5 whole brain based lessons and posttest. The lessons included whole brain strategies like “mirror me”, “teach, okay”, and other interactive activities. At the conclusion of the lesson, a posttest was issued. All 20 students earned a passing score as compared to the low scores on the pretest. Therefore, I concluded that using whole brain teaching strategies throughout lessons increase students’ academic scores. My intent is to continue this technique with future lessons to improve students’ Florida Standardized assessment.

### **The Effect of Time on Visual Search Patterns**

Bonnie Higgen

**Tammy Knipp**

Dorothy F. Schmidt College of Arts & Letters  
Graphic Design

Spatial intelligence is the ability to conceptualize and comprehend complicated visual scenes. Previous studies have shown that scanning patterns change based on the content and the layout viewed. For example, subjects will scan a webpage differently when imagery is present as opposed to reading text-only pages. This study proposes the question: Does the element of time have a crucial effect on scanning patterns and the degree of comprehension? With the aid of eye-tracking technology, this paper will explore subjects’ fixation durations and saccade patterns in a timed environment. The results may potentially influence methods for administering timed evaluations in the educational system.

### **Improvement of Cooling Efficiency for Data Centers using Heat Pipes**

Stephan Hoo-Fatt

**Myeongsub Kim**

College of Engineering & Computer Science  
Mechanical Engineer

Data centers are one of key components in success of many IT companies such as Google. Cooling of data centers has been a decade-long problem since tremendous heat emitted from multiple racks of computing facilities typically overwhelms the cooling magnitude by traditional air-based cooling schemes. The objective of this study is to investigate the effectiveness of heat pipe-based cooling technologies for data center thermal management. For the feasibility, three different cooling systems are tested: conventional air cooling system, air-cooled heat pipe system, and water-cooled heat pipe system. The mock-up systems were already fabricated and tests are currently ongoing. Temperature measurements will be used to estimate the overall cooling performance of each system. Experimental results will also be validated with FEM-based 3D simulations. The outcomes of the project and the perspective of advanced cooling methodologies will be discussed.

### **RNA Damage and Modification on Protein Synthesis**

Giovana Jaen

**Zhongwei Li**

Charles E. Schmidt College of Science  
Biology

Every neurodegenerative disease, such as Alzheimer’s and Parkinson’s, has been found to include protein aggregates in the brain. It is unknown whether they are a cause or effect of the disease, but the aggregates damage and destroy neurons in the brain causing irreversible neural damage. Since RNA is less protected than DNA, we hypothesize that during the

process of translation, damage is applied to the RNA strand that results in irregular protein shapes bundling together to cause the protein aggregates. Using in vitro plasmid mRNA from the L9 subunit of 50s Escherichia coli K12 and in vitro translation, we will introduce different biologically relevant modifications to identical RNA strands of about 70-85 base pairs in length. The protein products will be analyzed through Tricine gel for length and dot blot membranes to detect any mutations. These results will attempt to find a correlation between RNA modification and protein shapes.

### **Impact of Glutamate In ALS**

Rajesh Jaiprashad

**Patricia Snyder**

Charles E. Schmidt College of Science  
Chemistry

Amyotrophic Lateral Sclerosis (ALS) is a neurodegenerative disease afflicting the global population. This disease affects motor neuron nerve cells located in the brain, brainstem, and spinal cord that serve as controlling units and communication points between the nervous system and the muscles of the body. In ALS, both the upper motor neurons, in the brain, and the lower motor neurons, in the spinal cord, degenerate or die; thus ceasing transmission. The cause of this disease is still under investigation. Here in, it is hypothesized that ALS engenders from the over excitation of motor nerve cells due to an excess of the amino acid, glutamate, the principal neurotransmitter in the brain. Therefore, an investigation into the properties of the neurotransmitter glutamate, which could be the potential cause of this neurodegenerative disease, will help elucidate the role of this amino acid in ALS.

### **Genetic Engineering of Tomato Plants Expressing $\beta$ -Glucuronidase Through Agrobacterium-Mediated Transformation Adriana Justs, Noah Kaplan and Xing-Hai Zhang Department of Biological Sciences, Florida Atlantic University**

Adriana Justs

**Xing-Hai Zhang**, Noah Kaplan

Charles E. Schmidt College of Science  
PSM Graduate program

Advancements in biotechnology have allowed us to study genetics and plant physiology by engineering transgenic plants. For our research we transformed Micro-Tom, a tomato variety developed for use in genetic research, using Agrobacterium mediated transformation. Within a time span of fourteen weeks, we inserted two distinct plasmid constructs (pCAM-BIA2301 and E1492). Plants have the unique ability to regenerate their tissue and we took advantage of this ability to regenerate the transgenic plants with antibiotic selection. Approximately one third of the explants endured the infection process and fourteen of these survived in the presence of kanamycin. By the end of the fourteenth week, eleven out of our fourteen plantlets had fully developed roots but only four survived to maturity. After verification with PCR and qPCR, we found that we generated two transgenic plants. Here we describe all the methods and techniques used to achieve these compelling results. could be the potential cause of this neurodegenerative disease, will help elucidate the role of this amino acid in ALS.

### **The Legalities of Accepting or Refusing Refugees and Asylum Seekers in International Law**

Sama Kahook

**Cheryl Arflin**

Dorothy F. Schmidt College of Arts & Letters  
Political Science

In the wake of contemporary events, such as the Syr-

ian refugee crisis, and recalling historical events such as the Holocaust, it is important to understand the dynamic between states and international law. In the midst of the current refugee crisis, how might countries decide who accepts and denies refugees into their borders? We answer this by focusing on the laws and regulations that have been implemented since the 1951 Refugee Convention. The attitudes toward refugees and how the crisis is handled are an accurate reflection of the discrepancy between states' responsibilities and states' needs. We investigate the history of the laws and how states have found loopholes through the rules and regulations through court cases. Through this research, we are able to understand the legalities of how refugees reach safety and who takes responsibility when a government ultimately fails its people. mitter in the brain. Therefore, an investigation into the properties of the neurotransmitter glutamate, which could be the potential cause of this neurodegenerative disease, will help elucidate the role of this amino acid in ALS.

### **2-Hydroxychalcone as a Unique Luminescent Probe (ESIPT) for Peptides Labeling**

Thomas Kempton  
**Stéphane Roche**  
Charles E. Schmidt College of Science  
Chemistry

Peptides and proteins with photochemical sensors are valuable tools when analyzing biochemical processes and peptide properties. Recent work on fluorescent  $\alpha$ -amino acids (FIAAs) proved extremely useful in studying protein folding, conformational changes and reactivity. When fluorescent tags are appropriately attached to proteins they allow for the detection of their environment and changes therein. Research on the topic of site-specific fluorescent molecules is in its early stages. Several challenges face the topic of selectively excitable fluorescent probes. These include limits on the size and lifetime

of synthesized proteins and enzymes, attaching the tag at the target location on a peptide chain which will take advantage of the photochemical properties of the tag, and developing molecules that will readily exhibit environment-sensitive fluorescence.

### **Rainwater Applications to Reduce the Waste of Purified Water**

Bertrand King  
**Tsung-Chow Su**  
College of Engineering & Computer Science  
Civil engineering

Adequate supply of clean water is one of the major challenges facing humanity for decades to come. For every flush of a toilet, 1 to 3 gallons of clean water is used. To put this in perspective, the World Health Organization recommends a minimum of 5 gallons of water per person per day for washing, cooking, and drinking. To conserve water and the associated energy required for produce clean water, our research focuses on recycling of rainwater by rerouting the plumbing of a house to connect to an outdoor rain catcher. Design of replacing clean water with rainwater for a typical house is presented.

### **Improving Fractionation Methods of Marine Natural Products for High-Throughput Screening**

Patricia Le  
**Lyndon West**  
Charles E. Schmidt College of Science  
Biology

Marine natural products (i.e. sponges, corals, and other invertebrates), rich in novel chemical compounds, have great potential in being used towards pharmaceutical and related therapeutic applications. The chemical diversity present in marine natural products facilitate the need for streamlining fractionation methods efficient in cost, labor, as well as time. Ef-

efficient fractionation methods allow for increased high-throughput screenings of novel chemical compounds in a shorter timeline. Marine invertebrate extracts are isolated via preparative high pressure liquid chromatography (HPLC) using the resin HP20SS. Partially purified natural product libraries are created via integration of extractions and LC/MS screenings for ready high-throughput screenings and rapid drug discovery. Spectroscopic analysis is done via 1D and 2D NMR spectroscopy. Project findings will be discussed.

### **Adaptive Individual Blade Pitch Control of an Ocean Current Turbine**

Louis Lee

**James VanZwieten**, Parakram Pyakurel  
College of Engineering & Computer Science  
Ocean Engineering

The ocean currents off Florida are a renewable and energy dense resource capable of providing Florida with about 25% of its electricity needs. This current is strongest at the sea surface and decreases in strength with depth such that the individual rotor blades on ocean current turbines (OCT) deployed to harness this resource will operate in stronger currents when positioned vertically upwards than when vertically downwards. This current shear will induce cyclic loadings on the rotor blades unless active control is used to reduce these load variations. A direct adaptive individual blade pitch controller is implemented into a numerical model simulating an OCT operating in the Gulf Stream. The adaptive controller is analyzed with the OCT simulated in both stationary and moored configurations. The results concluded that the IBP controller reduced the amplitude of the loads in the stationary and moored simulations by 91.18% and 92.3%, respectively.

### **Frog Alley Community Garden**

Lauren Lightbody

**Sharon Hart**

Dorothy F. Schmidt College of Arts & Letters  
Fine Art Photography

Frog Alley Community Garden is located in the historic neighborhood of Frog Alley in Delray Beach. The garden's philosophy believes in "sowing community through organic practices". They advocate the importance of sustainable life practice by providing the community an open space in which to cultivate and grow their own food. Through documenting the ins and outs of the Frog Alley Community Garden, I wish to raise awareness on sustainable and practical life practice through Organic cultivation. This means documenting methods that require a relatively small amount of energy to yield a high amount of outcome. An example of this would be permaculture, agricultural design in alignment with the patterns of nature, plays a large role for many of these dedicated gardeners. With the intent of implementing gardening methods that seek to coexist with the natural ecosystem, the ability to grow and share food, as well as contributing little to no environmental impact, establishes Frog Alley as a sustainable garden. The diversity of gardeners at Frog Alley, a handful of who are new to gardening in general, are eager to learn and experiment with various methods of organic cultivation. The sharing of information from gardener to gardener pertaining to the growth of their plots, when to seed and harvest, the identification of native plants, and assorted solutions to pest problems is what makes Frog Alley a community garden. Candid shots focusing in on the gardeners, the conscious design of space, the plants, and the tremendous amount of work involved have been the highlights of this project. The significance of each composition is to mirror the earthy element, depicting a combination of labor and love. The choice of paper and size, such as a cold press natural matte 13 x 19, coincide with the natural aspect echoing throughout.

## **Integration and Implementation of the Quine-Mccluskey Simplification Algorithm in an Interactive Smartphone Game.**

Kevin Lopez

**Maria Petrie**

College of Engineering & Computer Science  
Electrical Engineering

Logic Design is a compulsory prerequisite course in most computer science, computer engineering and electrical engineering bachelor programs in the United States. The most popular and/or desirable outcome for undergraduate students in computer science is to secure an industrial position where programming is required as a skill in one form or another. While the theoretical and practical aspects of the "Introduction to Logic Design" course are tailored to moderately expose the student to a broader body of knowledge, the learning curve for a programming-oriented individual persists and may pose an academic performance problem. We have designed a game for mobile devices that is designed to aid students taking the Logic Design Course in understanding the practical side of the material, namely the techniques associated with Karnaugh Maps. The objective is to make the process of simplifying Boolean expressions using Karnaugh Maps both a challenging and rewarding experience, reduced to the compact and approachable format of a smartphone game.

## **Community Based Research to Address Dementia and Parkinson's Disease in Older Adults**

Yolanda Madera Ramos

**Patricia Liehr**, Joy Longo

Christine E. Lynn College of Nursing  
Nursing

There are increasing numbers of older adults living in Continuing Care Retirement Communities (CCRCs). Many of these residents are living with dementia and

Parkinson's disease. CCRCs are challenged to provide therapies that enhance ability to carry out activities of daily living for these residents. The purpose of this project is to identify effective therapies. The Stinger Action research model is being used to guide the project. Students have met with a community representative who has focused attention on falls, behavioral problems and pharmacological management of dementia and Parkinson's disease. An exhaustive literature search has been undertaken to provide evidence. There are pharmacological approaches to manage symptoms. However, there is less evidence supporting non-pharmacological approaches addressing behavioral problems and falls. Models of CCRC care are evolving and integration of person-centered non-pharmacological, evidence-based approaches will be critical and best developed with resident input.

## **Everglades Apple Snail Density**

Zara Mansoor

**Dale Gawlik**

Charles E. Schmidt College of Science  
Biology

The Florida apple snail (*Pomacea paludosa*) is found in tropical/subtropical freshwater ecosystems climate (Cordeiro & Perez, 2011). The Florida apple snail is of special management interest because survival of the endangered Snail Kite (*Rostrhamus sociabilis plumbeus*) depends on a healthy populations of apple snails. Results of this study show Florida apple snails occur independently of habitat type (slough, prairie etc.), which should indicate abundant foraging habitats available to Snail Kites. However, Snail Kites show preferences for specific foraging habitats, which suggests that they are more restricted in available habitat than what snail habitat use would suggest.

## **Death Spiral Financing**

Alina Marian

**Cheryl Arflin**

College of Business

Economics

“Death Spiral Financing” refers to a certain type of Private Investment in Public Equity (PIPE), generally used by companies in financial trouble. I will show how these “toxic” PIPEs usually lead to the devaluation and even destruction of companies. While not illegal, these transactions take advantage of loopholes within the SEC regulations regarding disclosure of securities purchases. I will present how the SEC has raised claims (mainly unsuccessfully) against such practices in at least one of two categories: sale of an unregistered security, or insider trading. I will conclude by arguing that such transactions need to be more carefully scrutinized in order to protect and better inform the “unsuspecting public”.

## **Self-care for Nurse Leaders in Acute Care Environment Reduces Perceived Stress: A Pilot Study**

Doren-Elyse Marquit

**Susan Dyess**, Ryne Sherman

Christine E. Lynn College of Nursing

Psychology

Nurse leaders need to possess stress management skills to support their effective and successful management of their patient service units. Meditation is frequently cited within the literature as an option for a number of workforces to cultivate being present, and recognizing and reducing stress. Therefore, the purpose of this study is to examine the impact of a personal systematic meditation practice for nurse leaders on their reported stress, mindfulness, sense of control and self-esteem and patient satisfaction on the nursing units they manage. The study employs

a repeated measures intervention design for nurse leaders at two sites with a mixed method integrated approach. Focus group interviews, patient satisfaction scores and four valid instruments are used for data collection at baseline, week 6 and week 12; the instruments Mindful Attention and Awareness Scale (MAAS), Perceived Stress Scale (PSS), Rosenberg Self-Esteem (RSE) and Locus of Control (LOC).

## **The Effect of Inactivation of the Nucleus Reuniens on Spatial Working Memory**

Macarena Martinez Rey

**Robert P. Vertes**

Charles E. Schmidt College of Science

Neuroscience and Behavior

The Nucleus Reuniens (RE) of the ventral midline thalamus has been shown to have extensive reciprocal innervations with the medial prefrontal cortex (mPFC) and the hippocampus (HF) in the brain of the rat. Both structures are essential for encoding, retrieval, and delayed spatial working memory. The (RE) is believed to play a vital role in facilitating cognitive function and affective behavior and has been shown to be critical for a variety of working memory tasks. In this study we tested Long Evan rats using a T-maze. For each trial the rats were required to alternate between the left and right goal arms with a delay period in between randomized intervals of 30s, 60s, or 120s. After two consecutive testing days of 80% the rats were infused with muscimol procaine, and saline. We expect that the effect of reversible inactivation of RE will demonstrate a significant decline in performance of the task.



## **Treatment Options for Mesial Temporal Lobe Epilepsy**

Blanca Melero

**Angelica Nevin**

Charles E. Schmidt College of Science  
Psychology

Mesial temporal lobe epilepsy (MTLE) is the most common form of epilepsy seen in adults. Most mesial temporal lobe epilepsy have an association with hippocampal sclerosis. Patients suffering from MTLE have had seizures or experienced a serious injury during critical brain growth periods of their childhood. Research to date on MTLE has not elicited the discovery of a pharmaceutical treatment. Therefore, MTLE is currently treatable through only surgery. Patients who are eligible for surgery are already in the advanced stages of MTLE, although recently there has been a discovery that post surgery, has shown some risk of memory lost. Now, laser ablation therapy is being looked at as an alternative treatment for those who are suffering from MTLE. The focus of this study is on the current research on MTLE with a concentration on possible connections of the diagnosis and treatment options for patients experiencing different types of epilepsy.

## **Exploring Social Stigma Related to Vaping on the College Campus**

Katherine Mesa

**Jennifer Attonito**

College of Business  
International Business and Trade

Vaping refers to the inhale and exhale of water vapor through a vaporizer or electronic cigarette. It has become increasingly popular within the last 5 years and is common indoors and outdoors. Florida Atlantic University (FAU) protects people from the health hazards of secondhand tobacco smoke by having im-

plemented a no tobacco policy. Due to the undiscovered health risks caused by vaping and its no tobacco nature, it is unclear whether or not FAU should ban vaping in their policy. In order to gauge how college students, faculty, and staff feel about vaping, I will be conducting a university wide survey that will show 1) previous knowledge of vaping 2) stigma associated with vaping and 3) policies that should be implemented concerning indoor vaping. This will be done by creating a pilot first. The results from the survey could be used to influence FAU policy.

## **Removing Methanol Additives from Fracking Fluids using Advance Oxidation Technology**

Lisandre Meyer

**Daniel Meeroff**

College of Engineering & Computer Science  
Civil Engineering

Methanol additives used in fracking fluids are harmful to both the environment and to public health. This is because methanol is a hazardous air pollutant and can contaminate the groundwater. The EPA estimates 32.5 tons of methanol is released into the environment each year. The aim of this study is to test the removal efficiency of methanol additives from fracking fluids using advanced oxidation technology with hydrogen peroxide and ultraviolet energy instead of more expensive methods such as flash evaporation. The first experiment tested different dilutions of water and methanol (30-1000 ppm) with five percent hydrogen peroxide. Then, the samples were exposed to ultraviolet radiation for several time periods ranging from 30 seconds to 15 minutes. Results showed 97.3% or higher removal at 20 minutes. Continued research in this field will allow for fracking wastewater to be treated effectively, so that it is safe to discharge into the environment.

## **Increasing Language Development Through Rhythm**

Morgan Miller

**Lori Dassa**

College of Education  
Elementary Education

My objective is to determine if rhythm and rap can help increase language development in an urban elementary classroom. To determine this outcome I created a pre/post assessment cycle design using vocabulary relevant to the water cycle. Participants included 18 first graders at Park Lakes Elementary. These students took a pretest, were involved in 5 rhythm and rap based lessons, and a posttest. The lessons included videos, vocabulary reviews, and finally the development of a song to help reinforce the vocabulary terms and their meanings. A pop culture song from Justin Bieber was used to make connections to their everyday lives. All 18 students passed the posttest as compared to the pretest results. Therefore, I concluded that the rhythm and rap approach to teaching vocabulary was successful. I intend to use this technique with future vocabulary lessons to predict future improvement in the ELA area of the Florida Standardized Assessments.

## **Male-male Aggressive Function of “Whisper Song” in the Bachman’s Sparrow (*Peucaea Aestivalis*)**

Caitlyn Montero

**Rindy Anderson**

Charles E. Schmidt College of Science  
Psychology

We will test the hypothesis that a low-amplitude signal, “whisper song,” functions in the context of male-male aggressive interactions in the Bachman’s sparrow (*Peucaea aestivalis*), an imperiled species. We will perform two simulated territorial intrusions on each male bird’s territory by placing a replica of a male sparrow above a loudspeaker and playing

either whisper songs (low amplitude) or broadcast songs (high amplitude). We will record vocalizations and behaviors performed by the subject male before, during and after the playback. This project is in progress and results are not yet available. We predict that male Bachman’s sparrows will respond more aggressively and will sing more whisper songs in response to whisper song playback compared to broadcast song. These findings will support the hypothesis that whisper song functions in an aggressive context will contribute to our understanding of the vocal communication system of an understudied species.

## **Synthesis and Characterization of Polyesters**

Francesca Mosca

**Charles Carraher**

Charles E. Schmidt College of Science  
Chemistry

The present research is part of an overall effort to synthesize polymers that can be used in the inhibition of various unwanted microorganisms, here specifically cancer. The approach is to include into a polymer two agents that may intersect cancer growth at two different sites thus increasing the probability for success. The overall reactions can be considered as an extension of the general concept of Lewis acid and Lewis base reactions where the metal-containing reactant is the Lewis acid and the other reactant is the Lewis base typically containing two functional groups producing linear polymers. Reaction is achieved employing the interfacial polycondensation process that was pioneered by Paul Morgan at DuPont and Charles Carraher.

## **The Development of Thermosensitive Hydrogels for Endothelial Cell Growth**

Kathryn Moschouris

**Yunqing Kang**

Charles E. Schmidt College of Science  
Biology

The objective of this study is to investigate if a thermo-sensitive hydrogel, N-trimethyl chitosan (TMC) hydrogel, can support the growth of human umbilical vein endothelial cells (HUVECs). TMC was synthesized by modifying chitosan and dissolved in water. Beta-glycerophosphate (Beta-GP) as a cross-linker was added into the TMC solution to crosslink and form soft hydrogel. HUVECs were encapsulated into the TMC hydrogel and cultured for 7 days. Cell morphology was observed and captured using a microscope. Our results indicated that TMC supported the growth of HUVECs and expansion. HUVECs grew in the TMC hydrogel with time. This result suggested that TMC is biocompatible for cells. We will further study cell proliferation and migration in the TMC hydrogel in the next step.

## **Angiographic Changes of Blood Vessels in the Photoreceptor Degenerative Mouse Retina**

Matthew Nguyen

**Wen Shen**

Charles E. Schmidt College of Science  
Neuroscience & Behavior

Tortuous, or twisted, arteries and veins are commonly observed in humans and animals diagnosed with diseases caused by the degeneration of photoreceptor cells. However, the mechanisms of their formation and development are poorly understood. We used immunocytochemical, confocal imaging and computer remodeling techniques to map the angiographic changes in the photoreceptor degenerative mouse model, pde6d (rd1) mice. We found that mechanical

instability and rewiring in the distal retina of rd1 mice could be mechanisms for the initiation and development of these tortuous vessels. We also found that in the late stages of retinal degeneration, severe tortuosity leads to ischemic attack in the distal retina. This study provides valuable insights into understanding the pathologic changes of retinal blood vessels in the development of diseases in humans and animals.

## **Game On! Increasing Science Content Knowledge through Competitive Instruction**

Chelsea Osborne

**Lori Dassa**

College of Education  
Elementary Education

My research question was to determine if using academic games and friendly competitions during instruction would increase the knowledge of 5th grade students in science content. To test this hypothesis, I created a pre/post assessment cycle design focusing on the human body standard. Participants included 20 5th graders at Park Lakes Elementary. These students took a pre test, were involved in 4 competition based lessons and a posttest. The lessons included competitions such as Speed Bag Drills, Kahoot, and other team based games. At the conclusion of the lessons, a posttest was issued. All 20 students earned a passing score as compared to the low scores on the pretest. Therefore, I was able to conclude that academic games and friendly competitions during instruction increased science content knowledge. I intend to use this technique with future science units to demonstrate improvement on the science portion of the Florida Standardized Assessments.

## **Constructing Adulthood in Contemporary Societies**

Ashley Ostrout

**Ann Branaman**

Dorothy F. Schmidt College of Arts & Letters  
Sociology

In America and other industrialized countries there has been a delay in attainment of traditional markers of adulthood (i.e. marriage, parenthood, completion of education, and full-time employment). Young people are becoming “adults” much later than previous generations, and their ideas of what it means to be an adult are shifting. Some have claimed that a new period of life called “emerging adulthood” is forming, in which young people feel as if they are not yet full adults (Arnett 1997, 2000, 2004). However, while this period may exist for middle-class youth, it may not reflect the experience of working-class youth (Silva 2013). Based on my data I argue that, while middle-class young adults are more likely to experience a period of emerging adulthood and pursue a fulfilling adult life, working-class youth are more focused on financial stability and are not as likely to experience a period of “emerging adulthood.”

## **Does Having a Muslim Connection Affect Voting Stances?**

Seema Patel

**Monica Escaleras**

College of Business  
Political Science

Religion and country affiliation seem to have the edge in this coming election. The Muslim community has been put on-the-spot in many ways in connection with the ongoing events of ISIS, which had led to Donald Trump’s proposal to ban Muslims from coming into the United States and making them identify themselves publicly. The purpose of my study is to

examine the relationship between voting stances and their connection, if any, to a Muslim person. To test this, I conducted a survey of 500 registered voters in the State of Florida and asked them the question of their connection to a Muslim person, if any, and what their voting stance would be. What I found is that their relationship is statistically significant. This serves to show that people that have connections with a Muslim person is more likely to not support candidates that are against Muslims and vice versa.

## **Numerical Simulation of Two Ocean Current Turbine Design Types**

Isabella Pinos

**James VanZwieten**

College of Engineering & Computer Science  
Ocean Engineering

Despite the overall global dependence on fossil fuel for fulfilling energy needs, there is a growing interest in renewable energy. In particular, in-stream hydrokinetic energy is proving to be a viable alternative with great potential. Some estimates show that possible energy output from ocean currents could reach 19 GW of power. Using a program called ProteusDs, this work focuses on preliminary models of in-stream hydrokinetic turbines able to capture energy from the Gulf Stream Current. The goal is to find a turbine setup that maximizes efficiency in energy capture. The numerical modeling conducted is used to acquire power production estimates under simulated conditions.

## **Whether Sole Proprietors Should be Treated Differently Under the Tax Laws than Corporations?**

Gregory Point Du Jour

**Cheryl Arflin**

College of Business

Accounting

Sole proprietors should be treated differently than corporations under the tax law of United States. Why treat sole proprietors and corporations differently? Sole proprietorship and Corporations have some similarities and dissimilarities but the reason why sole proprietors should be treated differently than corporations under the tax laws of the United States because they both have different and distinct characteristics that makes them completely unequal under the U.S Treasury regulations. These two entities through operation activities can generate profit or sustain losses. The profit or losses for both entities are reported from a P & L statement . Nevertheless, each entity creates different tax issues, as a result the entities should have totally different tax treatment. From my investigation I recommend that sole proprietor and corporations should have totally different tax treatment.

## **What Marketing Techniques/Strategies Would Best Entice Consumers to Purchase a “Tile”?**

Alexander Potenza

**Allen Smith**

College of Business

Marketing

This study analyzes which advertising techniques would best entice consumers to purchase a “Tile”. Tile, a portable GPS device, connects to a smart-phone app to make the process of finding lost or valuable items quick and easy. We researched which advertising techniques would best attract customers and enable them to see Tile as a need not a want. Secondary, research shows that Americans lose

\$5,591 worth of belongings over their lifetime. In fact, one in five people misplace something every week. Our findings are a work in progress as we will conduct qualitative and inferential research by hosting focus groups and questionnaires to study purchase patterns. If consumers see Tile as a need more than a want it is more likely they will buy the product. This study’s objective is to perform a systematic review of research, while maintaining ethical standards and full disclosure to research subjects involved.

## **Photo Documentary: Equine Assisted Therapies of South Florida**

Charles Pratt

**Sharon Hart**

Dorothy F. Schmidt College of Arts & Letters

Studio Art

My documentary focuses on the aspects of therapeutic riding: which engages the rider both physically and mentally. Physically the rider is able to build core body strength and the movement of the horse mimics the human gate. Mentally the riders attention has to be engaged multi-dimensionally focusing both on the instructions they are given and on the connection with the horse. The shift in the riders’ personality is interesting to watch and in many cases they open up and enjoy the experience. The therapies shifts the greater conversation away from disabilities and being unable to participate in activities to being an individual who has impairment who can still be an active participant. Those with a physical impairment experience independent movement, those who are non-verbal and autistic individuals tune their communication skills.

## **Queer Images: Photographs of LGBTQ Americans**

Charles Pratt

**Barclay Barrios**, Sharon Hart

Dorothy F. Schmidt College of Arts & Letters

Studio Art

Although LGBTQ people currently experience unprecedented visibility in American media and popular culture, those representations depict flattened images that reduce complex individuals into simplified and limited categories of identity. I created this documentary to blur and shatter the boundaries currently restraining the lesbian, gay, bisexual, transsexual, and queer communities through the production of theoretically informed photographic images. These pictures form a response to pop culture tropes and misinterpretations of the LGBTQ community. In totality, I intend to pluralize and complicate notions of identity and bodies.

## **T-shirt Projectile Firing Mechanism**

Christopher Quinones

**Javad Hashemi**

College of Engineering & Computer Science

Mechanical Engineering

Modern devices such as the projectile t-shirt launching cannon is consisted of a handheld cannon with a tank of compressed air attached at the base. Our team explored new innovative designs in order to re-vamp current state of the art products on the market. The team took initiative to focus on a more autonomous functioning device rather than a user-controlled system. The design would have capabilities to locate and transport to pre-determined locations for optimal proficiency to launch t-shirts to fans in all ranges of the venue/stadium. Similarly, alongside with automatic dynamic abilities, the device must control the pitch and rotation of the barrel while firing t-shirts and launch multiple rounds of shirts in one trial run. The

device will provide an overall better experience for corporate or private investors to interact with their fan-base delivering free merchandise within the limitations of the respected venues.

## **The Effect of 3-Bromopyruvate on the “Warburg Effect” displayed in 4-T1 Metastatic Breast Cancer Cell Lines**

Mostafizur Rahman

**James Hartmann**

Charles E. Schmidt College of Science

Biology

It has been documented that numerous cancer types display characteristics of the “Warburg Effect,” a process of elevated glucose metabolism to Lactic Acid (glycolysis), both aerobically and anaerobically. 3-Bromopyruvate is a molecular inhibitor of the “Warburg Effect,” specifically by binding to Hexokinase-2 and rendering it ineffective. Common chemotherapeutic drugs, such as Mitox and Gemcitabine, are DNA mutagens which prompt cancer cells to become resistant to the above drugs at a higher rate than 3BP. This should cause the efficacy of Mitox and Gemcitabine to decrease over several treatments, whilst 3BP should remain almost as effective as it was upon the initial treatment. In addition to remaining effective after several treatments, 3BP is also speculated to be less toxic than the above DNA mutagens, thus healthy cells in the body will be able to tolerate 3BP much easier than they would mutagenic drugs.

## **Methionine Sulfoxide Reductase Expression in Response to Anoxic Stress Conditions in *D. melanogaster***

Evgeniya Rakitina

**David Binninger**

Charles E. Schmidt College of Science  
Biology

Anoxia is poorly tolerated by mammals. In contrast, *D. melanogaster* endures hours of anoxia with no apparent problems. In response to anoxia flies enter protective comma - spreading depression. Reintroduction of oxygen is characterized by overabundance of ROS, which oxidize vital molecules in cells. Methionine is exceptionally susceptible to oxidation, but is catalytically restored by Msr enzyme. Expression of Msr genes in response to anoxia is the subject of this study. We use anoxia chamber to induce comma in flies, followed by recording recovery times. Preliminary results show, that single mutant flies do not take significantly longer than wildtype to recover from spreading depression. However, double mutants take significantly longer to recover and greater number of Msr-deficient flies die as a result of anoxia. Failure to recover becomes more pronounced as animals approach senescence. These studies offer insight into the role of oxidative damage during reperfusion period following cardiac stroke.

## **Advancing Oral Health with Stable Microbiome: the Search for Potential Oral Probiotic Bacteria**

Roberto Ramirez

**Nwadiuto Esiobu**

Charles E. Schmidt College of Science  
Biology

The mouth is home to more than 700 species of bacteria. Previous investigations have concluded a shift in overall oral microbiota is associated with disease; this suggests a possible correlation between

disease acquisition and microbial diversity. Studying the diversity and complex microbial relationship in the mouth will shed light on novel bacterial/host interactions that could provide new methods of disease prevention or therapy. This investigation has been divided into two parts. The first consists of data mining scholarly articles in search of the most prevalent oral microbes. While the second part consists of sequencing the genome of 18 oral metagenomic samples, gathered from western Nigeria, using Mi-Seq technology and protocols. The sequences will be run through the BLAST database, and analyzed with illumina and QIIME software in order to identify and map out the oral bacterial community in a population outside of the USA.

## **Mechanisms of Neuronal Survival Under Conditions of Oxidative Stress**

Howard Retz

**Howard Prentice**

Charles E. Schmidt College of Science  
Biology

Parkinson's disease (PD) is an irreversible and progressive brain disease that affects approximately 5,000,000 people worldwide and it has been shown oxidative stress plays an important role in the progression of the disease. The production of free radicals by oxidative stress is a causative agent for neuronal cell death. Glutamate is a neurotransmitter that can induce the production of oxidative stress and free radicals in neuronal cells. Taurine is a known neuro-modulator that can combat free radicals and reduce oxidative stress. Primary cortical 12 (PC12) rat neuronal cells will be pre-treated with different concentrations of Taurine followed by Glutamate or Cobalt Chloride administration to induce oxidative stress. The objective of this study is to determine the value of Taurine in enhancing neuronal cell survival upon oxidative stress challenges. Determining the efficacy of Taurine in preventing neuronal cell death induced

by oxidative stress may increase our understanding for treatment of PD.

### **Discovery of Non-Electrophilic Agonists of the Nrf2-Mediated Antioxidant Response Pathway**

Michael Rohr

**Paul Kirchman**, Michael Cameron  
Harriet L. Wilkes Honors College  
Biochemistry

Cellular oxidative stress occurs when oxidant formation rate exceeds neutralization rate, shifting intracellular redox homeostasis and leading to cytotoxicity. Oxidants stimulate the Antioxidant Response Pathway (ARP) which activates Nrf2 transcription factor, increasing expression of antioxidant genes. Many diseases implicate oxidative stress and thus chemically targeting the ARP represents high therapeutic potential. Ironically, however, current ARP drugs are electrophilic and function by inducing oxidative stress, thereby activating Nrf2. Therefore, non-oxidative substitutions for these drugs will increase therapeutic index, safety, and effectiveness especially in treating Rheumatoid Arthritis or Multiple Sclerosis. An initial chemical library screen of 403,862 compounds for non-electrophilic properties led to 28 hits and subsequent cell viability and ARP induction assays further decreased this number to five. Structure Activity Relationship (SAR) analysis revealed a single compound series that demonstrated preferential characteristics on all fronts tested in vitro. Further in vivo studies are needed to verify translational therapeutic properties.

### **Taxation and the Separation of Church and State**

Abel Roman

**Cheryl Arlin**

College of Business  
Accounting

The separation of church and state was passed under the First Amendment in 1791. However, since its inception the United States has not followed through with this philosophy. Since colonial times, churches have been privileged with tax exemptions. Nine out of the thirteen colonies had some form of tax relief to aid their churches. This right was granted to all religious organizations with the expectation that they would contribute to their communities by providing aid to the poor. Through their constant reformation, tax laws have achieved a more rigorous stance on religious tax exemptions, yet lack the integrity needed to prevent religious organizations from taking advantage of the current tax laws. The objective of this project is to analyze how the church went from being humble, to a corporation that exploits the current tax exemptions law, and how we need reconstruct the current tax exemptions on religious organization.

### **Three-Dimensional Anatomical and Functional Analysis of Individual Layer 5 Thalamic Projecting Excitatory Neurons in the Rat Somatosensory Cortex**

Trina Rudeski

**Julie Earles**, Mike Guest

Harriet L. Wilkes Honors College  
Biology & Psychology

Within the somatosensory cortex of the rodent brain, a certain sub-population of layer 5 (L5) excitatory neurons uniquely project their axons to the posterior medial nucleus (POm) of the thalamus. These neurons comprise nearly 20% of L5 neurons and play an integral role in both motor circuits and sensory feedback loops, yet little is known about their anatomical and

functional relationships. Complete three-dimensional (3D) structures of single corticothalamic neurons were obtained for anatomical analysis, by the use of both custom high-resolution brain-wide imaging and semi-automated reconstruction methods, while functional analysis of those neurons was completed through in vivo electrophysiological recordings under both spontaneous and whisker evoked conditions. The 3D reconstruction revealed their classification as thick-tufted pyramidal neurons, while the recordings demonstrated that whisker-evoked stimuli elicit an immediate spike in action potentials. In all, this study offers new insight to the functional responses and anatomical structures of L5 corticothalamic projecting neurons.

### **Chemopreventive Effects of Rosemary Spice Phytonutrients (*Rosemary officinalis*) and Vitamin D in Human Prostate Cancer in vitro.**

Carla Ruiz

**James Kumi-Diaka**, Saheed Oseni

Charles E. Schmidt College of Science  
Biology

Prostate cancer (PCa) accounts for about 21% of all new cases and 8% of estimated cancer deaths in 2016. This study was developed to investigate the chemopreventive effects of rosemary spices, vitamin D, and a combination of both treatments on human prostate cancer cells in vitro.

Cultured PCa cells were exposed to graded concentrations of rosemary (10-400  $\mu\text{M}$ ), vitamin D (20-200  $\mu\text{M}$ ) and a combination of both for 48 hours. Cell viability and death were assessed using MTT assay, fluorescence microscopy and gel electrophoresis techniques. There was a significantly dose-dependent decrease ( $p < 0.05$ ) in cell viability in rosemary spice and vitamin D treated cells. An increase in cell deaths through apoptosis was found especially in combination treatment under fluorescent microscopy and gel electrophoresis. In conclusion, our findings suggest that rosemary and vitamin D combination may be

more efficacious and beneficial compared to single treatments and hence may potentially be chemopreventive for prostate cancer.

### **Genetic Diversity of Florida Populations of Invasive Apple Snails**

Estevao Santos

**John Baldwin**, Nathan Dorn

Charles E. Schmidt College of Science  
Biology

Apple snails (*Pomacea* spp.) have been introduced into foreign environments across the globe where they have become established and are flourishing. In Florida, exotic species of apple snails, specifically *Pomacea maculata* (formerly *Pomacea insularum*), can now be found throughout the state. In order to assess the genetic diversity of established populations of *P. maculata*, we conducted a survey of four distinct populations throughout central and southern Florida. We sequenced the 709bp Cytochrome c oxidase subunit I (COI) locus, a mitochondrial gene, to identify haplotypes and assess genetic diversity of the populations sampled. From our survey we conclude that Florida populations of *P. maculata* exhibit low genetic diversity. Additionally, we conclude that no additional introductions of *P. maculata* have been made in Florida since the last genetic survey (2007) of this species. Lastly, we identified a new haplotype for the species, which was likely the result of a random genetic mutation.

## **Linnaeus and Buffon's Ornithological Methodology During the Age of Enlightenment**

Siddharth Satishchandran

**Sandra Norman**

Dorothy F. Schmidt College of Arts & Letters  
History

During the 1700's, several biologists and naturalists attempted to create a myriad of designs in order imbibe structure in this world of chaotic organisms. Among the many candidates for a taxonomic system were the Swedish biologist Carol Linnaeus (1707-1778) and George Leclerc, Comte de Buffon (1707-1788). Insight into their scientific methodologies allows us a rare window into mid-eighteenth century discussions about the animal-human relationship and its place in society. Historians, and scientists have commented on this ever growing debate and its outcome, but none have seriously delved into the approaches of both Linnaeus and Buffon and its comparisons to modern day understanding of animals. In this paper I explore the similarities and differences in the methodology of these two naturalists by analyzing three distinct birds: the ibis, the sandpiper, and the hummingbird.

## **Diet and Temporal Partitioning by the Common Octopus and the Atlantic Longarm Octopus in a South Florida Habitat**

Rachel Shanker

**Randy Brooks**

Charles E. Schmidt College of Science  
Biology

Determining mechanisms that allow species coexistence is crucial for understanding community structure and biodiversity of ecosystems. The common octopus (*Octopus vulgaris*) and the Atlantic longarm octopus (*Macrotritopus defilippi*), overlap in a South Florida habitat. This study examines if these species coexist by feeding on different prey (diet partitioning)

or feeding at different times (temporal partitioning). Prey remains were collected from dens of both species to determine their diets. Both species of octopus were video-monitored for 24h periods to determine foraging times. Octopuses preyed on the same species of bivalve and crustacean, indicating diet overlap. However, *O. vulgaris* forages during night and early morning periods while *M. defilippi* forages in morning and mid-afternoon periods. This study will provide baseline data for conservation requirements of these octopus species and similar sand-dwelling organisms, which use this habitat as a nursery, and contribute to the general knowledge base of niche partitioning.

## **Behavioral Sensitization Induced by Cathinones (Bath Salts) in Rats**

Connor Shields

**Rui Tao**, Ibrahim Shokry

Charles E. Schmidt College of Science  
Biology

"Bath salts" is a term used in recent years to describe designer drugs as stimulants. They contain beta-keto amphetamines that are similar to amphetamines, causing hallucinations, illusions, combative behavior, and euphoria. The goal of this study was to investigate bath salts similarities to other stimulants that elicit behavioral sensitization. Sprague-Dawley rats were administered with methylenedioxypyrovalerone (MDPV; "bath salts") in a testing chamber. Injections made daily for 5 consecutive days, sensitization was examined on day 8 (2 days after the last administration). In a separate study, animals treated with MDPV were sacrificed and brain slices were hybridized with c-fos probes. As a result, MDPV caused behavioral sensitization. In an in-situ hybridization test, we found an increase in c-fos expression in glutamatergic neurons following MDPV administration. Similar to other stimulants, MDPV elicits behavioral sensitization in rats. The effect may be ascribed to activation of glutamatergic neurons.

## **Marine Aerial Survey Technology (MAST)**

Andrew Silverstein

**Allan Phipps**, Tricia Meredith

Charles E. Schmidt College of Science  
Physics

Recently, there has been increased academic interest in applying commercial unmanned aerial vehicles (UAVs) towards scientific research. However, these UAVs, such as multirotors, have inherently limited flight times, which can restrict the types of research done with them. Also, it is difficult to land these on small boats, when doing research out at sea. Aerostats are crafts that generate their lift from buoyancy, which allows them to be more power efficient and therefore attain longer duration flights than heavier-than-air UAVs. An aerostat was constructed with onboard stabilization mechanisms, along with a high definition camera. A tether allowed for safer retrieval of the craft. MAST was developed and improved through a series of controlled experiments that simulated the anticipated atmospheric environment it would encounter in flight. This technology can be employed in marine biology research, where an aerial view of the water surrounding a boat is desired.

## **Characterization of Peptides from the Venom of *Conus Purpurascens*, an Eastern Pacific Fish-Hunting Cone Snail Species**

Anthony Singer

**Tanja Godenschwege**, Frank Mari

Charles E. Schmidt College of Science  
Biology

Conotoxins are disulfide rich neural-active peptides produced by venomous marine gastropods called cone-snails, which are currently being investigated for their therapeutic potential in the treatment of neuromuscular or neurodegenerative diseases. These compounds are found to express specificity towards

ion channels and acetylcholine receptors within neuronal and muscular cells. The species under examination is *Conus purpurascens*, which is a fish hunting species that utilizes the paralytic effects of the venom to capture prey. The current study focuses on the classification of unknown conotoxins based on their mRNA signal sequence, cysteine framework, and pharmacological target. Using analytical RP-HPLC, conotoxins were isolated from milked venom. MALDI-TOF/MS was used to determine the molecular mass of the isolated conotoxins, and the number of disulfide bridges was calculated. The amino acid sequence of the conotoxins was determined using tandem MS/MS. Overall, this research provides the sequence and disulfide framework characterization of many unclassified conotoxins.

## **Aesthetic, Functional, Symbolic, and Ergonomic Impressions: Implications for Hoverboard Product Design Form**

Hunter Smith

**Allen Smith**

College of Business  
Economics

Product design, a product's outward appearance, associates with successful innovation when the design triggers buyers to develop positive impressions. The project assessed impressions of forty respondents to four distinctive hoverboard designs: 1) a prototypical design, 2) an ornate design, 3) an atypical design, and 4) a radical design. The original research extended extant research into design impressions of functionality, aesthetics, and symbolism to add an assessment of ergonomic impressions. The systematic research method entailed a literature review, qualitative research, manipulation check, questionnaire pretest, convenience sample, and Chi-Square method enabling inferences with 90% confidence. A consent form and adherence to FAU's academic integrity provided an ethical foundation. Results suggest that

designers of hoverboards conform to the prototypical design to increase positive functional impressions, avoid ornate designs, and consider buyers' skill level and self-expression when developing atypical designs due to respondents' negative impressions of safety risks and ability to control a hoverboard.

### **Characterization of Plasmodium Falciparum-infected Erythrocyte and Host Interaction**

Nethania Thelemaque

**Ewa Wojcikiewicz**, Shalondria Sears  
Charles E. Schmidt College of Science  
Biology

Plasmodium falciparum is the deadliest form of malaria and contributes to one million deaths annually. Interaction between infected *P. falciparum* malaria erythrocytes and monocytes can lead to an overactive immune response that results in multi-organ failure. ICAM-1 is an adhesion receptor found on monocytes that mediates the adhesion of infected erythrocytes (IEs). ICAM-1 is known to bind to the 3G8 IEs strain, and this interaction is known to cause cerebral malaria. The extent to which IEs strains bind to monocytes has not been elucidated. We hypothesize that ICAM-1 mediates the interaction between IEs. Knowing the biophysical mechanism of the interacting cells will provide a conceptual model that will be used to test anti-adhesion drugs against *P. falciparum* malaria. Results show that ICAM-1 mediates the interaction between IEs and various anti-adhesion drugs decrease these interactions.

### **Levels of Involvement in Greek Organizations: A Comparative Study of Alcohol Use of Students Attending Four-Year Institutions**

David Thompson

**Frankie Santos Laanan**, Marlena Coco  
College of Education  
Exercise Science and Health Promotion

According to the National Institutes of Health, about 80 percent of students consume alcohol (National Institute of Alcohol Abuse and Alcoholism, 2013). Because of the high number of student alcohol consumption, more research is needed to further understand the nature of use. The purpose of the study is two-fold: 1) investigate student involvement and alcohol consumption of Fraternity and Sorority participation and leadership; and 2) conduct comparative analysis of alcohol consumption, binge drinking, consequences and beliefs about drinking. Using national data from the Core Institute and the Core Alcohol and Drug Use survey, this study looks at students attending public and private four-year institutions. This research provides implications of relationships of involvement in Greek life to alcohol consumption and whether the culture of Greek organizations tend to set trends stemming from their leaders. This study can further inform programs for risk management and the Greek system in higher education.

### **Does the Use of Hydraulic Fracturing Violate the Statutes Implemented to Preserve the Environment?**

Annelle Ulysse

**Cheryl Arflin**  
College of Business  
Accounting

The United States Environmental Protection Agency is a federal regulatory agency that was created on December 2, 1970 for the purpose of protecting the environment and human health by passing and en-

forcing regulations. Since its inception, it has been faced with many complex issues such as the use of hydraulic fracturing as a means for producing natural gas and oil. However, this method has significantly contaminated our environment, and has had substantial adverse effects on human health. Even though there are several standard regulations the EPA has implemented to mitigate these effects, environmentalists have come to believe that the negative effects of fracking still outweigh the positive benefits. Consequently, this raises question as to whether or not the EPA has been effective in enforcing laws such as the Clean Water Act and the Safe Drinking Water Act, because fracking is still deemed to be in a direct violation of them.

### **Creation of a Bacteria Surrogate for Accelerating Research on the Ebola Virus Zaire**

Reen Varghese

**Nwadiuto Esiobu**, Douglas Holmes  
Charles E. Schmidt College of Science  
Biology

Ebola Viral Disease (EVD) is a devastating illness with high infectivity and mortality rates. The 2014 West African EVD outbreak was unprecedented in case numbers and fatalities, and has highlighted the need to develop rapid Point of Care detection devices. Progress in the diagnosis and treatment of highly virulent pathogens like the Ebola virus is often limited by the small number of labs adequately equipped to handle them. This study is one of the first to aim at developing a non-pathogenic bacterium surrogate, containing a stable EBV gene for subsequent detection studies. Our approach entailed the use of synthetic biology, to design a recombinant vector containing the Ebola virus glycoprotein (GP) gene. The synthetic gene was spliced into a E.coli pUC19 plasmid vector by ligation and subsequently transformed into competent E. coli by cloning techniques. This Ebola virus surrogate will assist in further Ebola diagnostic platform design and testing.

### **Characterization of Unknown Peptides from the Venom of the Conus Purpurascens**

Eber Vazquez

**Tanja Godenschwege**, Frank Mari  
Charles E. Schmidt College of Science  
Biology

Uncovering treatments for diseases has become a top priority in today's world. Cone snails like the *Conus purpurascens* contain a very potent venom comprised of many neuro active peptides. After analysis, each peptide has distinct properties and target specific ion channels which can potentially be used to treat diseases. The venom is obtained via milking and analyzed and purified by Reverse Phase High Performance Liquid Chromatography (RP-HPLC) and Matrix Assisted Laser Desorption/Ionization Time of Flight Mass Spectrometry (MALDI-TOF/MS). The peptides isolated are further purified and disulfide bonds were determined by reduction and alkylation. Peptides isolated, purified, reduced and alkylated have a mass of 2636 and 1778 Daltons. Mass Spectrometry-Mass Spectrometry (MS-MS) will be used to obtain the peptides primary sequence.

### **Regulatory Pattern of PUN Promoter for Gene Expression**

Stephanie Velez

**Xing-Hai Zhang**  
Charles E. Schmidt College of Science  
Biology

The purpose of this research was to analyze the regulatory pattern of the PUN promoter in the expression of a marker gene,  $\beta$ -glucuronidase (GUS), within regenerated tobacco plants. The genes for neomycin phosphotransferase (NPT II) and GUS were included in the coding region of the Ti plasmid construct. The NPTII gene drove antibiotic resistance and was used to select and identify homozygous lines through the

segregation of the progeny. Analysis through histochemical staining and genetic assays rendered putative transgenic lines that were cultivated for further assessment of progeny. First generation histochemical analysis of 14-day tissue formation resulted in no levels of expression for the GUS gene, which demonstrated that the flower-specific PUN promoter was not active in the leaf tissue. Further testing of gene activity throughout all stages of tissue formation for the first generation lines is required in order to assess regulatory pattern of the PUN promoter.

### **Do You Even Lift: A Comparative Study on the Lift Contribution of Shark Head Morphology**

Steven Warren

**Marianne Porter**

College of Engineering & Computer Science  
Ocean Engineering

Hammerhead sharks are characterized by a dorso-ventrally compressed and laterally expanded head known as a cephalofoil. Within this family, there is a large degree of morphological diversity in lift generating surfaces (pectoral fins and cephalofoil). Hammerheads have proportionally smaller pectoral fins than pointy-nosed sharks and proportionally larger cephalofoils. Pointy-nosed sharks large pectoral fins contribute to lift generation so it is hypothesized that the cephalofoil takes on this role in hammerheads. The goal of this study was to quantify the lift contribution of the head during swimming across differing morphologies of sharks. We collected CT-scan data of the heads of a bonnethead, scalloped hammerhead, and pointy-nosed blacknose shark and 3D printed models. Models were placed in a flow tank at varying angles of attack in order to quantify lift generation. These data can be used to better understand the hydrodynamic implications of the unique morphological feature that characterizes hammerhead sharks.

### **Flying into Code: Computer Science Education Through Unmanned Aerial Vehicles**

Janet Weinthal

**Tricia Meredith**, Suzette Milu

College of Engineering & Computer Science  
Electrical Engineering

Students are raised in a world of computers, yet most secondary schools fail to teach students the programming skills to succeed in computer science. Some programs have sought to address this issue, but primarily relied on teaching students code syntax in simulated environments. Our program at AD Henderson University Middle School will instead challenge students to address a physical problem: how to program an Unmanned Aerial Vehicle (UAV). Our study will compare student scores in competitions, in which they will autonomously navigate a UAV through an obstacle course, before and after completing our training course. We will also analyze student scores on surveys issued before and after the program to determine their ability to solve problems using code-like logic. We anticipate that our program will successfully teach students to succeed in computer science. We hope to encourage younger students to harness the power of programming in a computer dominated age.

## **Snake Oil in the 21st Century**

Asya Yanchinova

**Cheryl Arflin**

College of Business

Business Management

This article questions the legality of issues that fall into the gray-area of the law in regards to misrepresentation as exemplified by the distortion of results from a lack of publishers and researchers willing to publish negative results, ineffectual disclaimers in social media content, the fine line between what is legally permissible and legally questionable advertising, and more. This article will be focusing on the many ways that misrepresentation exists in a myriad of fields and the methods by which they are currently being addressed, or not addressed. The article will also discuss the historical background, current situation, and future implications of these methods.

## **Proving the Infinite Gravity of a Black Hole**

Mark Younan

**Daniela Nikolova-Popova**

College of Engineering & Computer Science

Mechanical engineering

The black hole is one of the most interesting phenomena's that exist in our world, it's said that the gravity of a black hole is super strong that it can literally pull anything including light, but the speed of the light is said to be infinite because nothing in the known physical form can actually stay in the form on reaching the speed of light. That means that for the light to be pulled the gravity of whatever the object that's pulling it has to be infinite as well, which can only come as a result of having so much mass condensed in a singular point, called "black hole".

## **Vulnerability to Seizure is Mediated by a Shift in the Gating Properties of Hippocampal Granule Neurons in Transgenic Mice Over-Expressing the Brain-Derived Neurotrophic Factor**

Wei Hui Zhou

**Ceylan Isgor**

Charles E. Schmidt College of Medicine

Biology

Structural changes that alter hippocampal functional circuitry are implicated in learning impairments, mood disorders and epilepsy. Failure to properly gate neuronal activity arriving in hippocampus may be critical in developing synaptic circuits that generate seizures due to sustained elevations in hippocampal BDNF. Our data shows higher number of synaptic contact points (spines) on dendritic surfaces of granule cells in 2-3 month-old TgBDNF mice compared to WT mice, suggesting that there is increased cortical input onto granule cells. The dysregulation in mature GC circuitry in seizure dormant period in TgBDNF mice indicates early seizure susceptibility. Both mature GCs and immature GCs will show structural alterations in their input and/or output regions in TgBDNF mice long before full motor seizures are detectable pinpointing early dysregulations in the gating properties of these input neurons to hippocampus, favoring enhanced information processing and propagation. These collective results will help pinpoint intervention targets for seizure prevention.

# NOTES

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# CONTRIBUTORS

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**1. Selected TLR Agonists Act in Synergy to Reprogram DC-NK Cross-talk and Generate Effector T cells in Nicotinic Environment**

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**2. Removing Body Heat Through A Finned Wrist-band During Exercise**

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**3. Responsive Design: All Scales Considered**

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**4. Increasing Comprehension Levels Through Content Vocabulary**

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**5. Effects of Methionine Sulfoxide Reductase (Msr) on Drosophila Melanogaster Larval Development using RNAi**

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**6. Development of Control Tension System for Open Source 3D Printed Bionic Hand**

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**7. The Importance of Roles, Power and Ethical Standards of Drug Court Officials**

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**8. SMaRTly Motivate: Self-management Support Motivational Statements for Behavioral Change in Diabetic Kidney Disease (DKD) Populations**

*Coral Bajbek*

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**9. The Relationship Between Birth Order and College Students' Perceived Levels of Extraversion**

*Hannah Baker*

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**10. Deconstructing the Socialization of Sex in Virginia Woolf's "Orlando"**

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**11. On the Expected Increase of Mobile Transactions Authenticated Through Biometrics**

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**12. Formulating Different Detection Algorithms to Eradicate Invasive Red Lionfish Using an Autonomous Underwater Vehicle in South Florida and the Bahamas.**

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**13. The Psychology Behind Nonprofit Organizations**

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**21. Interactions with Resonators: How Can Resonate Sound Bring Change Within or on the Body?**

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**22. Multilateral Trade Agreements and Their Implications**

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**24. The Impact of Rainfall and Temperature on the Green Turtle (*Cheloniemydas*) Sex Determination**

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**25. Quantifying Wading Bird Activity in Drying Wetlands Using Time Lapse Imagery.**

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**26. Poster presentation Steroid Usage Among College Athletes: A Comparison of Public and Private Four-year Institutions**

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**28. Healthcare and Hispanics: The Disparity in Healthcare Coverage and Affordability Between Genders**

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**35. Arabian Women of the Jahiliyya and Early Islamic Times**

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**36. An Examination of Wildlife Crime on the Treasure Coast: Do Crime Detection Rates Differ on “Conservation Lands”?**

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**54. Consumer Motivation: The Craft**

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**55. Optical Trapping Through the Motion of Micron-Sized Particles**

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**56. Differences in Submerged Walking and Swimming Kinematics of the Epaulette Shark (*Hemiscyllium ocellatum*)**

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**57. The Effects Whole Brain Learning has on Students' Academics in an Urban School Setting**

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**58. The Effect of Time on Visual Search Patterns**

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**59. Improvement of Cooling Efficiency for Data Centers using Heat Pipes**

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**69. Integration and Implementation of the Quine-Mccluskey Simplification Algorithm in an Interactive Smartphone Game.**

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**70. Community Based Research to Address Dementia and Parkinson's Disease in Older Adults**

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*Zara Mansoor*

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**72. Death Spiral Financing**

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**73. Self-care for Nurse Leaders in Acute Care Environment Reduces Perceived Stress: A Pilot Study**

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*Emilio Matthews*

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*Jeffrey McLachlan*

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**79. Treatment Options for Mesial Temporal Lobe Epilepsy**

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**Faculty Mentor: Angelica Nevin**

**80. Exploring Social Stigma Related to Vaping on the College Campus**

*Katherine Mesa*

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**81. Removing Methanol Additives from Fracking Fluids using Advance Oxidation Technology**

*Lisandre Meyer*

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**82. Electric Impedance Sensing for Study of Cell- Cell Interactions in an in-vitro Blood Vessel Model**

*Michael Mian*

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**83. Increasing Language Development Through Rhythm**

*Morgan Miller*

**Faculty Mentor: Lori Dassa**

**84. Investigating Ground Penetrating Radar (GPR) Limitations and Potential for Subsurface Nest Detection in South Florida**

*Sarah Mitchell*

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**85. Male-male Aggressive Function of “Whisper Song” in the Bachman’s Sparrow (*Peucaea Aestivalis*)**

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*Nicholas Morano*

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**87. Synthesis and Characterization of Polyesters**

*Francesca Mosca*

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**Faculty Mentor:** Wen Shen

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*Ashley Ostrout*

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**95. Does Having a Muslim Connection Affect Voting Stances?**

*Seema Patel*

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**Faculty Mentor:** Monica Escaleras

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*Kimberly Quinn*

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*Christopher Quinones*

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