

S e v e n t h A n n u a l

UNDERGRADUATE RESEARCH SYMPOSIUM

03.31.17



DISTINCTION
THROUGH DISCOVERY

March 31st, 2017

Live Oak Pavilion and
Grand Palm Room
Boca Raton Campus

WELCOME

Welcome to the 7th 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

SPECIAL THANKS TO:

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 College

Graduate student judges

Student Government

Student volunteers

Undergraduate Studies

University Communications - Marketing and Creative Services

University Libraries

ARTIST STATEMENT

Luca Brunozzi
Major: Biology

I was prompted by the question “what does research mean to you?” Before I could go any further, I asked myself two questions. First, what is research? I think research is the cyclic relationship of interest and inquiry. One results in the other, and on and on it goes. The second question: what does research look like? At first I thought about labs, albino mice, old books, and translated texts. Then, I took a step back, and I considered the question very literally. What does research look like? I don’t mean the graphs and tables and figures; those are the results of research. I mean, if research had a body—if it were a corporeal thing—what would it look like? That was my starting point. In my experience, the research process is not clean and linear. Rather, it’s an organic process that twists and weaves; that buds-off and re-converges. I’ve also found that many things that appear drab and simple, when closely inspected and pulled open, are beautifully fascinating. I used these qualities to assign research a physical form. The result is the painting on the cover: the body of research.

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AGENDA

Time	Event	Location
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 <ul style="list-style-type: none">• Welcome Message• FAURJ Co-editors• Edward Pratt, Ph.D., Dean of Undergraduate Studies Keynote Speaker: Anton Post, Ph.D. Executive Director of Harbor Branch Oceanographic Institute	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 <i>hosted by the Council for Scholarship and Inquiry</i>	Live Oak Pavilion A-D

KEYNOTE SPEAKER

Anton Post, Ph.D.



Before joining FAU Harbor Branch, Anton Post, Ph.D., served as the executive director of the Coastal Resources Center at the University of Rhode Island. Post earned a Ph.D. in microbiology, a Master of Science degree in aquatic microbial ecology and a Bachelor of Science degree in biology from the University of Amsterdam.

He began his research career as a graduate student nearly four decades ago in the Netherlands and went on to the Hebrew University for his postdoctoral work. Over the course of a 20-year career of research and teaching, he climbed the ranks to full professor before being promoted to academic leadership roles. Post is well-published, with 120 peer-reviewed publications, and has been the recipient of numerous fellowships and awards, including being named visiting scholar at the Massachusetts Institute of Technology and earning the Gruss-Lipper Fellowship at the Marine Biology Laboratory in Woods Hole, Mass. He has held several similar leadership positions at state universities, overseeing multimillion-dollar budgets comprised mainly of competitively awarded research grants. In recent years, he also served as a program director in the Division of Ocean Sciences at the National Science Foundation.

ORAL PRESENTATION SCHEDULE

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

LIVE OAK A

Music, Art, Literature, Theater
History & Philosophy

Connotation & Rhetoric: The Semantics of Suspicion in the Writings of Desmoulins

Ivy Gilbert

Faculty Mentor: Romain Rivaux

Residential-Defensive Towers in the Balkans: Where Christianity and Islam Sheared Roof

Stefka Kuneva

Faculty Mentor: Vladimir Kulic

The Talking Dead: The Rejection of Irish Idealism and the Cultural Appropriation of Rural West Ireland in Mairtin O' Cadhain's Cre' na Cille

Savannah Law

Faculty Mentor: Julieann Ulin

Religious Iconography in T. S. Eliot's "Ash-Wednesday"

Anna Riso

Faculty Mentor: Yasmine Shamma

The Strength of A Living Ghost: The "Ghost" Narrative in the Works of Gabriel Garcia Marquez, Toni Morrison, and Ralph Ellison

Malyka Young

Faculty Mentor: Sika Dagbovie-Mullins

LIVE OAK B

Environmental, Ecological
& Marine Sciences

Identification of Fauna Associated with Gopher Tortoise Burrows at Florida Atlantic University Preserve and Jonathan Dickinson State Park

Laura De Souza

Faculty Mentor: Evelyn Frazier

Form-Finding Strategies through Elastic Grids

Taylor Eccher, Stefani Spence

Faculty Mentor: Emmanouil Vermissou

Hematology and URTD Status of Gopher Tortoises in the Abacoa Greenway

Lauren Fremont

Faculty Mentor: Jon Moore

Comparison of Floatation and Candling for Estimating Snowy Egret and Tricolored Heron Egg Age

Zachary Lee

Faculty Mentor: Dale Gawlik

ORAL PRESENTATION SCHEDULE

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

LIVE OAK C

Business and Marketing

Presentations from Dr. Allen Smith's RI Advanced Advertising: Research, Persuasion, and Creativity class

ORAL PRESENTATION SCHEDULE

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

LIVE OAK A

Behavioral, Educational & Social Sciences

Are Things Getting Better or Worse? A Race and Power Perspective on Police Brutality in America

Jeanelle Angus

Faculty Mentor: Vaughn Crichlow

American Personal Safety & Terrorism

Esteban Cardenas

Faculty Mentor: Monica Escaleras

A Historical and Sociological Analysis of William Friedkin's "The Exorcist".

Varad Gharat

Faculty Mentor: Gina Lukasik

How Do We Access the News

Laura Gomez

Faculty Mentor: Monica Escaleras

The Effect of Social Capital on Corruption

Jesse Pulliam

Faculty Mentor: Nur-tegin Kanybek

Effect of Virtual Reality Headset for Pediatric Fear and Pain Distraction During Immunization – a Pilot Study.

Emaan Sulaiman

Faculty Mentor: Chad Rudnick

LIVE OAK B

Engineering

The Mixing and Dynamics of Two Phase Flow in a Circular Hydraulic Jump

Adam Dubin, Marc Carlo, Alexander Gonzalez

Faculty Mentor: Tsung-Chow Su

A Microfluidic Approach for Nanoparticle-Assisted CO₂ Dissolution

Minh Nguyen, Charles Nighswonger

Faculty Mentor: Myeongsub Kim

Development of an Air Quality Monitoring UAS for Remote Sensing Applications

Andrew Silverstein

Faculty Mentor: William Hahn

ORAL PRESENTATION SCHEDULE

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

LIVE OAK C

Grant Workshop for Undergraduate Students: Writing a Winning Proposal

This workshop is designed to share successful strategies used to write competitive grant proposals for undergraduate research grants and summer undergraduate research fellowships. The workshop will also examine winning proposals and highlight common traits present in those successful documents. This workshop is open to all undergraduate students. Registration not required.

ORAL PRESENTATION SCHEDULE

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

LIVE OAK B

Basic Health and Medical Sciences

Economic Injustice in Health Insurance Premiums for Married Couples

Sravya Gurivireddygari, Christy Folk
Faculty Mentor: Ashley Kennedy

Neuroprotective Mechanism of Granulocyte Colony Stimulating Factor in a Mouse Model of Global Cerebral Ischemia

Kristen Medley, Paola Trujillo
Faculty Mentor: Howard Prentice

Protein Replacement Therapy to Rescue Neuronal Structural Defects Caused by Mutation of the Autism Risk Gene PTEN

Vanessa Walters
Faculty Mentor: Monica Maldonado

LIVE OAK C

Business, Marketing, Finance,
Public Administration

The Different Perceptions of Future Economic Conditions Amongst Millennials and Baby Boomers

Onur Basman
Faculty Mentor: Monica Escaleras

Incentivized Reviews: An Investigation of Online Consumer Review Bias

Jesse Darrow
Faculty Mentor: Kanybek Nur-tegin

A Presentation by the Cellular Agriculture Academic Society: Exploring the Prospects of Cellular Agriculture

Kristopher Gasteratos
Faculty Mentor: Ryne Sherman

Groceries to You

Jonathan Green
Faculty Mentor: Monica Escaleras

Special e-Learning Session

Grand Palm Room
1:30 p.m. - 3:30p.m.

Operations Management Research Project

Course Name: Operations Management, MAN 3506

Faculty: Dr. Ravi Behara
Associate Professor, Information Technology & Operations Management
College of Business
rbehara@fau.edu

Delivery Mode: Hybrid using lecture capture video streaming (LCVS) real-time streaming/online delayed streaming and in-class.

Number of student submissions: 350

Research project:

Each student will conduct individual research on the operational issues within an assigned Fortune 500 Company. They will do this mainly by using company documents, regulatory submissions by the company, and third-party business databases from the FAU library. They will then draw conclusions on the current challenges/opportunities faced by the company as well as how these challenges/opportunities are being addressed. Each student will submit their research results as a report as well as a poster for display during the 7th Annual Undergraduate Research Symposium.

POSTERS

- 1. Toroid Characterization in Rotating Flow of Two Layer Liquid**
Nicole Perry
Faculty Mentor: Tsung-Chow Su

- 2. The Effect on Temporary Inactivation of the Nucleus Reuniens Using Chemogenetic Methods on Spatial Working Memory**
Max Schreiber, Kara Harris
Faculty Mentor: Robert Vertes

- 3. How Did I Get Here? Selective Activation of Head Direction Cells**
Jonathan Rivera
Faculty Mentor: Robert Stackman

- 4. Application of 3D Printing Technology for Better Understanding of Biomolecular Structures in Biochemical Education**
Dalia Soueid, Lauren Schmidt
Faculty Mentor: Maciej Stawikowski

- 6. Open Ocean Turbulence Characterization for Ocean Current Energy Applications**
Remy Komocsin
Faculty Mentor: James VanZwieten

- 7. Auditory Spatial Perception in Identical Spaces**
Laura Gomez
Faculty Mentor: Julie Ward

- 8. Analyzing FAU Commuter Residential Locations by Observing Bus Routes**
Mohamed Abutineh, Clare Therese, Gabriela Aragundi, Carly Boltin
Faculty Mentor: Tricia Meredith

- 9. Corruption in the Pharmaceutical Industry**
Abel Roman
Faculty Mentor: Cheryl Arflin

- 10. Role of Megalin Protein Transport System in Maternal-Fetal Interactions during Placental Malaria**
Guerlande Fontus
Faculty Mentor: Andrew Oleinikov

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

11. Design and Synthesis of Novel Substrate and Inhibitor of Human Hepsin - Enzyme Involved in Prostate Cancer Progression and Metastasis

Ruben Zapata, Aqiyl Mills

Faculty Mentor: Maciej Stawikowski

12. Diet and Temporal Partitioning by the Common Octopus and the Atlantic Longarm Octopus in a South Florida Habitat

Danielle Bartz

Faculty Mentor: W. R. Brooks

13. Are Americans Saving Enough for Retirement?

Lucas Cantwell

Faculty Mentor: Monica Escaleras

14. Optogenetic Control of Grooming in Drosophila

Eamonn Byrnes

Faculty Mentor: Ken Dawson-Scully

15. The Influence of Language Proficiency on the Appraisal of Valence of Verbal Content in Spanish-English Bilinguals

Vannia Arana, Caitlyn Montero

Faculty Mentor: Monica Rosselli

16. The Effects of Sea Level Rise on Microbial Community Structure in Biscayne National Park, Simulated Using Soil Samples in Mesocosms at Various Scaled Sea Levels and Salinities

Christian Klein

Faculty Mentor: Nwadiuto Esiobu

17. Dimension Perception

Tristan White, Sebastian Vergara, Ian Pitters

Faculty Mentor: Tammy Knipp

18. Testing Links Among Cognitive Performance, Stress Response, and Personality in Song Birds

Jennifer Applebaum

Faculty Mentor: Rindy Anderson

19. Multisensory Installations and Their Effects on Emotion

Cynthia Stucki

Faculty Mentor: Julie Ward

20. Self Reflection Projection

Soraya Leathers, Brandon Powers,

Fabiola Valdivia

Faculty Mentor: Tammy Knipp

21. The Effects of Active Ingredients in Aerosol Sunscreen on Behaviors in Drosophila Melanogaster Larvae

Nicholas Pizzo

Faculty Mentor: Tricia Meredith

22. Delay on Traffic caused by Distracted Drivers at FAU Intersections

Laura Eugene, Aniela Edwards, Manal Imran,

Anastasija Bulatovic

Faculty Mentor: Tricia Meredith

23. Gopher Tortoise Social Interactions in a Population from South Florida

Andrea Rodriguez

Faculty Mentor: Evelyn Frazier

24. To Cleave or not to Cleave? (Defining the Functional Role of Amyloid Precursor Protein in the Development of the Drosophila Giant Fiber Circuit)

Richelle Poulos

Faculty Mentor: Tanja Godenschwege

25. Using Next Generation Sequencing to Investigate the Relationship Between the Rhizobiome of Citrus Trees and the Devastating Citrus Greening Disease

David Dunleavy, Omar Chahine, Harrison Smith,

Faiza Naeem

Faculty Mentor: Nwadiuto Esiobu

26. Emotional Scaffolding and the English Language Learner

Lauren Rubin

Faculty Mentor: Lori Dassa

27. Examining Differences in the Anterior Lateral Line Nerve of the Yellow Stingray

Katie Kramer

Faculty Mentor: Stephen Kajiura

28. Effect of PAK6 Gene Knockout on Prostate Cancer Cell Stiffness

*Nikolas Echeverry, Belinda Gerard
Faculty Mentor: Ewa Wojcikiewicz*

29. Temporal Ontogeny of Epileptogenesis in a Model of Adult-onset, Spontaneous Seizures

*Melanie Gil, Rachel St Clair
Faculty Mentor: Ceylan Isgor*

30. Chemical-Assisted Recovery of Heavy Oil

*Natalia Linares, Seokju Seo
Faculty Mentor: Myeongsub Kim*

31. Human Powered Submarine Data Acquisition System

*Robert Kipp
Faculty Mentor: Dr. Edgar An*

32. Expression and Purification of Recombinant Human Galectin-1 for Future Binding Studies as a Potential Target for Cancer Therapy

*Camelia Garcia, Yaima Rivero, Forrest FitzGerald
Faculty Mentor: Mare Cudic*

33. Markers of Mitochondrial Function and Cell Death in Models of Stroke Therapy

*Paola Trujillo
Faculty Mentor: Howard Prentice*

34. Neuroendocrine Regulation of *C. elegans* Larval Development by Autophagy

*Cecilia Nicholas
Faculty Mentor: Kailiang Jia*

35. The Patient Caretaker Relationship and its Effect on the Progression of Lewy Body Dementia and Alzheimer's Disease

*Elizabeth Robertson
Faculty Mentor: James Galvin*

36. Enhanced CpG Activated Macrophage Killing of 3-Bromopyruvate Pre-treated 4T1 Breast Cancer Cells

*Dawit Rumicha
Faculty Mentor: James Hartmann*

37. Determining potential enzymes involved in the cleavage of L1-type CAM in vivo

*Brittany Henry
Faculty Mentor: Tanja Godenschwege*

38. Initial Synthesis of Nucleic Acid-Like Polymers from Diethyltin Dichloride and Thymidine, the Pyrimidine Nucleoside, from Commercially Prepared Thymidine

*Loretta Chen
Faculty Mentor: Charles Carraher*

39. The Effects of Disorientation on the Survival Rates of Emerging Loggerhead (*Caretta caretta*) Hatchlings Between the Nest and the Surf

*Brianna Villegas Vindiola
Faculty Mentor: Jeanette Wyneken*

40. A Kinetic and Spectroscopic Study of Tryptophan Analogs as Mechanistic Probes for hIDO1 Catalytic Activity

*Jesse Meacham
Faculty Mentor: Andrew Terentis*

41. Frequency of "Thank You's" Differs Between Age and Gender Groups

*Janet Davis, Bryan Bellinetti
Faculty Mentor: Tricia Meredith*

42. Investigation of Metals Concentrations in Lake Worth Lagoon

*Gino Garlaschi
Faculty Mentor: Tara Root*

43. Parental Ratification: The Roles of Our State "Parents"

*Giovanna Basilio
Faculty Mentor: Lincoln Sloas*

44. Song as an Aggressive Signal in the Bachman's Sparrow

*Sabah Ali
Faculty Mentor: Rindy Anderson*

45. An Open-Source Research Platform for Autonomous Vehicle Research and Development

*Shawn Martin, Nicolas Tutuianu, Marcus McGuire
Faculty Mentor: Elan Barenholtz*

46. Study of Global Gene Expression and Alternative Splicing in HIV Infected CD4+ T-Cells

*Maha Naim
Faculty Mentor: Massimo Caputi*

47. Multicomponent Assembly of Novel Thiono Analogues of 4-aza-Podophyllotoxin with Potential Antitumor Activities

*Charles Shearer
Faculty Mentor: Stephane Roche*

48. Effect of Gender on Levels of Tension & Neutral in the Therapist-Client Relationship

*Amrita Ghaness
Faculty Mentor: Paul Peluso*

49. Recognizing Functional Decline in Persons with Mild Cognitive Impairment

*Dana-Lee Bowes
Faculty Mentor: Monica Rosselli*

50. Comparing the Effects of CEEE versus HIIT Exercise on Cardiac Damage in *Cyprinus carpio*

*Jessica Halle
Faculty Mentor: Michael Whitehurst*

51. Cathelicidin is Capable of Killing Cancer Cells via 1,25(OH)₂D₃ Activated Human Macrophages

*Gabrielle Rind
Faculty Mentor: James Hartmann*

52. The Effects of Women's Status on the Adoption of Post-Conflict Justice Mechanisms

*Sama Kahook
Faculty Mentor: Angela Nichols*

53. Characterizing the Biophysical Mechanism of Cell-Penetrating Peptide Cancer Cell Entry

*Mary Moussa
Faculty Mentor: Ewa Wocikiewicz*

54. Gender and Talking in Therapy

*Erin Beattie, Kaleigh Dietz
Faculty Mentor: Paul Peluso*

55. Evacuation Plan Preparedness Matrix

*Estefania Mayorga
Faculty Mentor: John Renne*

56. Developing an Image Recognition and Motor Control Algorithm for Controlling Invasive Red Lionfish in South Florida.

*Alexis Base
Faculty Mentor: Fraser Dalgleish*

57. The Effects of Different Building Materials on Textiles of Varying Weave Sizes when Cast Making

*Chastity Pascoe
Faculty Mentor: Julie Ward*

58. Active vs Rest State: Is Object Memory Encoding, Consolidation, and Retrieval Affected by Biological Clock?

*Elishama Petion
Faculty Mentor: Robert Stackman*

59. A Brief Overview of the Laws Governing Fetal Rights in the State of Florida

*Renzo Broggi
Faculty Mentor: Cheryl Arflin*

60. Influence of cGMP- Dependent Protein Kinase Signaling Pathway in Time to Recovery from an Induced Electroconvulsive Seizure in *D. melanogaster*

*Leonor Miranda
Faculty Mentor: Ken Dawson-Scully*

61. Promoting Cultural Awareness in the Urban Elementary Classroom through Multicultural Literature

*Gina Musick
Faculty Mentor: Lori Dassa*

62. Mapping Historic Structures Using UAV Technology

*Jason Blankenship
Faculty Mentor: Hongbo Su*

63. Neuroprotective Properties of Aeurin and GCSF on Amyloid-Beta in Alzheimer's Disease

Ahmed Altamimi, Ashleigh Morrell
Faculty Mentor: Jang-Yen Wu

64. An Autonomous Seawater Sampler Using a Flexible Soft Material

Cuong Tran, Minh Nguyen, Nafisa Shikdar
Faculty Mentor: Myeongsu Kim

65. Cytotoxic Effects of THP-1 Derived Macrophages Activated by Imiquimod on T47D Breast Cancer Cells

Sean Casey, Yevgenia Permanova
Faculty Mentor: Dr. James Hartmann

66. Identification of Economic Damage in Four South Florida Counties Due to Hurricane Andrew

David Brodylo
Faculty Mentor: Tobin Hindle

67. A New Lanthanide Coordination Polymer Based on 2,2'-bithiophene-5,5'-dicarboxylic Acid for Nitroaromatic Sensing Applications.

Raul Ortega
Faculty Mentor: Daniel T. de Lill

68. The Distribution of Butterfly Developmental Stages at FAU's Boca Raton Campus

Aaria Arancherry, Vassilios Georgakopoulos
Faculty Mentor: Tricia Meredith

69. Modulating Fear Extinction via Calcium-activated Potassium Channels

Danielle Riboul
Faculty Mentor: Robert Stackman

70. Combating Oil Spills Through the Development of a Novel Autonomous Oil Skimmer Using Hydrophobic-Oleophilic Absorbent Mats via a Low-Cost Computer Module

Vithulan Suthakaran
Faculty Mentor: Javed Hashemi

71. Branding and Advertising Strategy for FitBit Flex-2: Implications from Survey Research and Per-

suasion Theory

Andrea Ayala, Rubens Lacerda, Robinette Devin
Faculty Mentor: Allen Smith

72. The Road to Redemption of a Conquistador: Álvar Núñez Cabeza de Vaca

Claudia Schmucker
Faculty Mentor: Dr. Yolanda Gamboa

73. For the Love of the Team

Kassi Coviello, Brian Sapp
Faculty Mentor: Monica Escaleras

74. A Microfluidic for Measurements of Evaporation Rate at Different Salinities

Heather Crawford, Christian Asfour
Faculty Mentor: Myeongsu Kim

75. The Effectiveness of Nonpharmacological Pain Reduction Methods in Preterm Infants

Emma Hensley
Faculty Mentor: Toni Francis

76. Shark Survey: Friend or Foe

Makayla Magielnicki
Faculty Mentor: Tricia Meredith

77. Social Network Simulation

Omar Eldaghar
Faculty Mentor: Erik Lundberg

78. Loss of Neurofibromin During Development Increases Grooming in Drosophila

Chevara Joseph
Faculty Mentor: Monica Maldonado

79. The Effects of Methionine Sulfoxide Reductase (Msr) Deficiency During Anoxia in Drosophila melanogaster

Victoria Beck
Faculty Mentor: David Binninger

80. Soft Robotic Jellyfish - Steering Control

Nicholas Lopez
Faculty Mentor: Erik Engeberg

81. A Comprehensive Polymer Analysis using Raman, Infrared, and Thermogravimetric Techniques in for use in an Instrumentation Course

Yiro Shimabukuro

Faculty Mentor: Jerome Haky

82. Cytotoxicity Studies of Marine Natural Products in Different Prostate Cancer Cell Lines

Joubin Jebelli, William Trevino, Bryan Fleurantin

Faculty Mentor: Lyndon West

83. Influence of Metagenomic DNA Extraction Protocol on the Amount and Purity of Nucleic Acid and the Bacterial Diversity

Pimnitah Visitdesotrakul, Daniela Garzon-Aljure

Faculty Mentor: Nwadiuto Esiobu

84. Should an Innovator Embrace the Prototypical, Authentic, or the High-Design Form? Insights into Initial Perceptions of Functionality, Ergonomics, Hedonism, Self-Expression, Authenticity, and Information Search of Dune Buggy Product Design Forms

Hunter Smith, Katherine Llanos, Danielle Gordon

Faculty Mentor: Allen Smith

85. The Effects of Cultural Differences Between Therapists and Clients on the Therapeutic Alliance

Rafael Leite

Faculty Mentor: Paul Peluso

86. Isolation and Biomimetic Synthesis of Bioactive Marine Natural Products

Shakia Williams

Faculty Mentor: Lyndon West

87. Flying Into Code: Evaluating the Effectiveness of a New, Hands-on Computer Science Educational Program

Janet Weinthal, Paul Morris, Benjamin Coleman

Faculty Mentor: Tricia Meredith

88. Studying the Social Behavior of Red-tailed, Blue and Hybrid Monkeys of the Cercopithecus genus in Gombe National Park, Tanzania.

Stacey Pasternak, Charlene Korchia,

Samantha Wallshein

Faculty Mentor: Kate Detwiler

89. Conservation Behavior Intervention

Caitlin Benedict

Faculty Mentor: Julie Earles

90. Study of Mitochondrial Trafficking in Huntingtin Knockout Cell Line

Christopher Minasi

Faculty Mentor: Jianning Wei

91. Sociological Analysis of Family Life in Sitcoms

Joseph Weisler

Faculty Mentor: Gina Carreno-Lukasik

92. Comparison of the Oral Microbiomes in US and Nigerian Populations: Implications for Probiotic and Diagnostic Applications

Marissa Burns,

Faculty Mentor: Nwadiuto Esiobu

93. Assessing the Public Health implications of High numbers of Staph aureus and indicator Bacteria in Fort Lauderdale Beach Sand, swash zone and recreational water

Tacianna Williams

Faculty Mentor: Nwadiuto Esiobu

94. Taking a Physical Activity Break After a Lesson and Before a Summative Assessment can Increase Students' Academic Scores and Decrease Their Test Anxiety.

Christiania Burton

Faculty Mentor: Lori Dassa

95. Monitoring and Modeling to Estimate Impact Of Hydrogen Sulfide Emissions and Dispersion Near Gas Wellheads on a Florida Class I Landfill

Angel Martinez

Faculty Mentor: Daniel Meeroff

96. Development of a Cooling Wristband with Embedded Temperature Monitor

Lyndsey Mandelare

Faculty Mentor: Tsung-Chow Su

97. Synthesis of Rhodamine B Conjugate Building Block Suitable for Use as a Fluorescent Probe

Vicente Rubio

Faculty Mentor: Maciej Stawikowski

98. Ideal Pipe Orientation for Draining a Reservoir

Luke Ridley, Robbie Kipp, Steven Warren

Faculty Mentor: Tsung-Chow Su

99. Advertising Research, Persuasion Theory, and Competitive Strategy: The Role of Brand Association Using Life-Style Relevance

Monique Casanova, Maria Barni,

Marcio Do Nascimento, Viviana Moreno

Faculty Mentor: Allen Smith

100. Photovoltaic (PV) Panel Efficiency Assessment Using Current -Voltage (IV) Curve analysis

Ricardo Sanatan, Christopher Romaine,

Shefatha Rabbany

Faculty Mentor: Amir Abtahi

101. Flow through Elasmobranch Olfactory Organ

Ayse Demircan

Faculty Mentor: Tricia Meredith

102. Adulthood in the 21st Century: Factors that Affect the Transition to Adulthood

Caralin Branscum, Deborah Ford

Faculty Mentor: Ann Branaman

103. Are Americans Financially Literate?

William Fetzer, Jennifer Armatrading

Faculty Mentor: Monica Escaleras

104. Living Shorelines: Building Resiliency and Sustainability in the Florida Keys

Connor Bailey

Faculty Mentor: Diana Mitsova-Boneva

105. The Role of Persuasion Theory and Advertising Message Strategy: Implications for Attacking a Market Leader

Joseph Salcedo, Emanuel Delgado, Blake

Berkheimer, Fiorella Panzitta

Faculty Mentor: Allen Smith

106. Memory for License Plates

Joanna Beazley

Faculty Mentor: Julie Earles

107. Drug Discovery in Class: In Silico Design and Engineering of Novel Proprotein Convertase Inhibitors

Lauren Schmidt, Brian Busbee, Adam Reinstein

Faculty Mentor: Maciej Stawikowski

108. How Does Education Affect the View of Legislating Marijuana Usage?

Garrett Cox, Benjamin Henry

Faculty Mentor: Monica Escaleras

109. How is Posture Affected by Backpack Wearing?

Amanda Ramdhyan, Anisa Sookhoo, Levi Travis,

Jessen Auguste

Faculty Mentor: Tricia Meredith

110. Synthesis of Organotin Polyamine Esters from Reaction of Organotin Dichlorides and 4-Aminobenzoic Acid (PABA)

Natalie Ezzell, Elohise St.Fort

Faculty Mentor: Charles Carraher

111. Does Age Affect the Way People Perceive Cancer?

Katie Ali, Megan O'Connor

Faculty Mentor: Moinca Escaleras

112. The Correlational Relationship Between Social Media Usage and Alcohol/Tobacco Consumption

Jesse Meagher

Faculty Mentor: Gina Carreno-Lukasik

113. Aqueous Droplet Microfluidics: Fundamentals of Droplet Generation Mechanisms

Sofia Melgar Jimenez, Nick Petrozzi

Faculty Mentor: Myeongsub M. Kim

114. Effects of Emotion on Memory for Events

James Adaryukov, Nicole McRostie, Anna Riso

Faculty Mentor: Julie Earles

115. Characteristics of Summer Beach Morphology in Southeast Florida

Madeline Rubio

Faculty Mentor: Tiffany Roberts-Briggs

116. Protecting Civilians and Public Service Personnel through an Early Identification System for Airborne Chemicals: SEIAC

Hannah Herbst

Faculty Mentor: Tricia Meredith

117. Spatiotemporal Variability in the Morphodynamic Classification of Southeast Florida Beaches

Richard Hart

Faculty Mentor: Tiffany Roberts Briggs

118. Challenging Source Effects Theory: The Case of High-Technology Computers

Judie Simon

Faculty Mentor: Allen Smith

119. Buckling of a Column Made of FGM with Buckling Mode Represented by 4th, 5th, 6th, 7th, 8th and 9th Order Polynomial

Kristopher Stewart

Faculty Mentor: Isaac Elishakoff

120. An Analysis of Gopherus polyphemus Reproduction at the Florida Atlantic University Preserve

Thuyminh Nguyen

Faculty Mentor: Evelyn Frazier

121. Single Nucleotide Polymorphism Mapping of Novel Genes Involved in C. Elegans Dopamine Signaling

Divyesh Doddapaneni

Faculty Mentor: Osama Refai

122. Comparing Techniques Used to Determine Biodiversity on the Prop Roots of Rhizophora Mangrove

Andrea Carmona

Faculty Mentor: C. Edward Proffitt

123. Effect of Virtual Reality Headset for Pediatric fear and pain distraction during immunization – a pilot study

Emaan Sulaiman

Faculty Mentor: Chad Rudnick

124. Attitudes Towards Cultured Meat; Exploring Methods of Increasing Appeal

Kristopher Gasteratos

Faculty Mentor: Ryne Sherman

125. Initial Synthesis, Characterization, and Preliminary Cancer Cell Line Results for Polymers Derived from Reaction of Zirconocene Dichloride and the Thymidine Nucleoside

Jessica Frank

Faculty Mentor: Charles Carraher

126. Drug Discovery in Class: In Silico Design of PCSK9 Inhibitors as Potential Cholesterol Lowering Drugs

Jessica Frank, Elyse Jutte, Jesse Meacham

Faculty Mentor: Maciej Stawikowski

127. The Effect of Acute High-Intensity Interval Exercise vs. Continuous Moderate-Intensity Exercise on Flow-Mediated Vasodilation in Obesity

Alexandra Rodriguez

Faculty Mentor: Chun-Jung Huang

128. Pentraxin 3 and Glucose Responses to Acute High-Intensity Interval Exercise vs. Continuous Moderate-Intensity Exercise in Obesity

Alexandra Rodriguez

Faculty Mentor: Chun-Jung Huang

129. Increasing Academic Levels Through Student Generated Questions

Kerliza Foon

Faculty Mentor: Lori Dassa

130. Exercise and Sport Motivation among College Students: Examining Background Characteristics and Factors Related to Academic Performance.

Emily Kramer, Jessica De Souza

Faculty Mentor: Frankie Laanan

131. Teacher Opinions and Perceptions of New Literacies Practices in Schools

Tiffany Manbodh

Faculty Mentor: Philomena Marinaccio

132. Analysis of Water Bubble Collisions Caused by a Heat Source

Jason Swinton

Faculty Mentor: Tsung Chow

133. Design and Synthesis of Novel 4-Aza-Podophyllotoxin Analogues with Modified E-ring to Enhance Tubulin-Binding Activity and Anticancer Properties

Aya Tal-mason

Faculty Mentor: Stéphane Roche

VA 1. Queer Images: Portraits

Charles Pratt

Faculty Mentor: Barclay Barrios

VA 2. Utilizing a Phenomenological Approach in Performance and Installation Art to Create a Social Consciousness of Disease Transmission

Sarah Rabinowitz

Faculty Mentor: Julie Ward

(alphabetical by students'
last name)

ABSTRACTS

Analyzing FAU Commuter Residential Locations by Observing Bus Routes

*Mohamed Abutineh, Clare Therese, Gabriela Aragundi, Carly Boltin, Chetan Yarlagadda, Eren Akgunduz
Tricia Meredith*

As with any other university, students at Florida Atlantic University commute from different parts of the region throughout the week to attend classes. To assess the population of commuters using public transportation at FAU, we observed activity at two bus stops and quantified the number of passengers departing the bus at each stop. The first bus stop was located directly outside the main administration building of FAU and the second at the intersection entering the main campus. Buses that dropped off students at these stops came from two bus routes: the Boca Tri-rail (94) and the West Boca Area (91). We found that more commuters arrived from along the Boca Tri-rail than from the surrounding area; thus, the general commuter population of FAU comes from areas other than Boca Raton. The significance of our collective research stands in ensuring the accessibility and efficiency of public transportation to FAU.

Effects of Emotion on Memory for Events

*James Adaryukov, Nicole McRostie,
Julie Earles, Kersten Alan*

This study examines age differences in memory for events that involve actions with a neutral or negative valence. Participants include fifty younger adults aged 18 – 40 and fifty older adults aged 60 – 95. All participants watched a series of events, each of which involved an actor performing an action. Half of the actions were neutral and half of the actions were negative. Participants were tested to see if they could remember the actors, the actions, and, most importantly, who performed which action. A measure of feature memory was created by subtracting the proportion of false alarms to new items from the proportion of correct responses to old items. We hypothesized that older adults would demonstrate an age-related associative deficit, that memory for negative actions would be better than memory for neutral actions, and that emotion would affect bind-

ing ability.

Does Age Affect the Way People Perceive Cancer?

Katie Ali, Megan O'Connor, Anna Riso
Monica Escaleras, Eric Levy

Although the United States seems to be progressing more than ever in both culture and science, more people are getting cancer than in prior history. Not only are there more cancer patients, but the majority of cancer patients in the U.S. rely on traditional treatments such as Chemotherapy and Radiation. In eastern societies, not only are there fewer cases overall, but they tend to rely on eastern medicine treatments such as herbs and different foods as treatment options. Even though billions of dollars are being raised to aid in cancer research in the U.S. alone, it is not often you hear about new advancements that change the landscape. This project explores people's attitudes towards cancer and its cure based on demographics such as age.

Song as an Aggressive Signal in the Bachman's Sparrow

Sabah Ali
Rindy Anderson

*Communication is central to the survival and reproductive success of all animals. In male-male competition, communication plays a key role in mediating aggressive interactions. In a field experiment, we studied how song functions to mediate male-male aggressive interactions in the Bachman's sparrow (*Peucaea aestivalis*). Territorial male Bachman's sparrows (BACS) sing three types of songs: 'primary song,' 'whisper song,' and 'excited song,' in response to a threat by a rival male. We simulated territorial intrusions by a male BACS and quantified subject males' vocal and behavioral responses with the aim of determining which vocal behaviors are reliable threat signals. Results indicate that the number of whisper songs given is the most reliable predictor of aggressiveness toward an intruder. Our results raise compelling questions about the evolution of threat signals, and contribute to a better understanding of the social behavior and communication system of this species.*

Neuroprotective Properties of Aaura and GCSF on Amyloid-Beta in Alzheimer's Disease

Ahmed Altamimi, Ashleigh Morrell
Jang-Yen Wu

Alzheimer's disease is a neurodegenerative condition that is currently afflicting more than five million Americans, and it is the 6th leading cause of death in the United States of America. It is projected to cost taxpayers one trillion dollars in health care expenses by 2050. The purpose of this research is to study the neuroprotective efficacy of Granulocyte Colony-Stimulating Factor (G-CSF) and Aaura on concentrations of amyloid beta in undifferentiated neurons (in-vitro). Currently, there are medications that provide a temporary relief of symptoms for patients suffering from Alzheimer's disease. Pharmacological interventions do not show increased neuroprotection for chronic symptomology management. If the numbers of normal cells increase when treated with G-CSF and Aaura despite the presence of amyloid beta, which is crucially involved in the pathophysiology of Alzheimer's disease, then this could potentially provide a treatment or cure for Alzheimer's disease.

Are Things Getting Better or Worse? A Race and Power Perspective on Police Brutality in America

Jeanelle Angus
Vaughn Crichlow

Historically, there have been factors that have led Western civilization and law enforcement to perceive African Americans as impure and uncivilized. As a result, minorities have been the main target of horrendous violent activities ever since the slave trade and the colonial conquest of the Americas. Policing and violence are only symptoms of this larger societal issue. This study incorporates a qualitative content analysis of cases that have been reported in the media between the year 2011 and 2016. This design is used to provide an insight regarding the research question and a contribution on how to solve these societal issues in order to create a better community. By incorporating critical race theory, this project concludes why there is a higher proportion of minorities being killed by police officers and will be able to provide a better understanding of racism and

discrimination in policing.

Testing Links Among Cognitive Performance, Stress Response, and Personality in Song Birds

Jennifer Applebaum

Rindy Anderson

*I am examining the relationships between cognitive performance, neophobia (a measure of animal "personality"), and stress responsiveness. Cognition, or the ability to acquire and use information from the environment, is key to adaptive behavioral decision-making. I measured neophobia for 16 captive song sparrows (*Melospiza melodia*) using a standard behavioral assay. I will compare neophobia to the cognitive performance scores and stress-elevated corticosterone levels (stress responsiveness) previously measured for these same birds. I hypothesize that stress responsiveness is linked to personality traits and to cognitive performance. I predict positive relationships between stress responsiveness and neophobia, and negative relationships between these traits and cognitive performance. This study aims to contribute to understanding the causes and consequences of behavioral flexibility, a trait that impacts survival and underlies response to environmental change.*

The Influence of Language Proficiency on the Appraisal of Valence of Verbal Content in Spanish-English Bilinguals

Vannia Arana, Caitlyn Montero, Idaly Velez-Uribe

Monica Rosselli, Idaly Velez-Uribe

Research on differences in perception of emotion words in bilinguals, suggests a processing discrepancy between their first (L1), and their second (L2) languages. The purpose of this study was to analyze the influence of Spanish-English bilinguals' proficiency on the differences on the appraisal of emotion word valence between languages. It was hypothesized that proficiency in L2 would be the highest contributing factor to the differential scores. Two variables (Spanish and English proficiency) were included as predictors in six regression models. Differential scores were obtained by subtracting English from Spanish scores in two sensory modalities (visual and

auditory), and in three valence categories (positive, negative and taboo). Proficiency in L1 and L2 were significant predictors for the differential scores for the visual and auditory positive categories. Proficiency in L2 was significant for the visual and auditory negative categories. The significant influence of proficiency in both languages is consistent with previous findings.

The Distribution of Butterfly Developmental Stages at FAU's Boca Raton Campus

Aaria Arancherry, Vassilios Georgakopoulos, Makayla Magielnicki, Renzo Rivera-Hurtado, Conor Coleman, Sorahya Eugene

Tricia Meredith

The population of pollinators, like bees, are risking extinction. Butterflies, another pollinator, could help to solve the issue of lack of pollination. Our study examined whether there is a correlation between plant species and butterfly or caterpillar numbers. Over a period of five weeks, twice/week for 1 hour in the morning, we took a census of caterpillar and butterfly populations in two habitats: the butterfly garden near Karen Slattery Educational Research Center for Childhood Development (ERCCD) and the field just adjacent to ERCCD. In the field, there was a mean of ten butterflies/day and a mean of 1.43 butterflies in the garden. There was a mean of 74.57 caterpillars in the garden/day and .29/day in the field. A T-Test revealed significant difference in caterpillar numbers in the garden each day. This research is intended to help further the research on pollinators in semi-urbanized habitats.

Branding and Advertising Strategy for FitBit Flex-2: Implications from Survey Research and Persuasion Theory

Andrea Ayala, Rubens Lacerda, Robinette Devin Allen Smith

A robust audience profile informs advertising campaign planning. The systematic research-in-progress will reveal a rigorous audience profile for FitBit-Flex 2, a wearable fitness tracking technology, through secondary research using credible business databases, the survey research method (e.g., con-

sent form, questionnaire pre-test, convenience sampling, personal distribution and pick-up), descriptive statistics, and reliability assessment. The audience profile will inform the campaign problem, campaign objectives, and message strategy by revealing brand concept elements and message tactics to convey. Secondary research using FAU Library's business databases has revealed marketplace, environmental, competitive conditions, and the audience's demographic, geographic, generational, and psychographic characteristics. This basic profile will be enriched by survey research using items extracted from reliable and valid marketing scales. Motives, benefits, product perceptions and preferences, relative performance, lifestyle relevance, hedonistic pleasure, and decision making strategies will be subjected to measurement. Advertisements will be based on the audience profile, persuasion theory, and creative thinking techniques.

Living Shorelines: Building Resiliency and Sustainability in the Florida Keys

Connor Bailey

Diana Mitsova-Boneva

The Florida Keys are predominantly vulnerable to the impacts of climate change as a result of its unique geographic context; climate change impacts such as sea-level rise, storm surge and increased storm intensity, and coastal erosion have the ability to greatly affect the this chain of islands. To mitigate climate change effects on environmental resources and island communities in the Florida Keys, the research aims to identify the proper placement of nature-based shoreline stabilization options within the Florida Keys based on existing shoreline type and exposure. The use of Geographic Information Systems (GIS) technology will calculate and determine the appropriate location of harder, softer, or the hybrid of the two features along the shorelines of the Florida Keys.

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

Danielle Bartz

W. R. Brooks, Chelsea Bennice

Niche partitioning mechanisms may be used by closely related, sympatric species to reduce competition. We examine two dimensions of niche partitioning (diet and temporal) amongst the common octopus (*Octopus vulgaris*) and the Atlantic longarm octopus (*Macrotritopus defilippi*), which spatially overlap in a South Florida intracoastal habitat. SCUBA is used to collect octopus prey remains and gather supplemental feeding images to determine diets of each species. A 24h octopus monitoring camera records foraging activity times for each species. The common octopus consumes bivalves (49%), gastropods (32%) and crustaceans (19%), and forages at dawn, dusk, and nocturnal hours. The Atlantic longarm octopus consumes crustaceans (89%) and bivalves (11%), and forages during diurnal hours. Results suggest there is diet overlap between species and octopuses use temporal partitioning. This study provides additional findings to cephalopod niche partitioning literature, novel information on the ecology of the Atlantic longarm octopus, and conservation requirements for sand-dwelling species.

Developing an Image Recognition and Motor Control Algorithm for Controlling Invasive Red Lionfish in South Florida.

Alexis Base

Fraser Dalgleish, Ajemian Matt

The Red Lionfish (*Pterois volitans*) has overwhelmed South Florida's coastal waters and needs to be eradicated before consuming unsustainable amounts of native fish. Currently, Lionfish reach densities of 200 adults per acre which consume more than 460,000 native fish a year. The proposed idea is to develop an autonomous underwater vehicle (AUV) with an on-board camera image recognition system to locate Lionfish. The Red Lionfish is a very unique species considering its color and shape and tolerances. Stereo image recognition software allows the AUV to run in accordance to its surroundings without

needing outside processing directives via tether and joysticks. This project's focus is developing an image detection algorithm and the electronics system for a base frame AUV developed by Blue Robotics. This year the researcher refined the algorithm from last year to work with the stereo camera on board an AUV while developing a fully working prototype.

Parental Ratification: The Roles of Our State “Parents”

*Giovanna Basilio
Lincoln Sloas*

This study examines the impact of the parties involved in dependency proceedings under the jurisdiction of South Palm Beach County's Juvenile Court. I present data collected from observations of over thirty hours at dependency hearings and interviews of representatives for the Florida Department of Children and Families (DCF), Guardian ad Litem (GAL) attorneys, and the Juvenile Judge. The current study analyzes the foregoing participants and their roles within reunification, termination of parental rights, and adoption. Additionally, criminal records, mental health status, incidents of domestic violence, and accounts of substance abuse, pertaining to the parents in Florida dependency cases, are discussed.

The Different Perceptions of Future Economic Conditions Amongst Millennials and Baby Boomers

*Onur Basman
Monica Escaleras, Eric Levy*

The population of Millennials will surpass the populations of both Generation X and Baby Boomers, reaching 81.1 million in 2036. The difference in the perceptions of the American economy by Millennials and Baby Boomers will affect how likely they are to engage in future market activity. The purpose of this research is to test whether there is a statistically significant difference in the perception of the economy between these two generations. To test this theory, I conducted research of 131 Americans using online surveys and found that Millennials are more optimistic about the economy when compared to Baby Boomers. Marketing departments of companies that wish to target different age groups could consider

my conclusion adjusting their marketing strategies according to the economic hopefulness of the various generations.

Gender and Talking in Therapy

*Erin Beattie, Kaleigh Dietz
Paul Peluso*

The therapeutic relationship has been studied for many years. The therapeutic relationship can be defined as the alliance between a professional healthcare worker, such as a therapist, and client. These relationships seek to influence beneficial changes in the client through therapy sessions. In an effort to look at effective modes of interacting, we studied how the amount of time talking in a single session would affect the relationship and the number of times a client returned to the same therapist. We coded thirty-six videos from the Counseling and Psychological Services Center on FAU's Boca Raton campus for our data. Our videos consisted of eight videos in each category: male-to-male, male-to-female, female-to-male, and female-to-female therapist and client subjects. We used a coding mechanism called “Who Is Talking” where each time a client, therapist, both, or no one was talking, we implemented a specific code.

Memory for License Plates

*Joanna Beazley
Julie Earles*

The purpose of this study is to determine which United States license plate(s) are best designed for recall. Based on what we know of human memory in terms of numbers, letters, and their combinations, this study aims to identify the “ideal” license plate for citizens to remember. This study's results will be applicable in criminal cases, as well as in identifying vehicles involved in AMBER Alerts and Silver Alerts. There are many studies that have examined eyewitness memory for crimes in younger adults and older adults. In this study, we will examine the effects of age on memory for license plates. We want to determine which license plates are better remembered by younger and older adults. We hypothesize that the organization of letters and numbers on the license

plate will have a larger effect on older adults than on younger adults because older adults need more memory support.

The Effects of Methionine Sulfoxide Reductase (Msr) Deficiency During Anoxia in *Drosophila melanogaster*

Victoria Beck
David Binninger

*Methionine sulfoxide reductases (Msr) are a family of enzymes that repair oxidative damage to the amino acid methionine. Preliminary results indicate Msr-deficient *Drosophila* exhibit sensitivity to anoxia and reduced ability to survive anoxic stress. This is an age-dependent effect that increases anoxia sensitivity as the animal approaches senescence. *Drosophila* can tolerate anoxia using a mechanism called spreading depression to down-regulate their metabolism. This study examines *Drosophila* survival following anoxia and explores the underlying molecular basis. The level of protein oxidation is measured immediately after anoxia and after recovery using Msr-deficient and wild-type *Drosophila* at different ages. Percent recovery from post-anoxia *Drosophila* at senescence for Msr-deficient is 60% and wild-type is 90%. This further supports the age-dependent decrease of survival in Msr-deficiency. Studying Msr under anoxic conditions will give insight into the role of oxidative damage during re-introduction of oxygen, providing potential treatment approaches for these cases.*

Conservation Behavior Intervention

Caitlin Benedict
Julie Earles

Environmental destruction is a major issue in today's world. Scientists and park rangers alike are desperately trying to find a way to change people's habits to better the planet. This thesis project examines the conservation practices of the students at FAU's Honors College. In addition to the requirement of students taking an environmental class to satisfy their core requirement, students and professors alike encourage environmentally-friendly practices. In this analysis, I look at conservation behavior, envi-

ronmental attitudes, and perceptions of personal responsibility and self-efficacy. In a cross-sectional study, I compare incoming students with graduating students to see if the Honors College, as a small, community-based college, acts as an intervention itself and influences student's world views. I expect that students who have been at the Honors College longer are more likely to engage in conservation behaviors.

Mapping Historic Structures Using UAV Technology

Jason Blankenship, Paulo Fernandez
Hongbo Su

This study is intended to find an accurate and cost effective solution to document large historical architectural infrastructures. We selected the Jupiter Inlet Lighthouse, situated in Jupiter, Florida as our subject. The Jupiter Lighthouse is approximately 105 feet in height and characteristics of the site provided a great opportunity for research. One of the new technologies in solving this problem is the use of Unmanned Aerial Vehicles (UAV) to collect aerial data of locations with limited or no access. This technology has an amazing potential in facilitating the collection of data in these areas because it is fast and affordable. With this research, we compared the data collected by the UAV with data collected by a Terrestrial Laser Scanning (TLS) so we can determine the accuracy of the UAV. Our findings support the use of UAVs in documenting historical architectural structures to be a cost-effective method.

Recognizing Functional Decline in Persons with Mild Cognitive Impairment

Dana-Lee Bowes
Monica Rosselli

Alzheimer's disease (AD) is a progressive brain disorder that destroys an individual's memory, which leads to difficulty performing simple tasks. This exponential growth of diagnosis of Alzheimer's Disease serves as an epidemic that affects individuals from a range of demographic backgrounds. However, there is not a cure for Alzheimer's Disease, but early detection may improve an individual's quality of life with continual access to medical care. The global

deterioration scale is an assessment of cognitive decline based on testing an individual's concentration, recent memory, past memory, orientation and functioning/self-care. There are seven different levels of cognitive decline, which determines if an individual does not detect any signs of cognitive impairment or potentially having severe dementia. According to the scale, level three is mild cognitive impairment, which is the earliest detection of memory deficits.

Adulthood in the 21st Century: Factors that Affect the Transition to Adulthood

Caralin Branscum, Deborah Ford, Ashley Ostroy
Ann Branaman

In recent decades, increased participation in post-secondary education has postponed the time when people enter the workforce, thus delaying the transition into adulthood. As a result, there is an increased level of ambiguity in youth's self-perceptions of adulthood. Not all individuals consider themselves adults at 18 years old, the legal age of adulthood. This research explores the transition to adulthood and specifically analyzes the differences in how working/lower-middle class youth and middle/upper-middle class youth identify as adults. A group of four researchers conducted semi-structured interviews with 100 young adults between the ages of 18-29 at a public research university in South Florida. Interviews took place over a one-year period, from July 2015 to August 2016. Based on preliminary findings, we predict that self-perception of adulthood will manifest itself differently for people of different social classes due to parental and class-based resources.

Identification of Economic Damage in Four South Florida Counties Due to Hurricane Andrew

David Brodylo
Tobin Hindle

Hurricane Andrew was one of the most destructive hurricanes to ever hit Florida when it made landfall on August 24th, 1992 near the city of Homestead. The hurricane moved across South Florida in about four hours, yet it left behind a track of immense devastation. This study will delve into the amount of economic damage that occurred in South Flor-

ida, specifically within the four counties that were directly impacted by Hurricane Andrew: Broward, Collier, Miami-Dade, and Monroe. Much of the data will focus on the residential, commercial, and agricultural sectors that were impacted in those counties, with special attention being paid to the areas that were the hardest hit and experienced the greatest tragedy. It is hoped that this study can give a glimpse of the destruction caused by the almost 25-year-old hurricane, and remind us that it has the possibility of happening again.

A Brief Overview of the Laws Governing Fetal Rights in the State of Florida

Renzo Broggi
Cheryl Arflin

In the State of Florida, there is a distinction present in the laws governing fetal rights and abortion rights. In this paper, the various definitions of the stages of human development in the State of Florida will be laid out: from the conception of the zygote until the formation of the fetus. The laws regulating the right of abortion and the laws regulating fetal rights in the State of Florida will then be compared to note the differences in how they have been formulated and administered. Afterwards, the application of these laws will be analyzed in order to understand the differences present.

Comparison of the Oral Microbiomes in US and Nigerian Populations: Implications for Probiotic and Diagnostic Applications

Marissa Burns, Veronica Molina, Ramirez Roberto
Nwadiuto Esiobu

This study analyzed metagenomic sequences of oral wash samples from healthy subjects from the US and Nigeria to gain a deeper insight into what constitutes the core microbiome and the factors that impact its structure. Overall the diversity of microbes were similar. However, the relative composition of the various taxa varied remarkably. Whereas the Nigerian population contained higher levels of Pasteurellales, Fusobacteriales, and Neisseriales, the US population showed higher levels of Lactobacillales, Bacillales, and Flavobacteriales. Despite this, the data showed

a possible core microbiome within a set of bacteria including members of the phylums Firmicutes, Spirochaetaes, Actinobacteria being at almost the same level in each of the populations. Taken together, it can be deduced that there's a core human oral microbiome and a more transient population that's influenced by culture and location. This information could pave the way for future probiotic and diagnostic tools to create a healthier oral microbiome.

Taking a Physical Activity Break After a Lesson and Before a Summative Assessment can Increase Students' Academic Scores and Decrease Their Test Anxiety

*Christiania Burton
Lori Dassa*

The purpose of the project was to see if giving students a structured physical activity break after a lesson and before the intended summative assessment would increase their scores academically and/or decrease their test anxiety. The idea was acquired from spending over 1,000 hours in elementary school classrooms ranging from kindergarten to fifth grade. It was observed that after a 30-minute math lesson, the students were expected to take an assessment based on the content of the lesson. It seemed as if students were having a difficult time focusing on the test and were getting wiggly in their seats. The students seemed nervous to take a test directly after instruction and some of the scores were not as high as intended. This was the basis behind conducting this research. There had to be a solution to this problem and the researcher was determined to find one.

Optogenetic Control of Grooming in Drosophila

*Eamonn Byrnes, Lanikea King
Ken Dawson-Scully, Seth Tomchik*

Neurofibromatosis is an inherited neurodevelopmental disorder caused by mutations in the tumor suppressor gene Nf1. Symptoms include nerve tumors, learning impairment, and ADHD. The cognitive effects of Neurofibromatosis were studied through using grooming as a behavioral phenotype of Nf1 mutations. Previous studies have shown Nf1 mutations increase grooming 7x. If Nf1 mutant flies

are optogenetically stimulated, will grooming levels increase? The light sensitive protein CsChrimson was used, so when light hit the organism, its motor neurons were stimulated and the fly would groom. The Drosophila were placed in a chamber, stimulated with red light, and a camera recorded each grooming event. Grooming levels observed between the control and NF1 mutant flies were compared. Overall grooming levels increased as expected. Although in previous studies Nf1 mutations caused increased grooming, when both NF1 and wild type Drosophila were stimulated, increased comparative levels of grooming in NF1 type flies were not achieved.

Are Americans Saving Enough for Retirement?

*Lucas Cantwell
Monica Escaleras, Eric Levy*

The economic future of our country is uncertain after the most recent presidential election, and many people are wondering if they will have enough money to retire. There are lots of people, even proficient economists who were stunned by the economy's positive trend over the past few months. While there is a strong growth in our country's economy, there is no clear way to see what the future has in store. The purpose of my research is to see how people are preparing financially towards their future. My goal is to see if people started saving for retirement, and how worried they are about the future. I am interested to see how much people saved so far. What I found is that many people did start to put money away for retirement, but they are worried about the future regardless of how much they have saved so far.

American Personal Safety & Terrorism

*Esteban Cardenas
Monica Escaleras, Eric Levy*

Since September 11th 2001, terrorism in the U.S. has been under more scrutiny than ever before. With the increased number of terrorist attacks around the world and the high demand for personal safety it is interesting to analyze how the public's attitudes towards safety and potential terrorist attacks in the U.S. are divided. It becomes compelling to study how

gender and income roles cause differences in beliefs with regards to personal safety and the likelihood of a terrorist attack. The purpose of this research is to highlight the differences caused by gender and income. In order to test this theory, I conducted an online survey of people residing in the U.S. After analyzing the data it is clear that there are discrepancies between gender and income when it relates to attitudes toward safety from potential terrorist attacks and privacy.

Comparing Techniques Used to Determine Biodiversity on the Prop Roots of Rhizophora Mangle

Andrea Carmona

C. Edward Proffitt, Jessene Aquino-Thomas

Harbor Branch's brackish coast can be used as the archetypal estuary for the Indian River Lagoon System, visual surveys can be used to identify species and determine biodiversity, specifically on the prop roots of mangrove trees. Using a Gopro camera videos of specific prop roots on the trees are taken, from the videos, stills of the root are isolated and overlapped using Quick software to create an image of the whole prop root. The picture can then be used to determine the biodiversity and abundance of species located on the prop root. Previously, the species residing on the prop root were counted and measured capping at 30. The Gopro camera and software allows us to maintain a pre-specified distance by attaching the camera to a mount creating a cleaner more continuous shot of the prop root, giving us a more realistic look at the biodiversity on the root.

Advertising Research, Persuasion Theory, and Competitive Strategy: The Role of Brand Association Using Life-Style Relevance

*Monique Casanova, Maria Barni, Marcio Do Nascimento, Viviana Moreno
Allen Smith*

As rivalry increases, marketers rely on advertising to solidify competitive positions. Our research-in-progress identifies the creative concept promising to maintain the position of Starbucks® Bottled Coffee Frappuccino® against the Coca-Cola/Dunkin' Do-

nuts alliance introducing a direct competitor. The systematic research project integrated secondary research from credible sources, focus groups, survey research, and descriptive statistics. Phase I revealed lifestyle relevance as the dominant selling message. Phase II integrates survey findings with persuasion theory and uses a basic experiment (i.e. control and three treatment groups) to identify the creative concept most likely to associate the brand with lifestyle relevance. Creative thinking techniques (e.g., fused metaphors, resonance, familiar/strange, reversals) will be used to generate the three creative concepts to serve as the independent variables. Lifestyle relevance, the dependent variable, will be operationalized by: 1) reflects lifestyle, 2) practical lifestyle contribution, and 3) lifestyle enjoyment. Consent forms and APA format adhered to ethical research standards.

Cytotoxic Effects of THP-1 Derived Macrophages Activated by Imiquimod on T47D Breast Cancer Cells

*Sean Casey, Yevgenia Permanova, Alberto Padilla, Genevieve Liddle
James Hartmann*

Macrophages have been shown to have cytotoxic ability against many cancers. In this study, we will differentiate THP-1 acute monocytic leukemia cell line with vitamin D analogs and the active form vitamin D3 (1-alpha, 25-dihydroxy-vitaminD3) into macrophage like cells. Once differentiated, macrophages can be polarized to a specific phenotype which will allow them the capability of secreting potentially tumoricidal cytokines, such as Tumor Necrosis Factor alpha (TNF-alpha). TNF-alpha is characteristic of a M1 phenotype macrophage and will allow it to have the ability to be tumoricidal toward cancer cells. This phenotype, along with tumoricidal cytokines, have shown to be successful in killing cancer in combination with LPS and possibly CPG and Imiquimod, which are associated with toll-like receptors 4,8, and 9 respectively. Once the M1 macrophage has been achieved, we will test the tumoricidal effects by co-cultivation with T47D breast cancer cells.

Initial Synthesis of Nucleic Acid-Like Polymers from Diethyltin Dichloride and Thymidine, the Pyrimidine Nucleoside, from Commercially Prepared Thymidine

Loretta Chen, Jessica Frank
Charles Carraher

Synthesis of nucleic acid-like polymers from diethyltin dichloride and the pyrimidine nucleoside, thymidine, from commercially prepared 2'-Thymidine. In conformity with Pearson's hard-soft acid-base theory, the initial synthesis of nucleic acid-like polymers was performed via simple Lewis acid-base reaction, with tin as the hard acid, and the pyrimidine nucleoside, thymidine, as the hard base. Structural characterization utilizing Infrared Spectroscopy are consistent with and follow typical trends of infrared bands obtained with the organotin nucleic acid-like polymers. As the alkyl group size increased, the chain length of the polymer tended to increase. With the number of repeat units spanning from 388 to 585. Preliminary screenings for anti-cancer biological activity were obtained, and indicate sufficient inhibition in various cancer cell lines in the nanogram/mL range.

For the Love of the Tea

Kassi Coviello, Brian Sapp
Monica Escaleras, Eric Levy

Professional sports is a large industry that reaches millions of Americans today. Those Americans are called fans- the ones that support the teams, fill the seats, and cheer them on from home. Occasionally these professional sports teams decide to relocate to another city, state, etc. Relocation has become increasingly prevalent in the past few seasons. This puts the dedicated fans in a difficult situation in which they can remain loyal to the city or the specific team itself. In order to analyze how someone would react to their favorite professional sports team being relocated, we developed a survey to addresses the underlying question of would your favorite team remain your favorite team even if they relocated. Our results found that the decision to remain a fan or switch to another team depends on gender and the level of education.

How Does Education Affect the View of Legislating Marijuana Usage?

Garrett Cox, Benjamin Henry
Monica Escaleras, Eric Levy

Recently, multiple states across the country have passed laws permitting the use of medical marijuana, with eight legalizing the substance altogether. The discussion of Marijuana has gained traction regarding legalization and usage with the appointment of Attorney General Jeff Sessions, who has a zero tolerance stance on legalization altogether. Sessions, who believes in federal regulation of the substance, raises the question of federal versus state legislation regarding marijuana. The purpose of our study is to examine education levels and their connection, if any, to views on legislation regarding marijuana. To test this we surveyed 200 people on a national scale, asking specific questions regarding legislation views and education levels. What we found is that their relationship is statistically significant. This shows that people with higher education levels tend to view laws regarding marijuana as a state decision as opposed to lower education levels siding with federal regulation.

A Microfluidic for Measurements of Evaporation Rate at Different Salinities

Heather Crawford, Christian Asfour, Seokju Seo
Myeonsub Kim

Geologic storage of carbon dioxide (CO₂) into deep saline aquifers is a promising strategy for mitigation of global atmospheric CO₂ levels-a main cause of climate change. These aquifers have the capacity to safely store significant amounts of CO₂ and are available worldwide. As such, reaction dynamics and multiphase transport accompanying CO₂ injection in deep aquifers are important to understanding CO₂ sequestration processes and therefore they have been extensively studied. Despite the comprehensive findings, there are still urgent needs for understanding of interactions between injected CO₂ and resident fluids since these interactions could determine the total CO₂ storage rate and capacity. The objective of this study is to investigate fundamental physics of water evaporation at different salinities

under the CO₂-rich environment. Microfluidic techniques visualize and quantify evaporation behavior of water in real-time in a simple 1D microchannel geometry. The detailed CO₂-water interactions and underlying physics will be discussed.

Incentivized Reviews: An Investigation of Online Consumer Review Bias

Jesse Darrow
Kanybek Nur-tegin

Online reviews play an important role in contemporary society, having been used to predict market trends and influence industry changes. In addition, many consumers depend on online reviews when deciding which products to buy. Recently, a large group of online vendors have started incentivizing shoppers by providing product discounts in exchange for reviews. Some researchers believe that reviewers who are compensated for writing reviews will publish higher-than-average reviews, which may diminish the overall usefulness of online reviews as genuine predictors of product quality and purchaser satisfaction. First, this paper establishes a method for differentiating and isolating incentivized reviews. Then, this paper analyzes incentivized reviews to determine if they are in fact inflated, compared to nonincentivized reviews. Finally, several methods are proposed for combating incentivized review bias in order to preserve the usefulness of online reviews as a predictive tool.

Frequency of “Thank You’s” Differs Between Age and Gender Groups

Janet Davis, Bryan Bellinetti, Jian-Li Chin, Yeranis Corrales, Lauren Festa, Nicholas Pizzo
Tricia Meredith

Everyday manners and gestures play important roles in a society. The purpose of this study was to observe whether politeness has a different expression in varying age groups and genders. In order to conduct the study, we observed children and adults at three locations on the Florida Atlantic University campus: at the Administration building, Karen Slattery Child Development Center, and at A.D Henderson University School. Twice per week during

October to December, we observed the number of people that verbally said “thank you” to people who held the door open for them. We compared age and gender and found differences; people in the age group of 15 years or older and females said thank you more often than individuals 15 years or younger and males. Our results indicate that manners are most commonly used by females age 15 and above as they mature, exhibiting an understanding of etiquette usage.

Identification of Fauna Associated with Gopher Tortoise Burrows at Florida Atlantic University Preserve and Jonathan Dickinson State Park

Laura De Souza
Evelyn Frazier

Gopherus polyphemus is a burrowing chelonian endemic to the SE United States. This tortoise is classified as threatened throughout its range due to habitat destruction and consequent fragmentation. Gopher tortoises are considered a keystone species due to their extensive burrows which provide shelter to 300+ commensals. We hypothesize that faunal species will utilize G.polyphemus burrows differently between two sites differing in size and vegetation cover. The two sites are Florida Atlantic University Preserve (FAUP) and Jonathan Dickinson State Park (JDSP). We randomly set up 20 cameras at FAUP (10 scrub, 10 grassy fields), and 10 in JDSP scrub to identify fauna at each location. We observed 26 different species in total at FAU. 16 species were identified in the grassy areas and 23 species in the scrub. At JDSP, we observed 13 different species in total. There were eight mammals, two avian, one reptilian, and one amphibian observed at JDSP.

Flow through Elasmobranch Olfactory Organ

Ayse Demircan
Tricia Meredith, Marianne Porter

Elasmobranchs (sharks, skates, and rays) are known to possess highly acute olfactory sensitivities, with large variation in the olfactory organ morphology among species. Multiple studies have investigated the mechanism of olfaction; however, none have determined the reason behind the observed diversi-

ty. This study examines the effects of morphological variation in the olfactory rosette by quantifying the morphological variation present in elasmobranch olfactory rosettes, creating a physical model of the olfactory rosette, and testing how variations in the model impact flow of water through the organ. Preliminary results show hammerhead sharks possess significantly larger rosette length to width ratios compared to other species. As we continue with this project, we expect that different model organs will exhibit different water flow patterns. Our results will provide insight how morphological variation inside elasmobranch noses affects their sense of smell.

Single Nucleotide Polymorphism Mapping of Novel Genes Involved in *C. Elegans* Dopamine Signaling

Divyesh Doddapaneni

Randy Blakely, Osama Refai

Dopamine (DA) is a neurotransmitter that regulates many aspects of human behavior including motor function and memory. The DA transporter (DAT) protein is critical for clearing DA after release, thereby limiting the molecule's actions in space and time. Mutations in DAT and alteration of DA levels have been implicated in neurological disorders like schizophrenia and Parkinson's disease. Our lab uses the *C. elegans* model to identify novel genes involved in DA signaling. Using a forward genetic screen for animals that display Swimming-induced paralysis (Swip), a phenotype seen in animals with loss of function DAT-1 mutations, we have identified multiple lines bearing either novel DAT-1 alleles or changes in novel genes. Here, we describe our efforts to identify the molecular basis of two of these Swip mutants, *swip-20* and *swip-25*, using single nucleotide polymorphism mapping. Our preliminary results show that *swip-20* maps to chromosome I, and *swip-25* maps to chromosome III.

The Mixing and Dynamics of Two Phase Flow in a Circular Hydraulic Jump

Adam Dubin, Marc Carlo, Alexander Gonzalez
Tsung-Chow Su

This experiment was conducted to study the phenomenon which occurs when water flows onto a flat

surface in a steady stream called Circular Hydraulic Jump. In particular, the study was focused on what occurs when a less viscous and heavier liquid is being poured onto a more viscous and lighter fluid in this case water onto vegetable oil. The experiment was set up using a disk of acrylic with a shallow lip around its edge to hold the oil in place, a pump was then used to ensure a steady flow of water onto oil. In preliminary implementations it was found that the water often pushed the oil out of the way before overflowing the lip and disrupting the circle that was being formed. The dynamics and mixing was investigated with time sequential photography.

Using Next Generation Sequencing to Investigate the Relationship Between the Rhizobiome of Citrus Trees and the Devastating Citrus Greening Disease

David Dunleavy, Omar Chahine, Harrison Smith,
Faiza Naeem, Zachary Hill
Nwadiuto Esiobu, Karim Dawkins

Citrus greening, spread by the Asian citrus psyllid, was introduced to Florida in 2005 and is caused by the bacteria *Liberibacter asiaticus*. The 10.5 billion-dollar industry in Florida is being threatened by this disease. There are no resistant clones to date and the bacterium has not been cultured. Understanding the citrus microbiome and its role in immunity / resistance could help solve the problem. Metagenomic DNA from the rhizosphere of infected and uninfected Valencia oranges, *Citrus sinensis*, and Duncan grapefruit, *Citrus x paradise* were extracted using the Mo Bio Soil kit. Next generation sequencing is currently on-going. Analysis of the rhizobiome sequences will provide insight to the specific role microbes play in the development of this disease. A full metagenomics analysis of this region through various stages of the disease will allow for a better understanding in the development of bio-inoculants specific to the crop in treatment for citrus greening.

Form-Finding Strategies through Elastic Grids

Taylor Eccher, Stefani Spence
Emmanouil Vermisso

"Emergence" and "Self-Organization" (common survival strategies in Biology, i.e. slime mold behav-

ior: <http://www.scientificamerican.com/article/brainless-slime-molds/>) are evaluated as drivers towards developing design methodologies which negate preconceived protocols for decision making. Our intent is examining “Emergence” as a vessel for relating design thinking in architecture to “form-active systems”. We propose an investigation of the concept of “elastic grids” through a form-finding process using elastic fabric systems. This system highlights the emergent properties of fabrics and the ability to derive form from simple parameters. The introduction of live agents (silkworm “Bombyx Mori”) enhances analogue testing by translating form-finding into a complex procedure with a “bottom-up” rationale. Analogue and Live-Agent testing modes are reinforced by digital modeling and parametric software simulation; this may further our research hypothesis towards identifying how form-finding techniques may influence building materials and optimize performance based on feedback from both “built product” and “context”.

Effect of PAK6 Gene Knockout on Prostate Cancer Cell Stiffness

Nikolas Echeverry, Belinda Gerard
Ewa Wojcikiewicz

PAK6, a known mediator of cytoskeleton rearrangement, is being investigated for its ability to regulate the stiffness of prostate cancer cells. Cell stiffness is a powerful indicator of metastatic potential. Cancer cells, which are more elastic, are able to more easily metastasize. PAK6, part of the phosphorylation cascade involved in the deactivation of the actin-binding protein cofilin, decreases cell stiffness. Using atomic force microscopy, the stiffness of DU145 prostate cancer cells and D19 PAK6 knockout prostate cancer cells was measured. The PAK6 knockout cells were found to be much less elastic than the DU145 cells with a measured cell stiffness of 2580.27 pascals and 1815 pascals, respectively. Targeting PAK6, a gene responsible for regulating cell stiffness, and understanding its influence on metastatic potential is essential for the development of novel prostate cancer treatments.

Social Network Simulation

Omar Eldaghar
Erik Lundberg

In today’s highly digitalized world, data collection has become increasingly common. However, some data collection can be impractical or infeasible due to the nature of the type of data being collected. To combat this, we propose a new algorithm for simulating interaction networks that captures community structure is proposed along with its inherent strengths and weaknesses. Our model makes use of several previous models including the BTER and GBTER model. This simulation helps to alleviate the problem of data collection and allows for metrics to be computed on the simulated network which reflects the desired network. Our model overcomes the previous limitations of capturing community structure while also modeling clustering coefficient and degree distribution.

Delay on Traffic caused by Distracted Drivers at FAU Intersections

Laura Eugene, Aniela Edwards, Manal Imran, Anastasija Bulatovic, Benjamin Kramer, Christopher Feijoo
Tricia Meredith

Research finds the use of cell phones prevents drivers from perceiving traffic signs, causing delays in traffic. However, the exact delay time in relation to the effect it has in our college campus has not been addressed. In our study, we observed drivers at two different intersections at the FAU Boca campus and recorded the delay times of the first car in each lane in addition to categorizing which drivers were visibly distracted and how. Our results suggest that those who weren’t distracted had lower delay times than those who were; and while half of the drivers were not distracted, phone usage was the most common distraction and resulted in the highest delay time. The results of this observational study can be utilized to educate students at the FAU college campus about road safety and distractions, which could aid in less traffic and safer roads.

Synthesis of Organotin Polyamine Esters from Reaction of Organotin Dichlorides and 4-Aminobenzoic Acid (PABA)

Natalie Ezzell, Elohise St.Fort, Michael Rone
Charles Carraher

The synthesis and initial structural characterization of polyamine esters was achieved through the interfacial polycondensation of organotin dihalides and 4-aminobenzoic acid (PABA). Percentage yield generally increases as the organotin alkyl group increases in size when the organic liquid is heptane but decreases when the organic phase is carbon tetrachloride. Infrared spectroscopy shows bands characteristic of SnO and SnN bond formation. Bands characteristic of formation of the Sn-O-(C=O) unit are consistent with the product being largely of the non-bridged form with a non-symmetrical repeat unit prevalent, R-(C=O)Sn-N-R. Conceptually, the reaction is a simple Lewis acid, the organotin dichloride, Lewis base, and PABA reacting forming polyethers.

Are Americans Financially Literate?

William Fetzer, Jennifer Armatrading
Monica Escaleras, Eric Levy

Financial literacy is the backbone of the American financial system. As cash begins to be used less, credit is playing a larger role in our day to day activities such as purchasing a home, car, or online shopping. This change can create trouble for those who do not have knowledge about their credit and finances. To understand the financial education of Americans, we developed an online survey about financial literacy and collected responses from over 200 people. Our findings show that there is a statistically significant difference of financial literacy based on factors such as income level and age group.

Role of Megalin Protein Transport System in Maternal-Fetal Interactions during Placental Malaria

Guerlande Fontus
Andrew Oleinikov, Olga Chesnokov

Placental or pregnancy malaria is associated with low birth weight contributing to the death of about 150,000 children and 10,000 women per year around

the world. Unfortunately, the molecular mechanisms as to how placental malaria affects fetal development are not well understood. During pregnancy, the megalin protein is highly expressed in the syncytiotrophoblasts of placenta. Megalin, along with its intracellular adaptor protein Dab2, aids in the transport of nutrients from the mother to the fetus. Our hypothesis states that parasites will disturb the function, expression and/or distribution of megalin and Dab2 in the brush border of syncytiotrophoblasts, leading to low birth weight in newborns. We conducted blind studies on the placentas of women from Papua New Guinea with/without malaria. We found that the megalin and Dab 2 protein expression is reduced in the brush border of placentas infected with malaria compared to placentas that are not infected.

Increasing Academic Levels through Student Generated Questions

Kerliza Foon
Lori Dassa, Patricia Kirsch

Testing has become a part of mainstream society. It is mainly used to determine how students perform in school and to assess how much they have learned. The stress of achieving high marks to move on to the next grade and attaining the A have also become synonymous with testing. To take away the stress attached to testing, students developed autonomy of learning by creating their own test questions that could be applied to any content. In this study, students created test questions for their English Language Arts class and took ownership of their learning. By creating the questions, the students also learned how their answer should be constructed to give them that desired A.

Initial Synthesis, Characterization, and Preliminary Cancer Cell Line Results for Polymers Derived from Reaction of Zirconocene Dichloride and the Thymidine Nucleoside

Jessica Frank
Charles Carraher, Michael Roner

The initial synthesis of nucleic acid-like polymers from zirconocene dichloride and the nucleoside

thymidine using commercially available reagents is described. Synthesis was carried out using simple Lewis acid-base reactions in accordance with hard-soft acid base theory, with zirconium as a hard acid and thymidine as a hard base. A molecular weight of 120,000 was determined employing light scattering photometry corresponding to a chain length (number of repeat units) of 260. Preliminary screening for anticancer biological activity indicates satisfactory inhibition of a variety of cancer cell lines including PANC-1 and AsPC-1, two pancreatic cancer cell lines. Preliminary data obtained for pharmacodynamic properties on tested cancer cell lines suggests that inhibition of a variety of cancer cell lines (including pancreatic cancer cell lines) displayed favorable inhibition at concentrations in the nanogram/mL range.

Drug Discovery in Class: In Silico Design of PCSK9 Inhibitors as Potential Cholesterol Lowering Drugs

Jessica Frank, Elyse Jutte, Jesse Meacham
Maciej Stawikowski

Proprotein convertase subtilisin/kexin type 9 (PCSK9) is a serine protease which plays a significant role in homeostatic regulation of plasma cholesterol. The primary focus of this project was to design a novel PCSK9 inhibitor analog based on endogenous serine protease inhibitor scaffolds. The engineering PCSK9 inhibitor analogs aim to have the improved binding affinity, stability, functionality, and synthetic feasibility. The technical, critical, and analytical skills acquired in structural biochemistry course (CHM 4350), in conjunction with bioinformatics, computer simulations and in silico mutagenesis were employed for this drug design process. Computer guided inhibitor design was also supported by employing 3D printing technology.

Hematology and URTD Status of Gopher Tortoises in the Abacoa Greenway

Lauren Fremont, Jon Moore, Adam Schaefer,
Kayla Villanueva
Jon Moore, Bhagyashree Kundalkar

Upper respiratory tract disease (URTD) is an illness present in gopher tortoises that can cause a vari-

ety of symptoms. A population of gopher tortoises in Range Via of the Abacoa Greenway in Jupiter, Florida, have been tracked for URTD for the last twelve years. For the most part, only adults have been tested, and we have had individuals that have tested seropositive, seronegative, and/or suspect. A blood protein electrophoresis test and a hematology test has also been conducted on the blood samples taken for URTD testing. Our goal was to look at the protein and hematology data in correlation with the URTD test result to find any trends. Results are presented here.

Expression and Purification of Recombinant Human Galectin-1 for Future Binding Studies as a Potential Target for Cancer Therapy

Camelia Garcia, Yaima Rivero, Forrest FitzGerald,
Chaya Edelman
Mare Cudic, Maria Rodriguez

Galectin-1 (gal-1), a β -galactoside binding protein, has become an important subject of research because of its overexpression by cancer cells and involvement in tumor promoting activities. Such activities are a consequence of a carbohydrate recognition domain (CRD) becoming functional by forming a homo-dimer through non-covalent bonding, thus leaving gal-1 fully accessible for cross-linking with multiple N- and O-glycoprotein ligands on the surface of cancer cells. The exact mechanisms are poorly understood and need to be further evaluated at the molecular level. Thus, our project has focused on optimizing expression and purification of gal-1. The protein was expressed recombinantly in *E. coli*, purified via α -lactose-agarose affinity chromatography, verified using gel electrophoresis, and concentrations determined by absorbance readings. Our future goals are to utilize the recombinant gal-1 in binding studies, to further explore the ligand binding properties of the CRD in order to advance gal-1 CRD specific inhibitors as a cancer therapy.

Investigation of Metals Concentrations in Lake Worth Lagoon

Gino Garlaschi
Tara Root

Lake Worth Lagoon (LWL) is an urban estuary located in Palm Beach County, FL that is affected by anthropogenic activity. This project's goal is to investigate dissolved metal concentrations throughout the lagoon. Objectives include discovering correlations between metal concentrations and conductivity, tidal cycle, rainfall, and West Palm Beach Canal (C-51) discharge rates. Metal concentrations are determined in FAU's Water Analysis lab using an Inductively Coupled Plasma Atomic Emission Spectrometer (ICP-AES). Preliminary results suggest there is an increase in metals concentrations compared to previous years. Sample sites near canals like the C-51 show slight correlations between canal discharge rates during high periods of rainfall and metals concentrations. However, it is too early to make definitive statements, and further investigation is taking place until June 2017 to obtain a full year's worth of data. The year-long data set will shed light on the magnitude, distribution and transport of metals throughout the Lagoon.

Attitudes Towards Cultured Meat; Exploring Methods of Increasing Appeal

Kristopher Gasteratos, Nicolas Brown
Ryne Sherman

Animal protein production systems are reaching production capacity limits due to their associated ecological detriments. Therefore, a global shift towards an ecologically sustainable alternative is vital, and hence exploring the scope of market for such alternatives. "Cultured meat", or ex vivo cultivated meat, may indeed serve as a viable alternative. However, although this method aims to lessen environmental woes, one current drawback is the ambiguity of consumer acceptance. This study addresses this concern through calculus of potential markets. Indeed, through surveying about 5,000 people worldwide, with focused populations in the United States and University undergraduates, statistically significant results of positive consumer interest in cultured meat

were attained. After survey completion, over 75% of participants expressed interest in eating cultured meat (interested in "probably" or "definitely" eating cultured meat). Ultimately, this novel study ought to serve as a foundational framework for catalyzing funding towards privatized and academic research on cultured meat.

A Presentation by the Cellular Agriculture Academic Society: Exploring the Prospects of Cellular Agriculture

Kristopher Gasteratos, Saam Shahrokhi, Nick Brown
Ryne Sherman

Cellular Agriculture aims at striving towards a post-animal bioeconomy where animal products do not come from living animals (organisms), but rather acquisition of these products occurs at the cellular level. This presentation will discuss Cellular Agriculture very generally, introducing the Cellular Agriculture Society (CAS), looking at the Science (Natural/Social) of cellular agriculture, its coordinating societal implications, and finishing with current research at FAU. Although encompassing various elements including ex-vivo cultivated eggs, leather, and milk, this discussion on cellular agriculture will focus on ex-vivo cultivated meat, or "clean meat" -- primarily due to the majority of efforts towards this part of cell ag and its corresponding importance in the birthing biotechnological field of cell-ag.

Effect of Gender on Levels of Tension & Neutral in the Therapist-Client Relationship

Amrita Ghaness
Paul Peluso

When studying therapeutic relationships, or the working alliance between a therapist and client, analyzing verbal and nonverbal communications is one way to determine the quality of the therapeutic relationship. The purpose of this research is to determine if gender can influence the quality of the therapeutic relationship, and if correlations exist between gender and specific affects. The Specific Affect Coding System (SPAFF) was used to determine the number of seconds of tension and neutral affects displayed during the first, middle, and last fifteen minutes of

the first and fourth sessions of therapy with same gender and opposite gender therapist/client pairs. We expect in situations where the therapist and client are the same gender, the total number of seconds of tension will decrease from the first fifteen minutes to the middle fifteen minutes of a therapy session. Counselors can potentially utilize the findings of this project to ease tension during therapy.

A Historical and Sociological Analysis of William Friedkin's "The Exorcist".

*Varad Gharat
Gina Lukasik*

This study is a socio-historical analysis of William Friedkin's The Exorcist released in 1973, based on the novel by William Peter Blatty. The themes of gender and sexuality, religious faith versus modern science, fear of youth, racism, exploitation of third world countries, and maternal love are explored. The movie's sociological significance as a whole is also evaluated, through the visceral reactions of those that watched the movie as well as its lasting impact today. The study explores ideas of entities beyond comprehension while referencing colonialism, in comparison to Christian ideology. It eviscerates the implications of supernatural mysteries while discovering the many hidden motives of the movie. In addition to elaborating on the above themes, further research is proposed to address the role of sexism, science against superstition with reference to secularism, and the role of piousness in the film.

Temporal Ontogeny of Epileptogenesis in a Model of Adult-onset, Spontaneous Seizures

*Melanie Gil, Rachel St Clair, Melanie Gil
Ceylan Isgor*

These experiments use a transgenic mouse strain that over-expresses the BDNF in the forebrain (TgBDNF) to study remodeling of synaptic circuits that mark the transition from normal to epileptic brain. TgBDNF mice develop spontaneous seizures in response to tail lifting and cage agitation at mid-adulthood. The goals of these experiments are 1) to test if we can detect changes in brain net-

work activity prior to the first convulsive seizure that are predictive of and later accompany convulsive seizures; 2) to test if hippocampal circuitry implicated in epilepsy is undergoing synaptic changes before convulsive seizures. Cortical EEG activity showed abnormalities in distinct stages prior to and accompanying first grand-mal seizure, including effects in sleep architecture. Data showed that hippocampal granule neurons develop more spines (synaptic contacts) in seizure-prone mice. Granule neurons of hippocampus gate cortical input, thereby prevent excess activity from propagating throughout hippocampus. This function is disrupted prior to seizures.

Connotation & Rhetoric: The Semantics of Suspicion in the Writings of Desmoulins

*Ivy Gilbert
Romain Rivaux*

An exacting command of language in his employ, journalist Camille Desmoulins was arguably one of the most dangerous and cunning players in the political arena of revolutionary France. His work is a clear synthesis of linguistic and political theory but what, precisely, made it so effective? Using the principles of semantic theory, rhetoric, and connotation, this project seeks to examine the semantic undercurrents of Desmoulins's works as they relate specifically to the public perception of suspicion, and to define the linguistic parameters within which he operated. A close analysis of selected examples will demonstrate how the evocative language speaks to the author's acute cognizance of his audience and his talent for inflaming the collective unrest and promoting suspicion; specifically through the use of dehumanization, personification, and the neologism "brissoter" which, together, allowed Desmoulins to effectively sow suspicion amongst the mercurial Third Estate.

Auditory Spatial Perception in Identical Spaces

*Laura Gomez
Julie Ward*

Sound based installations in spaces that lack unique visual stimuli were utilized to recreate sensations of space and structure. Multisensory art installations were viewed and tested to determine the most

effective method of providing the viewer with various altered perceptions of their environment. Different sounds were tested on the viewers ability to interact with various spaces. It is expected that sounds that reverberate differently in similar structures will influence the viewer's ability to differentiate between identical spaces. Experimental installations, professor feedback and peer critiques were utilized to assess viewer perception of artwork that lacks visual stimulation but targets auditory sensation. The results of this research are expected to influence future multisensory art installations that utilize sound as an independent medium.

How Do We Access the News

Laura Gomez

Monica Escaleras, Eric Levy

The news is our major source of information of what is going on not only in our backyard but also around the world. With new innovations including the internet, smart phones, and other technological advancements, the way we gather news has changed over time. What was once the popular daily newspaper now barely has limited readers. New players in the industry such as news apps are pushing TV news broadcasts out the window. The purpose of this research is to compare the different main news outlets that people access based on age, gender, income and educational level. To conduct my research, I developed a questionnaire and collected 172 completed surveys.

Groceries to You

Jonathan Green

Monica Escaleras, Eric Levy

As of 2015, total retail and food service sales in America alone had a very healthy revenue totaling an astonishing 5.32 trillion. With the ever growing concern of affordability and sustainable practices used to produce groceries within the United States this became an interesting topic. The rise of businesses being started in order to deliver groceries sparked my interest and concern for such subjects. The purpose of this study is to analyze individual's preferences on where to buy their groceries: in store

versus online. I developed a questionnaire and collected the data using online surveys. My results show there is a statistically significant difference in buying preferences based upon age.

Economic Injustice in Health Insurance Premiums for Married Couples

Sravya Gurivireddygari, Christy Folk, Namrata Gade-la, Jesse Darrow

Ashley Kennedy

When getting engaged, couples may not be fully aware of how marriage can affect their finances. Our research focuses on one particular expense, health insurance, and how getting married can impact its cost. We questioned whether married individuals do pay different health insurance premiums than single individuals and also whether they should pay different premiums. By analyzing data from Healthcare.gov, we found that a married individual has to pay an average premium of \$35 more per month than does the single individual for the exact same health insurance plan. Economically, this is unsound, as our research indicates no conclusive correlation between marriage and health. We also argue that charging married couples different prices is a discriminatory pricing methodology that is ethically indefensible based on the principle of justice. After considering both perspectives, we conclude that married individuals should not be charged different health insurance premiums than single individuals.

Comparing the Effects of CEEE versus HIIT Exercise on Cardiac Damage in *Cyprinus carpio*

Jessica Halle, Gabriel Pena

Michael Whitehurst

This study investigated the effects of two endurance exercise methods, chronic excessive endurance exercise (CEEE) vs. high intensity interval training (HIIT) on endurance performance and cardiac muscle damage in common carp (*Cyprinus carpio*). Ucrit (critical swimming speed) measures were obtained on all fish before and after training. Training consisted of 5 weeks of 5 swims p/wk with CEEE group swimming continuously for 30 min. at 80 % Ucrit and the HIIT group swimming at 95% of Ucrit for 1 min. followed

by 1 min. at 20%, for 30min. After training, all animals were euthanized with cardiac tissue stored for analysis. Post training Ucrit values for the exercise groups were significantly higher than controls but not different from each other. Similarly, there were no between group differences in heart muscle damage. These data support HIIT as an effective training method. However, both HIIT and CEEE promoted cardiac muscle damage.

Spatiotemporal Variability in the Morphodynamic Classification of Southeast Florida Beaches

Richard Hart

Tiffany Roberts Briggs

Beaches encompass the dynamic interface between marine and terrestrial environments. Spatiotemporal changes in beach morphology and sediment characteristics occur due to seasonal variability, frequency and strength of storm impacts, and human influences (e.g., beach nourishments). Morphodynamic classification of beaches is based on the interplay between wave height, wave period, and sediment characteristics (i.e., sediment fall velocity), resulting in a description of dissipative, intermediate, or reflective. This information is often used for modeling or predicting coastal change. The morphodynamic classification of three southeast Florida beaches, Boca Raton, Delray Beach, and Boynton Beach, was evaluated over a one-year period, to characterize seasonal variability (representing summer, early winter, and late winter). Sediment samples and wave data were used to determine the morphodynamic state of each beach. The classification was then compared to the measured beach profile (slope) to determine its applicability over space (in relation to anthropogenic influences) and time (seasonal variability).

Determining potential enzymes involved in the cleavage of L1-type CAM in vivo

Brittany Henry, Julie Freund, Jana Boerner, Priyanka Kakad

Tanja Godenschwege

L1-type cell adhesion molecules (L1CAM) are the immunoglobulin family of transmembrane proteins that is well known for its importance in nervous system

development, but also implicated in three leading causes of death; Alzheimer's, stroke and cancer. Recent studies revealed that transmembrane and cytosolic fragments of proteolytically cleaved vertebrate L1CAM translocate to the nucleus that recombinant expression of the intracellular domain (ICD) in vitro alters expression of genes involved in cell cycle progression and apoptosis. However, the in vivo L1-ICD nuclear function remains to be elucidated. Using drosophila homolog Neuroglian (Nrg), our long-term goal is to characterize L1-type CAMs nuclear function. Similar to L1CAM, Nrg is proteolytically cleaved and fragments including full-length translocate to the nucleus. Preliminary data suggest kuzbanian (ADAM) and BACE (β -secretase) are involved in Nrg cleavage. Our findings validate Nrg as a model to study L1CAM signaling in vivo that is of relevance to numerous neurological diseases.

The Effectiveness of Nonpharmacological Pain Reduction Methods in Preterm Infants

Emma Hensley

Toni Francis

Medical intervention is required for positive growth and improvement in newborns, especially preterm infants. Premature infants often require heel-pricking procedures, such as the Guthrie test, in order to determine if the child has a variety of diseases such as sickle cell anemia. The Guthrie test can have a negative effect on the patients' behavior and psychological state: pain management in this procedure is critical. There are several ways to reduce pain in the patient including, but not limited to: swaddling, breastfeeding, Kangaroo Mother Care method, oral glucose, and lullaby music. The Kangaroo Mother Care method and oral glucose are some of the more effective pain management tools used during the Guthrie test in preterm infants.

Protecting Civilians and Public Service Personnel through an Early Identification System for Airborne Chemicals: SEIAC

Hannah Herbst

Tricia Meredith

In this decade, airborne chemical exposure has

catastrophically impacted thousands of lives. Whether this exposure is intentional or inadvertent, the outcomes have been devastating, causing long-term incapacitation and in many instances death. Many of these horrific consequences could be ameliorated if victims were provided an early warning prior to exposure to odorless and colorless airborne chemicals. To solve this global issue, novel, plasticized composites composed of a static amount of polypropylene and experimental amounts of activated carbon nanotubes to react with the test chemical IPA Alcohol were created. Further, the novel prototype incorporated biomimicry through canine olfaction, economic feasibility through cost-effective materials such as rice and recycled tires, surface acoustic wave technology, and user-friendliness through preliminary application design. In the future, this life-saving innovation can be used in hospitals, schools, airports and other venues at risk of chemical spills or incidents before catastrophic exposure to civilians or public service personnel.

Cytotoxicity Studies of Marine Natural Products in Different Prostate Cancer Cell Lines

Joubin Jebelli, William Trevino, Bryan Fleurantin Lyndon West, James Kumi-Diaka

Prostate cancer is the second most common form of cancer in American men. Marine natural products can be utilized as candidates for drug development in the treatment of prostate cancer. In early preliminary studies, effects of several different marine secondary metabolites were investigated on prostate cancer cell lines. The compounds were extracted and purified using a series of reverse phase chromatographic separations. Currently, we are investigating the cytotoxic effects of our secondary metabolites on DU-145 and LNCaP cell lines. In this preliminary study, the following bioassays will be used to assess the impact of the metabolites of interest, on the carcinogenesis of the selected cancer cells: Trypan blue exclusion assay; MTT; NBT; and fluorescent microscopy to assess the mode of treatment-induced cell death. The results/data generated from the study will lay the platform for further in-depth studies on potential therapeutic application of these metabolites, in the fight against prostate

cancer.

Loss of Neurofibromin During Development Increases Grooming in Drosophila

*Chevara Joseph, Lanikea King
Monica Maldonado, Seth Tomchik*

NF1 is a genetic disease that causes benign tumors, cognitive impairment and hyperactivity. We know flies are able to exhibit physical behaviors due to the effect of the NF1 mutation. Flies are known to groom excessively when compared to controls. We do not know which developmental stage(s) is(are) most critical during development. This study proposes experiments that will help recognize the developmental stages that are most affected by the loss of NF1 in adult neurons using Drosophila melanogaster. I will show that the mutated flies groom significantly higher than controls. The expected results should express an increase in grooming behavior with the loss of NF1 during the third instar phase to pupal stage. Along with expressing higher grooming levels in these stages when compared to the others. This is important as it will help understand which stage of development is the most affected by the loss of NF1.

The Effects of Women's Status on the Adoption of Post-Conflict Justice Mechanisms

*Sama Kahook
Angela Nichols*

Research on post-conflict justice mechanisms is burgeoning; as a result, much of the extant literature concentrates on the different types and effects of these mechanisms. These mechanisms include truth commissions, trials, amnesty, and reparations. There is less research on the micro-factors that impact whether and which mechanisms are adopted in the first place. Toward this end, this paper examines post-conflict justice mechanism onset. I examine the role that women's status in a society has on the adoption of post-conflict justice mechanisms. I argue that when women achieve higher political, social, and economic status, post-conflict mechanisms are more likely to be adopted.

Human Powered Submarine Data Acquisition System

Robert Kipp,
Edgar An

The Human Powered Submarine Club designs and builds manned submarines to race at international competitions. The objective of this 2-semester research is to design and build a Data Acquisition System (DAS) that can be incorporated into an existing training device that replicates the submarine in the testing pool. The DAS automatically records and displays the RPM, torque, and thrust produced by the pilot and propeller, and allows engineers to make educated selections on pilots, gearboxes, and propellers for future competitions. The Fall 2016 semester consisted of the critical design phase and the Spring 2017 semester consisted of the fabrication and testing phase. The project is on schedule and currently in the fabrication phase for the mechanical and electrical systems. Once the system is constructed, underwater testing will begin in the testing pool. The Human Powered Submarine DAS will grant FAU vital information to engineer a world class human powered submarine.

The Effects of Sea Level Rise on Microbial Community Structure in Biscayne National Park, Simulated Using Soil Samples in Mesocosms at Various Scaled Sea Levels and Salinities

Christian Klein
Nwadiuto Esiobu

The interphase (littoral zone) of the Florida Everglades and surrounding marine environments are dominated by mangrove forests and mudflats that transition into freshwater communities. As salinity levels change, plant cover of the freshwater community will be adversely affected, but perhaps more importantly, their microbial symbionts responsible for their tolerance to high salinity will be impacted as well. Microbes respond quicker to changing environments and could provide an early warning of the loss of resiliency of the Florida coastline ecosystem. For 10 weeks, soil samples from Biscayne National Park will be placed in standardized mesocosms and

subject to local conditions like sunlight, tides, plants, increased sea levels, higher salinities, and variant inundation. Standard and variant conditions will be employed on different mesocosms, and weekly DNA extractions of the various soil samples will be analyzed via metagenomic analysis, creating a library of the 16S rRNA community structure over the 10 week period.

Open Ocean Turbulence Characterization for Ocean Current Energy Applications

Remy Komocsin
James VanZwieten

Creating electrical power from river, tidal, and ocean currents without the use of dams is a rapidly expanding renewable energy field. Ocean Current Turbines deployed off the east coast of the United States will be moored where the water depth exceeds 300 meters, and will operate 50 to 100 meters below the surface. Turbines will be impacted by a turbulent flow field that varies both temporally and spatially, which should be quantified for proper turbine design. Measurement systems deployed from boats are being utilized for measuring the turbulent flow field. This project evaluates and refines techniques for processing Acoustic Doppler Velocimetry data by first comparing results obtained from algorithms under development at FAU with those obtained using the Doppler Oceanographic Library for pYthoN (DOLfYN) code from the National Renewable Energy Laboratory. Measurements collected in the Gulf of Mexico are processed and compared, highlighting the strengths and weakness of these codes.

Exercise and Sport Motivation among College Students: Examining Background Characteristics and Factors Related to Academic Performance

Emily Kramer, Jessica De Souza
Frankie Laanan

Research suggests that frequently engaging in some form of physical activity (PA) positively correlates to improved psychological and physiological health. Further, studies maintain that increased PA among college students is positively associated

with higher academic performance and decreased level of anxiety, depression, and obesity. The purpose of this study is to investigate the motivation factors for exercise and sport participation. Data will be collected using the Exercise Motivation Inventory (EMI-2) from sample of over 500 undergraduate students. It is hypothesized that students engaged in sport participation are more likely to have lower levels of stress and perform better academically due to the social nature of team engagement. The results of this study will inform colleges and universities to develop and implement effective exercise and sport programs to positively impact overall student health and wellness and academic success.

Examining Differences in the Anterior Lateral Line Nerve of the Yellow Stingray

Katie Kramer

Stephen Kajiura, Kyle Newton

*To fully understand the function of the elasmobranch electrosensory system it is necessary to examine electrosensory nerves extending from the ampullae of Lorenzini to the central nervous system. Studies detailing the composition of sensory axons are rare, but they have shown that ontogenetic and sexual dimorphism exists in the anterior lateral line nerve (ALLN) of numerous species. This study obtained a count of the number of axons comprising the ALLN in male vs. female and adult vs. juvenile yellow stingrays (*Urobatis jamaicensis*). We hypothesized that males have more axons than females, and that the number of axons is ontogenetically constant. We expect males to have 30% more axons in their ALLN, and that the number of axons is ontogenetically constant for both sexes. This study will provide unique data about the electrosensory nerves of Yellow stingrays that can be used in future studies to make comparisons between other species.*

Residential-Defensive Towers in the Balkans: Where Christianity and Islam Sheared Roof

Stefka Kuneva

Vladimir Kulic

This study discusses the architectural properties of residential-defensive towers constructed in the

Balkans during the Ottoman rule (14th-19th centuries). They are unique as examples of single family fortified houses built independently of fortresses or monastery complexes. My work examines their origins and use as a way of studying the cultural entanglements between the Ottomans and the native Christian populations. It is assumed that dominant cultures and religions tend to assimilate the marginal ones. I argue that the residential defensive towers exemplify an opposite process, in which Balkan cultures decisively influenced the dominant Ottoman one. I also argue for the historical significance of the towers and their inclusion into the body of the recognized heritage, from which they are currently excluded because of the persistently negative views of the Ottoman period in the Balkan states. Ultimately, the towers reveal the deep and long-standing entanglements of Christian and Islamic cultures in Europe.

The Talking Dead: The Rejection of Irish Idealism and the Cultural Appropriation of Rural West Ireland in Mairtin O' Cadhain's Cre' na Cille

Savannah Law

Julieann Ulin

"The Talking Dead" argues that O' Cadhain's satirical Irish language novel acts a rejection of the idyllic, pastoral projection of Ireland's rural landscapes and isolated communities used by politicians and rhetoricians to create the inauthentic vision of a unified Ireland. Examining the novel alongside attempts at nationalistic propaganda such as President Eamon de Valera's 1943 speech and the new constitution of 1937, this project offers unique insight on the Irish Modernists' attempts to wrest cultural representation from those who sought to exploit and distort it during the reconstruction of the Irish Free State. As an explication of Irish deconstructionist literature during this period, "The Talking Dead" complicates critics' views of Cre' na Cille as a satirical re-write of the national narrative and asks us to reexamine O' Cadhain's novel as a literary rebellion which dismantles the pillars of the national restoration project to ensure the preservation of authentic Irish culture.

Self Reflection Projection

Soraya Leathers, Brandon Powers, Fabiola Valdivia, Tammy Knipp

Social Comparison Theory states that we are constantly ranking ourselves in relation to others. The perception of others determines how attractive we think we are. Social constructs, such as attractiveness, are the foundation of how we define beauty. With the use of an eye tracking system, this research will collect data to determine if the subjects fixate on their areas of insecurity. Subjects will be shown six randomized portraits, including an unbenounced photo of themselves. The study will examine if there is a link between how one sees themselves and to what degree those thoughts are involuntarily projected onto how they see others.

Comparison of Floatation and Candling for Estimating Snowy Egret and Tricolored Heron Egg Age

*Zachary Lee, David Essian
Dale Gawlik*

Nest success is a common demographic metric for determining the status of avian populations. Application of egg aging techniques such as floating and candling may improve estimates of nest success and better predict population change. We compared these two egg aging techniques using the eggs of small herons at Lake Okeechobee in 2016. We back-calculated nest initiation date by subtracting published incubation length from the known hatch date and adjusted for egg laying order. We compared the variance and mean difference between calculated nest initiation date and estimates obtained from floating and candling. Floating (-0.358 ± 0.217 SE) was more precise and accurate at determining nest age than was candling (2.13 ± 0.256 SE). Both methods were easy to perform but cloud and canopy coverage could limit the feasibility of candling. Thus, floatation is the recommended method for estimating the age of small heron eggs in the wild.

The Effects of Cultural Differences Between Therapists and Clients on the Therapeutic Alliance

*Rafael Leite
Paul Peluso*

The increasing diversity of the United States raises the probability that therapists will encounter clients with a different cultural background than their own. Thus, evaluating the relationship between the culturally different therapists and clients is essential in producing effective cross-cultural therapy. The objective of this study is to determine any significant effects that culturally similar or different clients and therapists have on the therapeutic alliance. The alliance was measured using the Working Alliance Inventory (WAI) for both the clients and therapists. By using this measure in therapist-client dyads, we are able to evaluate the influences that cultures have on the overall therapeutic alliance. The results of the research can be used to show the importance of multicultural competence in counseling relationships in order to provide the best outcomes for culturally diverse clients.

Chemical-Assisted Recovery of Heavy Oil

*Natalia Linares, Seokju Seo
Myeongsu Kim,*

More than 1 trillion barrels of oil deposited worldwide is heavy oil and natural bitumen. Due to their high viscosity and high density, extraction efficiency of heavy oil and bitumen from natural reservoirs is known to be less than 5% with the conventional primary recovery methods. To increase their recovery efficiency, a technique, known as enhanced oil recovery, has been developed using nanoparticles, surfactant, dispersant, and polymers. Among these materials, surfactants and dispersants lower interfacial tension between oil and the resident fluid; therefore enhance mobilization of oil. The objective of this project is to further improve the recovery efficiency of heavy oil by a combined effect of surfactant and dispersant. When the mixture of surfactant and dispersant in an aqueous solution is injected to oil-rich porous media, microfluidic visualization techniques will be employed to investigate the overall recovery rate. The possibility and effectiveness of the pro-

posed idea will be discussed.

Soft Robotic Jellyfish - Steering Control

Nicholas Lopez
Erik Engeberg

The ability to explore and monitor vulnerable sponge is becoming increasingly important. The soft robotic jellyfish is an innovative technology which will allow deeper exploration of these areas without risk of damaging any components of the ecosystem. Currently the soft robotic jellyfish is outfitted with two individually controlled water pumps, each controlling the actuation of one half of the jellyfish's tentacles. Through off-setting the pump's duty cycles, as well as controlling the input voltage to each pump, it is possible to control a planar heading direction of the robot. Adding a degree of freedom to the soft robotic jellyfish's movement is a vital part of its development, as it is now capable of maneuvering the continuously changing water movement during ocean testing.

Shark Survey: Friend or Foe

Makayla Magielnicki
Tricia Meredith

Shark Survey: Friend or Foe was established to determine the significance of the use of an informational video to educate the public on wildlife conservation issues. Sharks are extremely misunderstood creatures. This survey can help display why some people are reluctant to see past the common, unrepresentative depiction of sharks often portrayed in the media. The survey asks participants to answer ten questions via pre-survey then watch a video followed by the same ten questions via post-survey. The video shared biological information and conservation concerns about sharks. I hypothesized participants' opinions would transition from negative to positive after watching the informational video. A paired t-test showed a significant increase in "Shark Positive Responses": after people watched the video. This study gives shark advocates and other conservationists working to alter public perspective a possible way to communicate information concerning conservation.

Teacher Opinions and Perceptions of New Literacies Practices in Schools

Tiffany Manbodh,
Philomena Marinaccio

Clinical educators from the 6th largest school district in the country were surveyed to gather teacher self-perceptions of the frequency of the knowledge processes of NL (New Literacies). NL refers to the view that reading and writing only make sense when studied in the context of social and cultural practices (Gee, 1996). NL propose multimodal teaching of all representations of meaning including linguistic, visual, audio, spatial, and gestural (The New London Group, 1996). This study uses a mixed method design of qualitative and quantitative data which aligns with the review of the literature. Co-investigator Tiffany Manbodh in an elementary classroom after school, interviewed the volunteers and with the principal researcher, identified themes, recurring ideas or language, and patterns of belief that link people and settings together. The results of this study can inform administrators of the importance of providing new literacy workshops and ongoing trainings to teachers and preservice educators.

Development of a Cooling Wristband with Embedded Temperature Monitor

Lyndsey Mandelare,
Tsung-Chow Su

Previous studies have shown that the human body is responsive to rapid temperature changes, particularly in the forearm region, when determining comfortable temperatures. The goal of this study is to design a wristband that can passively cool the user through a finned design and to test its effectiveness. To this end, an aluminum finned wristband has been designed and the Adafruit Flora wearable microcontroller was used to monitor the temperature and output the data via Bluetooth. An Android application was then created to read the data output and save it as a text file that could be output elsewhere. This project will be tested by recording the temperature data as test subjects engage in physical exercise to see if the wristband can continuously cool the user.

An Open-Source Research Platform for Autonomous Vehicle Research and Development

Shawn Martin, Nicolas Tutuianu, Marcus McGuire, William Hahn, Marcus Elan Barenholtz

The availability of open-source software solutions and cost-efficient hardware platforms have reduced the barrier to entry for artificial-intelligence research. However, autonomous driving typically requires high initial investment and specialized hardware. Here, we describe an open-source platform for autonomous vehicle development that is cost-effective and simple to set up. The platform includes a low-cost RC rover with an on-board camera. This device is remotely controlled via a steering wheel, and connected to Wi-Fi with a computer that receives real-time data from the camera and the steering wheel. This platform allows users to record their own labeled data and use that data to train and test their own learning models. In addition, we provide a pre-labeled driving dataset, allowing any researcher to begin training their neural network models. We believe that this low-cost, easy to implement platform can extend the opportunity for students to engage in deep learning and autonomous vehicles research.

Monitoring and Modeling to Estimate Impact of Hydrogen Sulfide Emissions and Dispersion Near Gas Wellheads on a Florida Class I Landfill

*Angel Martinez
Daniel Meeroff*

According to the Bureau of Labor Statistics (BLS), H₂S (Hydrogen Sulfide) gas is one of the principal causes of workplace inhalation death. H₂S is fatal above 500 parts per million (ppm) and from 2001 to 2010 it claimed sixty lives. The purpose of this study is to gauge the effect of age of gas wellheads on ambient H₂S concentrations. At a local landfill, ambient H₂S concentrations and meteorological conditions (stability class, wind direction and speed, temperature, etc.) will be measured at twenty sample points with the Jerome Hydrogen Sulfide Analyzer and Kestrel 3500 Weather Meter. Measured data will be used with Gaussian plume variables to calculate

H₂S emission rates near gas wellheads of various ages. Knowledge from this study will contribute to reduce time in locating sources of H₂S emissions. The expected results for this study is that wellheads installed under a year period will produce the highest H₂S emissions.

Evacuation Plan Preparedness Matrix

*Estefania Mayorga
John Renne*

Transportation needs populations, as addressed in this study, are individuals who cannot drive or who do not have access to a vehicle and may require transportation and other evacuation assistance to be safely and effectively evacuated before or during a disaster. Historically, transportation needs populations are disproportionately affected by ineffective evacuation planning. The “Evacuation Plan Preparedness Matrix” is a gap-analysis that uses five identified best practices in transportation needs evacuation planning as a metric for assessing the evacuation preparedness measures of thirty-six cities’ current evacuation plans. The matrix uses the “Traffic Light System”—red, yellow, green, N/A— to determine the standing of each city’s evacuation preparedness measure. This process intends to contribute to the discussion of areas in which cities can improve their transportation needs evacuation planning for adequate response.

A Kinetic and Spectroscopic Study of Tryptophan Analogs as Mechanistic Probes for hIDO1 Catalytic Activity

*Jesse Meacham, Timothy Foo, Thomas Shane
Andrew Terentis*

The heme enzyme, human indoleamine 2,3-dioxygenase 1 (hIDO1), catalyzes the dioxygenation of L-tryptophan (L-Trp) into N-formylkynurenine (NFK). hIDO1 is recognized as a prominent immune regulatory enzyme that regulates certain physiological functions (e.g. pregnancy) and modulates the pathogenesis and severity of diverse conditions including chronic inflammation, infectious disease, allergic and autoimmune disorders, transplantation, neuropathology, and cancer. Chemical substitutions on the L-Trp

substrate were hypothesized to change the catalytic efficiency through steric and/or electronic effects that could be detected experimentally and modelled theoretically. Steady-state kinetic experiments were performed to determine the Michaelis-Menten kinetic parameters for each compound. Resonance Raman (RR) spectra of the hIDO1 carbon monoxide ternary complex were obtained for each compound in order to gain insights into the structural arrangement of each analog relative to the heme-bound diatom (Fe-CO) in the active site. Correlations between kinetic parameters and RR data could provide insights into structural requirements for hIDO1 catalytic activity.

The Correlational Relationship Between Social Media Usage and Alcohol/Tobacco Consumption

Jesse Meagher

Gina Carreno-Lukasik

This literature review will analyze the relationship between media usage and alcohol and tobacco consumption. Elementary school students, high school students, college students, and groups of different races will be analyzed. It is evident that as media influence increases in the life of the participant, alcohol and tobacco use also tends to increase. Youth should be taught to analyze the societal influences that affect them so they are not deceived about societal norms. Further research should be conducted to identify whether social media use affects men and woman differently in order to get a better view on how men and women perceive societal messages sent to them.

Neuroprotective Mechanism of Granulocyte Colony Stimulating Factor in a Mouse Model of Global Cerebral Ischemia

Kristen Medley, Paola Trujillo, Hongyuan Chou

Howard Prentice, Rui Tao

Granulocyte colony stimulating factor (G-CSF) is a cytokine that stimulates the proliferation and differentiation of hematopoietic stem cells and is widely used to treat cancer patients with neutropenia. Recent studies on the neuroprotective effect of G-CSF in stroke demonstrated that G-CSF increases survival and reduces neurological deficits and brain atrophy

in rodent models by mechanisms that include neurogenesis and protecting against apoptosis. Importantly, GABA, the main inhibitory neurotransmitter of the brain plays both a protective and harmful role in stroke models by stabilizing the infarct size, while increasing detrimental neuronal tonic inhibition in the brain. A recent study found that inhibiting the effect of $\alpha 5$ -GABAAR, a GABA A receptor subtype, following a stroke in mice increased motor recovery. Here we investigate the effectiveness of G-CSF protein therapy following global cerebral ischemia in mice by evaluating behavioral recovery (on corner and locomotive test) and measuring the components BAX, BCL2 and $\alpha 5$ -GABAAR.

Aqueous Droplet Microfluidics: Fundamentals of Droplet Generation Mechanisms

Sofia Melgar Jimenez, Nick Petrozzi

Myeongsu Kim

Aqueous microdroplets have shown great potential in various applications such as material synthesis, chemical reactions, and drug discovery. The objective of this research is to generate aqueous microdroplets in water using microfluidic techniques. Compared to conventional aqueous droplets in an oil phase, droplets generated from the proposed system will be more biocompatible and simply manufactured. To achieve this goal, the research focuses on understanding fundamental physics behind droplet generation at various geometries and input conditions. This understanding can subsequently help us obtain microdroplets with targeted properties. Several microdroplet generators made of polydimethylsiloxane (PDMS) transparent polymer are fabricated and an aqueous two-phase system (ATPS) made up of two water-based polymers, polyethylene glycol (PEG) and dextran (DEX) is used in these generators. The results successfully demonstrate that the proposed droplet generators produce aqueous microdroplets at various sizes at different frequencies. The controllability and tunability of the properties of microdroplets will be discussed.

Study of Mitochondrial Trafficking in Huntingtin Knockout Cell Line

Christopher Minasi
Jianning Wei

In order to further understand the pathogenesis of Huntington's Disease, as a step to possibly finding a treatment in the future, the molecular role of the huntingtin protein (htt) in regulating mitochondrial trafficking in neurons was tested. This was done by first generating a huntingtin protein knockout SH-SY5Y cell line using the CRISPR-CAS 9 system. Using live cell imaging, differences in retrograde and anterograde movement of the mitochondria in the htt knockout and normal cells were compared in order to determine the effects of htt on mitochondrial movement. The results suggest that removal of htt from the cell impairs retrograde and anterograde movement of the mitochondria.

Influence of cGMP- Dependent Protein Kinase Signaling Pathway in Time to Recovery from an Induced Electroconvulsive Seizure in *D. melanogaster*

Leonor Miranda,
Ken Dawson-Scully

*Some seizures are defined as hyper-excitability of the neuronal membrane observed as a result of mutations in voltage-gated ion channels along the membrane. Our laboratory uses *D. melanogaster* larvae as seizure model by inducing electroconvulsive seizures (IES). This project quantifies seizure susceptibility and its correlation with differences in the cGMP-dependent protein kinase (PKG) enzymatic activity levels. Since cGMP signaling pathway targets downstream K^+ channels which influence membrane excitability, we hypothesize that increases in PKG enzymatic activity decreases time to recovery from IES and vice-versa. For our preliminary, we used the foraging gene which has two natural allelic variations of the PKG enzymatic activity. Our data showed that changes in PKG enzymatic activity influences time to recovery in 3rd instar larvae from an IES. Understanding this pathway will allow us to manipulate different downstream components in order to develop more effective anti-epileptic drugs.*

Characterizing the Biophysical Mechanism of Cell-Penetrating Peptide Cancer Cell Entry

Mary Moussa
Ewa Wocikiewicz

Due to its cell penetrating abilities, Transportan has potential for being used in anticancer treatments. However, the mechanism of cell entry is still poorly understood. Our goal is to identify the potential impact of Transportan on cell biophysical properties, such as cell stiffness. For this project, we will be looking to determine the effect of Transportan treatment on SK-MEL2 cell stiffness. Preliminary data indicates that untreated SK-MEL2 cells averaged a stiffness of 1390.5 Pascals. After two hours of incubation with Transportan, the SK-MEL2 cells averaged a cell stiffness of 2259.6 Pascals. The goal of this study is to characterize the mechanism of transportan cell entry in order to be able to tailor its use for anticancer treatments. Subsequence studies will confirm these changes and also identify if they are time dependent and if they are reversible.

Promoting Cultural Awareness in the Urban Elementary Classroom through Multicultural Literature

Gina Musick
Lori Dassa

As the country's population grows ever more diverse, there is a growing need of cultural awareness in our elementary public schools. Young children are coming together from all over the world with diverse families and experiences and co-existing with each other in America's elementary schools. In order to minimize a negative view towards diversity, this study implements a multicultural approach that can create positive cultural interactions in the urban elementary classroom. Multiculturalism is, in short, the view that various cultures in society merit equal respect and genuine interest. In order to incorporate multiculturalism into the curriculum, I utilized selective multicultural children's literature that corresponded with the current reading standards and objectives. With a focus on literacy, reading and writing, the students participated in several activities that helped them explore the similarities and differences between characters from diverse cultures.

Study of Global Gene Expression and Alternative Splicing in HIV Infected CD4+ T-Cells

Maha Naim, Evan Clark, Sean Paz
Massimo Caputi

The Human immunodeficiency virus type 1 (HIV-1) primarily infects CD4+ T cells. Our goal is to study changes in gene expression levels and alternative splicing occurring in infected CD4+ T cells to better understand mechanisms utilized by the virus to replicate and the cellular response to the infection. CD4+ T cells have been purified from three healthy donors. A portion of the cells were infected with HIV-1 and the remaining cells were utilized as control. Total RNA was extracted from infected and control cells. The transcriptome of the cells was analyzed utilizing a high throughput RNA sequencing assay at high resolution (40 million paired ends reads per sample). The sequencing output was analyzed utilizing a pipeline we set up utilizing the FAU High Performance Computing and tools within the Galaxy environment. We will validate the data utilizing a RT-qPCR approach and conduct a final gene pathway analysis.

A Microfluidic Approach for Nanoparticle-Assisted CO2 Dissolution

Minh Nguyen, Charles Nighswonger, Seokju Seo,
Gabriel Navarrete
Myeongsub Kim

Carbon capture and sequestration is a promising technology for mitigating increasing levels of carbon dioxide (CO₂) emissions to the atmosphere. Previous research has shown the potential use of nickel nanoparticles (NiNP) for enhancing this technology; however, the fundamentals that drive this phenomenon have not been investigated. In this study, a cost-effective microfluidic approach was used to visualize the mechanism by which NiNP can augment CO₂ dissolution into a saline solution. Using CO₂ bubbles observed at microscale through high speed optical imaging in real time, the interfacial interactions between NiNP and CO₂ during the dissolution process were successfully quantified. At various concentrations of NiNP, the CO₂ dissolution behaviors to the saline solution were characterized in terms of the

diameter of CO₂ bubbles. The results show that the catalytic property of NiNP significantly contributes to enhancement of CO₂ dissolution and this catalytic effect reaches maximum at a concentration of 30 mg/L NiNP.

An Analysis of Gopherus polyphemus Reproduction at the Florida Atlantic University Preserve

Thuyminh Nguyen, Jessica Huffman
Evelyn Frazier, Jessica Huffman

Gopherus polyphemus (gopher tortoise) is a threatened keystone species whose burrows benefit over 350 species. Surveys conducted throughout 2010-2015 at Florida Atlantic University Preserve (FAUP) have found an age gap of ten years and a lack of nests. To update the demographic survey and to examine the population's reproduction and health, we conducted burrow and nest surveys from May to September 2016 and collected fecal samples to check for endo-parasites. Transects were used to locate burrows and measurements were taken to determine population structure. Wire-probing was used to locate nests and feces were tested for endo-parasites. From a total of 261 marked burrows and fecal sampling, results indicated a continuous age range, one nest, and presence of intestinal parasites. Future work will focus on health and reproductive behavior that will improve our understanding of the FAUP gopher tortoise population and may ultimately aid in future conservation methods.

Neuroendocrine Regulation of C. elegans Larval Development by Autophagy

Cecilia Nicholas
Kailiang Jia

Highly conserved insulin, cyclic guanosine monophosphate (cGMP) and autophagy pathways control metabolism, development and are involved in pathogenesis of diabetes, cancer and other human diseases. Caenorhabditis elegans (nematode) larval development, including entry into and recovery from an alternative development stage known as dauer, is modulated by these pathways. The precise role of autophagy and how it interacts with cGMP and insulin signaling during this development remains

unclear. Here we show that down-regulation of autophagy leads to decreased rates of dauer recovery. Moreover, DAF-2 (insulin-like receptor) functions in parallel with cGMP pathway to regulate autophagy and autophagy controls dauer recovery through neurotransmitters and neuropeptides.. These novel discoveries contribute to understanding interactions between these pathways in mammals, which shed light on their role in pathogenesis of human diseases.

A New Lanthanide Coordination Polymer Based on 2-2'-bithiophene-5,5'-dicarboxylic Acid for Nitroaromatic Sensing Applications.

*Raul Ortega, Jeffrey D. Einkauf,
Logesh Mathivathanan
Daniel T. de Lill*

Metal-organic frameworks (MOFs), are a unique class of materials in which metal clusters are linked together by organic moieties forming porous 1-D, 2-D, and 3-D structures. MOFs have many applications resulting from not only the overall structure, but also the metal center, organic “linker”, or a combination thereof. The high surface areas and porosity of these materials have found use in heterogeneous catalysis, display technologies, semiconducting materials, and biomedicine. These materials are also currently being developed as a new sensor technology for detection of potentially harmful chemicals. Nitroaromatics are key components in the fabrication of explosives, however, current detection methods are time consuming and expensive. Considering this, our interest lies in synthesizing MOFs that can be used as a sensor for nitroaromatic compounds. To this end, our lab has developed a new Er(III) MOF based on the linker 2-2'-bithiophene-5,5'-dicarboxylic acid (DTDC). Herein, synthesis and nitroaromatic sensing studies will be discussed.

The Effects of Different Building Materials on Textiles of Varying Weave Sizes when Cast Making

*Chastity Pascoe
Julie Ward*

Different methods of plaster and cement casting were tested to create figurative artworks with a

conceptual focus on space as it relates to relationships. In this research, different casting methods with plaster and cement were tested on fabrics of varying weave sizes to create these artworks. Professor feedback and peer critiques were used to assess the effectiveness of the approaches in communicating varying levels of emotional closeness while creating a dialogue about relationships. The culminating artwork is expected to create a commentary on interpersonal relationships, isolation, and most readily the impact of space on our perception of physical closeness as it relates to emotional closeness. The results of the experiment and exploration of combining soft and rigid materials will be used as a possible alternative medium in contemporary sculpture.

Studying the Social Behavior of Red-tailed, Blue and Hybrid Monkeys of the Cercopithecus genus in Gombe National Park, Tanzania.

*Stacey Pasternak, Charlene Korchia,
Samantha Wallshein
Kate Detwiler*

*The distribution of an affiliative behavior (proximity) was examined in a group of wild red-tailed (*Cercopithecus ascanius*) and blue (*Cercopithecus mitis*) monkeys. The two sympatric species studied reside in Gombe National Park, Tanzania, where they produce viable hybrid offspring. Proximity in this study was defined as two monkeys (referred to as a dyad) who engaged in grooming, or sat close enough to groom, but did not groom. The data were collected from a photographic database in Adobe Lightroom that stores approximately 38,000 digital images of monkeys from the study group. The images that met our selection criteria for determining phenotype (red-tailed, blue and hybrid) were then sorted into a proximity category. Our results yielded 129 proximity events that represented all combinations of phenotypes, however blue x blue dyads occurred significantly more often than expected. These results suggest that a preference may occur among blue monkeys to affiliate with conspecifics.*

Toroid Characterization in Rotating Flow of Two Layer Liquid

Nicole Perry, Andrew Matyk, Ian O'Keeffe,
Tsung-Chow Su

Rotating flow of two layer liquid, consisting of water and oil, in a circular cylinder is examined in a laboratory setting. A small rotating shaft is located within the upper liquid layer, along the axis of the cylinder, to set flow to rotate. It is observed that the central portion of the lower liquid first rises up and then impacts the shaft bottom, resulting in a water toroid moving up, one by one, along the rotating shaft. The formation of such vortex in the center of a rotating body of water involving a rotating shaft may have a significant implication in the performance of laboratory rotating mixer. The purpose of this research is to characterize the formation and the dynamics of a toroid that forms around a shaft. Data recorded includes shaft speed, distance of shaft from the liquid interface, and the dynamics of the toroid formation and movement.

Active vs Rest State: Is Object Memory Encoding, Consolidation, and Retrieval Affected by Biological Clock?

Elishama Petion, David Cinalli, Sarah Cohen
Robert Stackman

Rodents are nocturnal animals, exhibiting increased activity at night and decreased activity during the day. Therefore, conducting behavioral studies on mice during the daytime may not elicit optimal performance. Current study investigates the effect time-of-day on a mouse's memory performance - encoding, consolidation, and retrieval- using Novel Object Recognition. During a sample session, mice explored two identical objects in a familiar arena (encoding), followed by a delay of 12 or 24 hrs (consolidation). During the test session, one of the objects was replaced with a novel one. The sessions: sample-day/test-night, sample-day/test-day, sample-night/test-day, and sample-night/test-night. Object memory was inferred if mice spent more time exploring the novel object. Results indicate mice prefer the novel object more when the sample session is conducted during

the night and the test session during the day. These findings provide insight into the effects that time-of-day has on behavioral testing, which may influence future task designs.

The Effects of Active Ingredients in Aerosol Sunscreen on Behaviors in Drosophila Melanogaster Larvae

Nicholas Pizzo,
Tricia Meredith

The goal of this research was to observe whether aerosol sunscreen impacts the physiology of Drosophila Melanogaster and if it could suggest similar health problems in humans as a result of inhalation of aerosols. After sunscreen exposure, a larval crawling assay was used to examine the resulting motor effects. Their crawling speed was measured by observing the distance crawled in one minute. The data was analyzed using an independent T-Test, which showed that the exposed larvae crawled significantly slower than the unexposed larvae. The physiological effects of sunscreen ingestion found in this study highlight the importance of further research to determine whether there are negative consequences for humans as well.

To Cleave or not to Cleave? (Defining the Functional Role of Amyloid Precursor Protein in the Development of the Drosophila Giant Fiber Circuit)

Richelle Poulos
Tanja Godenschwege

Alzheimer's Disease (AD) is a neurodegenerative disease that arises from misprocessing of Amyloid Precursor Protein (APP). Although a great deal is known about AD pathology, little is known about the normal biological function of APP. Our lab investigated its functionality by expressing mutant constructs of the Drosophila homolog, APPL, in developing Giant Fiber (GF) neurons. Employing genetic and electrophysiological techniques, we assessed the conserved domains. Our electrophysiological and immunohistochemical analyses revealed that expression of APPL lacking its cleavage domain (APPL-SD) disrupted synaptic connectivity and stunted GF morphology.

APPL-SD mutants mimic phenotypes seen in mutants with disrupted retrograde transport, which are associated with motor neuron diseases. While excess cleavage of APP is associated with AD, our results suggest that inhibition of APP cleavage also leads to neurodegeneration. Thus, proteolytic processing of APPL is critical for proper development and neuronal survival. Our work provides new insights into the mechanisms of APP-associated diseases.

Queer Images: Portraits

Charles Pratt

Barclay Barrios, Sharon Hart

Lesbian, gay, bisexual, transgender, and queer (LGBTQ) identified people are experiencing unprecedented visibility in the media and popular culture. These representations often tend to be flattened images that reduce complex individuals to simplified and limiting categories of identity that exist in contradiction to lived realities of gender and sexual minorities. Queer Images: Portraits aims to expand the boundaries of LGBTQ communities by creating theoretically informed photographic images in domestic spaces that juxtapose interpretations of queer identity with lived realities. These images are created in a series developed over a period of months working closely with the sitter to create portraits that both explore the photographer's relationship with the sitter and the implications of that person's reality. Photographing the domestic spaces of the sitter transgresses the fragile private-public aspects of being queer that are freely expressed in a domestic space.

The Effect of Social Capital on Corruption

Jesse Pulliam

Kanybek Nur-tegin

It is theorized that societies with higher social capital, as indicated by stronger civic associations and more trust among citizens, tend to have lower levels of government corruption. This hypothesis is difficult to evaluate empirically because there is a lack of reliable data to measure both social capital and corruption. Furthermore, unreliable data has made it impossible to isolate the causal direction between

social capital and corruption. In this paper, we use new micro-level international data on social capital and corruption and a unique historical instrumental variable to provide empirical evidence that higher social capital leads to lower levels of corruption. Our results are causal and robust to alternative specification of the regression models.

Utilizing a Phenomenological Approach in Performance and Installation Art to Create a Social Consciousness of Disease Transmission

Sarah Rabinowitz

Julie Ward

Installation and Performance artwork that evoke a phenomenological experience was utilized to communicate an awareness of the microorganisms that coexist within the environment and impact public health. Currently, society is facing threats to public health that are arising from an insufficient understanding of their symbiotic relationships with microorganisms and a lack of mindfulness towards preventing the spread of communicable diseases. Different methods of using sound, multimedia installations, video, and performance were tested on their effectiveness in creating a phenomenological experience. Experimental installations, professor feedback, and peer critiques were used to assess the effectiveness of the approaches in communicating self and social consciousness. Data collected from surveying students at Florida Atlantic University were used to make specific artwork that address the community's knowledge of communicable diseases and health practices. The artwork is expected to influence some degree of social consciousness of the pathogens that could potentially harm individuals and communities.

How is Posture Affected by Backpack Wearing?

Amanda Ramdhyan, Anisa Sookhoo, Levi Travis,

Jessen Auguste

Tricia Meredith

Bad posture leads to various health impairments, such as scoliosis and joint degeneration. Recent studies have shown the alarming rates of back pain

increasing among schoolchildren mainly because of their backpacks. The purpose of this research is to compare individuals on our campus who are and aren't wearing a backpack to determine a correlation with their posture. For four weeks in Spring of 2016, twice per week (one hour/day), we recorded the posture of individuals walking around FAU using a nominal scale from one to five, five being the ideal posture. We also recorded other potential posture-influencing factors. We found that backpack wearing had a significant correlation with two types of poor posture. The results of this research can be useful in pinpointing the causes and possible solutions for the increasing rates of low-back pain and spinal problems for individuals in our local community.

Modulating Fear Extinction via Calcium-activated Potassium Channels

Danielle Riboul, Joan Lora
Robert Stackman

Fearful memories have the potential to be extremely debilitating, as seen in Post-Traumatic Stress Disorder (PTSD). Elucidating cellular mechanisms that underlie fear memory and fear extinction could serve as novel routes for PTSD therapy. Previous work has shown that small conductance calcium-activated potassium (SK) channels limit synaptic plasticity as well as learning and memory. Mice were subjected to a tone-shock conditioning session to induce fear memory. The current study examined whether manipulation of SK channels would affect extinction of fear memory. Preliminary results indicate that administration of SK channel activator, CyPPA significantly delayed acquisition of fear memory extinction compared to control-treated mice. Administration of SK channel blocker, Apamin facilitated extinction of fear memory compared to control-treated mice. Preliminary data suggests that brain SK channels modulate extinction of fear memory. Finding ways to dissociate fearful memories from triggering negative behaviors could be valuable in the search for novel PTSD treatments.

Ideal Pipe Orientation for Draining a Reservoir

Luke Ridley, Robbie Kipp, Steven Warren
Tsung-Chow Su

Finding the fastest route from a point of higher elevation to lower elevation was solved more than 300 years ago. The answer lies in between a steep curve which reduces resistance to gravitational force generating speed and a straight path to the destination, which minimizes the distance traveled. The solution is a specific cycloid curve, called the brachistochrone curve. We will test whether this curve is also optimal in draining a reservoir of fluid. We have constructed three paths of tubing to drain a reservoir of water. The average flow rate was calculated for a path of tubing that takes the least distance to a destination, a path that drains straight down and then over, and a path that follows the brachistochrone curve. The results of these experiments could be used to optimize flow in situations where a fluid is moving from one reservoir to another of lower elevation.

Cathelicidin is Capable of Killing Cancer Cells via 1,25(OH)2D3 Activated Human Macrophages

Gabrielle Rind, Alberto Padilla, Genevieve Liddle
James Hartmann

Tumoricidal effects can be achieved by boosting the immune system. The objective of this study was to cause cytotoxicity of monocytic THP-1 acute leukemia cells via co-cultivation with THP-1 derived macrophages activated with 1,25(OH)2D3. When activated with a steroid hormone such as 1,25(OH)2D3, macrophages can secrete significant levels of a cathelicidin anti-microbial peptide (CAMP), LL-37. This peptide can achieve cytotoxic effects and is noticeably reduced in studies involving acute monocytic leukemia patients. We found that at a concentration of 10⁻⁷M of 1,25(OH)2D3, THP-1 derived macrophages were stimulated to secrete increased levels of the LL-37 peptide. This peptide was identified using an LL-37 ELISA kit. After identifying the presence of LL-37, we co-cultured the activated THP-1 derived macrophages with undifferentiated THP-1 cells to identify the cytotoxic effects of cathelicidin on acute monocytic leukemia cells.

Religious Iconography in T. S. Eliot's "Ash-Wednesday"

Anna Riso
Yasmine Shamma

Approximately halfway through Eliot's career, he shifts from a secular focus in his writings to a religious focus. This can partially be attributed to his baptism and confirmation in 1927, which marked his entrance into the Anglo-Saxon Catholic Church. All of his religious poems, written after his baptism and confirmation, struggle with doubt, but this paper focuses specifically on Ash Wednesday. This paper discusses the ways religious iconography is manipulated and interrogated in T. S. Eliot's poem Ash Wednesday, and its relationship to religious doubt. The icons Eliot uses include the image of the veiled Lady, whose identity is never revealed, though several critics have speculated that she is the Virgin Mary, Emily Hale, Beatrice, or any composite of the above. Forms of prayer are also investigated and new ideas are integrated with those forms. Eliot complicates, and occasionally undermines, the traditional interpretations of religious icons.

How Did I Get Here? Selective Activation of Head Direction Cells

Jonathan Rivera, Joan Lora
Robert Stackman

Head direction (HD) cells, found in anterodorsal thalamic nucleus (ADN), may contribute to a sense of direction, and to underwrite goal-directed navigation; behavior compromised in aging and Alzheimer's disease. HD cell characterization has been limited to in-vivo electrophysiological recordings. We examined expression of the neuronal activation marker (c-Fos), and L-amino transporter (Lat4) in ADN. Results indicate that running in a fixed direction on a narrow treadmill induced limited expression of c-Fos in ADN, compared to mice that explored freely in an open field arena. Additionally, c-Fos and Lat4 proteins were co-localized within ADN neurons. Restricting forward locomotion to a narrow range of heading presumably activated the subset of HD cells coding for that directional heading (i.e., the sparse set of ADN neurons co-expressing c-Fos and Lat4).

Identifying genetic markers of HD cells will improve understanding of spatial navigation mechanisms and aid in development of therapies for spatial navigation deficits.

The Patient Caretaker Relationship and its Effect on the Progression of Lewy Body Dementia and Alzheimer's Disease

Elizabeth Robertson
James Galvin, Magdalena Tolea

Alzheimer's disease and Lewy Body Dementia (LBD) are the two most common forms of dementia lead to degeneration of neurological function. We sought to evaluate differences in disease progression by relationship to patient. Using an online caregiver grief and well-being survey (N=686), we created an estimate of disease progression and regressed it on relationship to patient with adjustment for significant covariates. Moderation by type of dementia was also assessed. We found that patients cared for primarily by their children tend to progress faster compared to those cared for by spouses (ORslowprogression=0.397; 95%CI:0.243-0.646), particularly patients with LBD (β interactionterm=-0.875($p=0.009$)). Children caregivers (vs. spouse) of LBD patients had higher levels of burden and depression and lower psychological well-being suggesting possible contribution to observed differences. LBD patients may benefit from interventions designed to alleviate stress and burn-out in their children caregivers, which may negatively impact their direct care and possibly exacerbate rates of progression.

The Effect of Acute High-Intensity Interval Exercise vs. Continuous Moderate-Intensity Exercise on Flow-Mediated Vasodilation in Obesity

Alexandra Rodriguez, Brandon Fico, Katelyn Dodge, Peter Ferrandi, Gabriel Pena, Michael Whitehurst
Chun-Jung Huang

Flow-mediated dilation (FMD) is an accurate and non-invasive technique to determine arterial health. As obese individuals experience chronic inflammation, contributing to endothelial dysfunction and heart disease, FMD is a useful clinical tool. Therefore, this study investigated FMD responses follow-

ing both acute high intensity-interval exercise (HIIE) and continuous moderate-intensity exercise (CME) in obese populations. Six subjects (3 obese and 3 normal-weight) performed HIIE and CME on separate occasions. The HIIE consisted of 4 x 4 min intervals at 80% - 90% VO₂max. CME equated in terms of caloric expenditure, lasting 38 minutes at 50% - 60% VO₂max. FMD data was collected prior to, immediately following exercise, one hour and two hours into recovery. Results showed that an improvement of FMD was observed in obese and normal-weight subjects following both exercise protocols ($p = 0.002$). These results suggest that acute HIIE could be as effective as acute CME to improve endothelial function in obesity.

Pentraxin 3 and Glucose Responses to Acute High-Intensity Interval Exercise vs. Continuous Moderate-Intensity Exercise in Obesity

Alexandra Rodriguez, Brandon Fico, Katelyn Dodge, Peter Ferrandi, Gabriel Pena, Michael Whitehurst, Chun-Jung Huang

Pentraxin 3 (PTX3) is a cardio-protective protein and is involved in the regulation of chronic inflammation (e.g., obesity). This study investigated whether obesity would modulate plasma PTX3 and glucose responses following both acute high intensity-interval exercise (HIIE) and continuous moderate-intensity exercise (CME). Seven subjects (3 obese and 4 normal-weight) performed both exercise protocols. Blood samples were collected prior to, immediately following exercise, one hour and two hours into recovery. Results demonstrated that obese subjects elicited an attenuated PTX3 response compared to normal-weight subjects following both acute HIIE and CME ($p = 0.050$). Furthermore, acute HIIE showed a greater glucose response than CME across time in obese and normal-weight subjects ($p = 0.004$). Additionally, a significant correlation was found in the percent change (baseline to immediately following exercise) between PTX3 and glucose following acute HIIE. These findings indicate that obesity could modulate exercise-mediated PTX3, independent of exercise protocol.

Gopher Tortoise Social Interactions in a Population from South Florida

Andrea Rodriguez, Jessica Huffman, Evelyn Frazier

The overall goal of this study is to evaluate the social interactions in the threatened gopher tortoise species at the FAU preserve and estimate their range. We are particularly interested in their reproductive behavior(s) since a previous survey of 250 burrow aprons conducted in 2016 revealed only one nest with nine eggs. The study will utilize radio telemetry by attaching transmitters to 20 tortoises in the grassy and scrub habitats at the FAU preserve. This study will allow us to determine if this population is sustainable which is crucial in view of previous studies and literature that state Florida gopher tortoise populations are declining. These findings can be useful to the conservation of this species both in the wild and in conservation areas.

Corruption in the Pharmaceutical Industry

Abel Roman, Cheryl Arflin

On November 4th, 2013, global health care giant Johnson & Johnson and its subsidiaries reached a settlement amount of \$2.2 billion dollars. Johnson & Johnson settled to pay this amount to resolve the civil and criminal allegations of promotions not approved as safe and effective, kickbacks to physicians, and violations based on the False claim act. This type of offense has been common with pharmaceutical companies for the past ten years, but the federal government still gives pharmaceutical companies tax breaks which represent billions of dollars in lost revenue for the federal government. With this type of exemption, pharmaceutical companies are given an incentive to commit fraud for corporate greed while neglecting to put funds towards research and development.

Emotional Scaffolding and the English Language Learner

Lauren Rubin, Lori Dassa

My research looked at how the emotional relationship formed between a teacher and their students can increase their motivation for learning. I specifically studied the effects of emotional scaffolding for English language learners (ELLs) in the regular classroom. There is no quick fix to solve the issue of reading and language development for ELL students. However, as this population continues to grow, it is crucial that ways to continuously try to close this learning gap are being researched. I aimed to see how strengthening the teacher to student relationship throughout my student teaching experience using scaffolding to boost reading scores. I used Vygotsky's theory to strengthen my research methods and prove the significance of this relationship in the classroom setting.

Characteristics of Summer Beach Morphology in Southeast Florida

*Madeline Rubio,
Tiffany Roberts-Briggs*

Changing environmental conditions, such as wind, waves, tides and sediment, can lead to morphology change along dynamic Southeast Florida beaches, which may have an impact on sea turtle nest habitat. To evaluate morphologic change, several closely-spaced beach profiles were surveyed bimonthly from May to October 2016 in Delray Beach, Boca Raton, and Deerfield Beach (~ 18 kilometers of shoreline). Profile change was evaluated to describe morphologic variability and quantify shoreline retreat/advance. Sediment samples at three cross-shore locations for each profile were compared for cross-shore and alongshore textural and compositional variability. Results from this study revealed little morphologic change during the early summer, when no significant storms impacted the area. However, in October 2016, the close passage of Hurricane Matthew induced coastal erosion. Profile shape and patterns of erosion/accretion varied between study areas, but sediment texture was similar, suggesting that grain size was not the largest influence on beach slope.

Synthesis of Rhodamine B Conjugate Building Block Suitable for Use as a Fluorescent Probe

*Vicente Rubio,
Maciej Stawikowski*

Rhodamine B is widely used as a fluorescent probe. In this project we have synthesized and characterized the Rhodamine B derivative to be used as fluorescent tag or as a fluorescent resonance energy transfer (FRET) donor/quencher building block. The synthesized fluorescent derivative will be used for a solid-phase peptide synthesis (SPPS) of FRET substrates or other labeled peptides used as probes for bioimaging. Presented here are the results of our synthetic approach, purification, and characterization of Rhodamine B derivative that does not form the non-fluorescent spiro-lactam form of the dye. Results of the application of synthesized Rhodamine B-RGD peptide conjugate are also presented here.

Enhanced CpG Activated Macrophage Killing of 3-Bromopyruvate Pre-treated 4T1 Breast Cancer Cells

*Dawit Rumicha, Liddle Genevieve
James Hartmann*

A common feature of breast cancer cells is the evasion of singular treatments by using the Warburg Effect, a process of metabolic ATP production through rapid anaerobic glycolysis. Cancer research has transitioned to an investigation of combination therapies to combat cancer. In our study, we seek to metabolically inhibit cancer cells before application of immunogenic killing. The Warburg Effect was targeted with 3-Bromopyruvate (3-BP), which blocks Glyceraldehyde 3-Phosphate Dehydrogenase (GAPDH) production. Treatment with 3-BP yielded up to 86.5% cancer cell death. Glycolytic inhibition renders cancer cells metabolically stressed, which may enable an effective immune response. Our hypothesis was that CpG activated macrophage will possess tumoricidal potential to target metabolically stressed cancer cells. Macrophages and CpG cultivation alone yielded a significant immune response. We sought to find a synergistic effect of 3-BP induced killing susceptibility with CpG activated

macrophages may lead to an effective method of combination therapy.

The Role of Persuasion Theory and Advertising Message Strategy: Implications for Attacking a Market Leader

*Joseph Salcedo, Emanuel Delgado, Blake Berkheimer, Fiorella Panzitta
Allen Smith*

Competitive theory suggests market challengers embrace either a head-to-head attack or flanking maneuver as alternative strategies to attack the market leader. Our research-in-progress, a three-phase systematic research plan of action, will reveal whether Monster Energy drink should convey action sports (head-to-head attack) or academic performance (flanking strategy) in advertising targeting college students to challenge Red Bull, the market leader. Phase I, Content Analysis of Red Bull Advertising, revealed emphasis on action sports. However, Phase II (i.e., secondary, qualitative, and survey research) revealed college students use energy drinks to increase academic performance. Phase III, Experimental Research, estimates the relative persuasive effectiveness of action sports versus academic themes in Monster advertisements. Ho: no different in persuasive effectiveness among action sports, academic performance, and neutral theme (control) on dependent variables (likeability, relevance, intention to buy). Ethical standards were met by using valid scales borrowed from scholarly marketing journals, consent form, and APA standards.

Photovoltaic (PV) Panel Efficiency Assessment Using Current -Voltage (IV) Curve analysis

*Ricardo Sanatan, Christopher Romaine, Shefatha Rabbany
Amir Abtahi*

This research seeks to improve the return on investment (ROI), and thereby the viability, of PV energy. Through the graphic characteristics of the Current - Voltage (I-V) curve the maximum power point (MPP) of a PV array is quantified and costly performance issues within the installation are revealed. The

process of selective shading, creating I-V curves and correlating the actual (field generated) MPP and theoretical (factory specifications) MPP will identify ineffective PV modules. The diagnostic methodology is based on parameters that can be easily calculated from the shape of the PV I-V curve characteristic [1]. I-V curve parameters including short circuit current (Isc), open circuit voltage (Voc), and curve functions will be used to determine panel faults and regulate when the panel should be repaired or replaced. This method of resolving deficiencies in PV arrays intends to confirm I-V curve analysis as an inexpensive diagnostic method to identify costly power losses.

Drug Discovery in Class: In Silico Design and Engineering of Novel Proprotein Convertase Inhibitors

*Lauren Schmidt, Brian Busbee, Adam Reinstein
Maciej Stawikowski*

This project was aimed towards exposing students to methods of drug discovery and to giving a hands-on understanding of chemical biology methods and techniques. Students employed their knowledge of biochemical structure and bioinformatics skills acquired in Structural Biochemistry (CHM4350) course. At the beginning of the drug design process a critical analysis of scientific literature was performed. Next, a preparation and examination of inhibitor models using computer simulations, and the visualization of these inhibitors using three-dimensional (3D) printing technology was applied. Using the acquired knowledge, each student manipulated and engineered different inhibitor scaffolds to obtain the potential novel inhibitor for proprotein convertase – furin. This enzyme was selected based on its biological activity that is linked to cancer progression and pathogenic proliferation. Students hope to gain considerable insight into the science underlying the drug design process through the understanding of their target's biochemical significance and its molecular architecture.

The Road to Redemption of a Conquistador: Álvaro Nuñez Cabeza de Vaca

Claudia Schmucker
Yolanda Gamboa

Alvar Nuñez Cabeza de Vaca (Jerez 1490-1560) was a Spanish explorer who participated in the Panfilo de Narvaez expedition to Florida in 1528 and was the governor of the Rio de la Plata territory in South America from 1541-45. Though Cabeza de Vaca is not a well-known explorer in U.S. history, he was the first Spaniard to provide an extensively detailed account of the indigenous populations. In his two chronicles, Naufragios and Comentarios, he reports on the indigenous population's customs, diets, environment, and hardships. Emphasis is placed on the dramatic transformation of Alvar Nuñez Cabeza de Vaca as is forced to adapt during his ordeals in a hostile environment. This analysis concentrates on the different stages of his life from a man who once sought gold and power to the one who became a slave, trader, shaman, governor, and ultimately a peace maker in an effort to redeem himself.

The Effect on Temporary Inactivation of the Nucleus Reunions Using Chemogenetic Methods on Spatial Working Memory

Max Schreiber, Kara Harris, Tatiana Viena,
Robert Vertes, Stephanie Linley

The nucleus reunions (RE) of the ventral midline thalamus anatomically connects the medial prefrontal cortex (mPFC) and the hippocampal formation (HF). Previous studies have found RE has instrumental mnemonic functions which recruit both the HF and mPFC. We examined the effects of RE in spatial working memory using a chemo-genetic technique. We injected the Designer Receptors Exclusively Activated Drugs (DREADDs) AAV8-hSyn-hM4Di-mCherry, into RE in rats after training them on a delayed non-match to sample (DNMS) task using a T-maze, whereby rats had to alternate following delays of 30 or 120 seconds. Following RE inactivation using the drug clozapine-N-oxide (CNO), which selectively inhibits cells infected by the DREADDs, we found that there was no difference in persevering behavior; however, there was evidence of spatial working memory impairment following CNO injections. Our

findings support the role of RE in the transfer of cognitive information between the HF and mPFC.

Multicomponent Assembly of Novel Thiono Analogues of 4-aza-Podophyllotoxin with Potential Antitumor Activities

Charles Shearer
Stéphane Roche

Cancerous cells are known to uncontrollably grow and spread (metastasize) throughout the body because of mitotic division; hence, cancer cells are more susceptible to mitotic inhibitors than normal cells. Mitotic inhibitors are drugs that disrupt microtubules, which are protein polymers that assist with cell division. Some mitotic inhibitors are already on the market: vinblastine and paclitaxel, and they both target different regions of tubulin, the monomer building block of microtubules, which disrupts microtubule dynamics. With the rise of multidrug resistance in chemotherapy it is imperative to locate new modes of cancer targeting in the form of new chemotherapeutic drugs. A synthetic compound, 4-aza-podophyllotoxin (APT) has anti-microtubule potential by binding to the colchicine site on tubulin; herein, we proposed to increase the biological activity of APT analogues through thiono-sulfur modification, a known alteration to increase compound's biological effects, on its lactone ring.

A Comprehensive Polymer Analysis using Raman, Infrared, and Thermogravimetric Techniques in for use in an Instrumentation Course

Yiro Shimabukuro
Jerome Haky

Raman and infrared (IR) spectroscopy examine molecular vibrations by either distorting the electron density or inducing a dipole change, respectively. The use of polymer films provides a directly analyzable sample requiring no preparation. Thermogravimetric analysis (TGA) measures the weight composition of a substance with respect to temperature or time. We demonstrate the effect various heating rates have on polymer decomposition, identification of the glass transition and melt temperature, as well as entropic information obtained from differential

scanning calorimetry (DSC). The combination of thermal and spectroscopic analysis provides an in-depth approach to integrating polymer science into the upper division chemistry curriculum.

Development of an Air Quality Monitoring UAS for Remote Sensing Applications

Andrew Silverstein

William Hahn, Elan Barenholtz

The purpose of this project is to develop an air quality monitoring unmanned aerial system (UAS). A commercially available quadcopter will be deployed with an accessory bay containing an Arduino microcontroller, a GPS receiver, and a suite of ten different gas sensors. The payload's sensor array will measure concentrations of various types of particulates, flammable gases, and volatile organic compounds. The sensors will be chosen on the basis of their particular detection limits, measurement rates, and power requirements. The effect of downwash from the rotors will be analyzed in an environmental chamber to help calibrate the sensors for operation. The anticipated outcome of this project is the development of a cloud-enabled aerial robotics platform that can map density of different pollutants with high spatial and temporal accuracy at low cost. The technology developed may be useful in detecting leaks in gas pipelines, monitoring pollution from mines, and measuring industrial emissions.

Challenging Source Effects Theory: The Case of High-Technology Computers

Judie Simon

Allen Smith

Consumer insights and persuasion theories enable advertisers to make better message strategy decisions. In recommending message strategy for high technology products, existing source effects theory appears challenged by insights into the freshman college student market. Traditional theory posits credible spokespersons (e.g., trained experts) be used in advertising complex products, such as high-technology computers. However, findings of our experiment contested existing theory by revealing that although newly-entering freshman believed

experts provided more cognitive information about a high-tech computer, they questioned their ability to understand and use expert advice in selecting the best computer. Moreover, results indicated that a referent - an upper-class college student - would be more able to convey a computer's: 1) usefulness, 2) relatedness, and 3) association with the freshmen college experience. Finally, the referent out performed a celebrity in source likeability. The experiment used a manipulation check, questionnaire pretest, a survey, chi-square method, and consent form.

Should an Innovator Embrace the Prototypical, Authentic, or the High-Design Form? Insights into Initial Perceptions of Functionality, Ergonomics, Hedonism, Self-Expression, Authenticity, and Information Search of Dune Buggy Product Design Forms

Hunter Smith, Katherine Llanos, Danielle Gordon
Allen Smith

The outward appearance of a product and product design form underlies successful innovation. Design form creates initial impressions impacting buyer judgments. Prototypical designs provide assurance and familiarity. High-designs signal superior quality, exclusiveness, and prestige. Continued high performance gives authentic designs the real deal reputation. Results contributed to product design literature by revealing buyer's initial impressions of prototypical, authentic, and high-design forms, the independent variables. The dependent variables were functionality, ergonomics, hedonism, self-expression, authenticity, and information search. Plan of action included a convince sample of 60 millennials, personal distribution/ collection, manipulation check, and questionnaire pretest. Methods included secondary, survey, and experimental research. Ethical practice conformed to APA style, and consent forms. Reliability/validity was heightened by items borrowed from scholarly journals. Key findings: 1) high-design scored highest on self-expression, hedonism, and information search but lowest on ease of use; 2) prototypical design posed the greatest injury hazard; 3) Authentic design signaled highest functionality.

Application of 3D Printing Technology for Better Understanding of Biomolecular Structures in Biochemical Education

*Dalia Soueid, Lauren Schmidt,
Maciej Stawikowski*

Modern technologies can be used to depict concepts of biochemistry in order to help students better understand the relationship between structure and function of biomolecules. Through the use of three-dimensional (3D) printing, molecular modeling, and visualization software, students are able to generate physical models. This helps bridge the gap in biochemical education where structures are generally presented in a flat two-dimensional fashion. With 3D-printed models, students gain an enhanced visual understanding of biomolecular architecture and its connection to biological context. Presented in this project are the protocols for (1) transformation of experimentally determined structures found in the Protein Data Bank and are (2) converted into 3D-printed models with use of appropriate software. The representative examples of 3D-printed models displayed include: secondary structures of proteins, DNA, carbohydrates, and lipids.

Buckling of a Column Made of FGM with Buckling Mode Represented by 4th, 5th, 6th, 7th, 8th and 9th Order Polynomial

*Kristopher Stewart
Isaac Elishakoff*

Functionally graded materials are the modern-day revolution on which alchemists dreamt for centuries. The material is transformed from one material to the other in a single structure. In the study of buckling of an inhomogeneous column made from functionally graded material (FGM); buckling load, mode shape, and flexural rigidity were calculated and analyzed. FGM has applications in fields like biomedical and photovoltaic-cells. The column analyzed was simply supported-clamped column the solutions are presented as closed form solutions. The buckling mode polynomial in this study ranges from the 4th to the 9th order. The buckling load was dependent on a flexural rigidity coefficient b_0 . The buckling load was

being analyzed to observe if the same load appears in the next order buckling mode polynomial. Multiple solutions appear in each buckling mode shape. Newly found modes have more legitimacy, although with different flexural rigidity it may possess the same buckling mode.

Multisensory Installations and Their Effects on Emotion

*Cynthia Stucki
Julie Ward*

My research involves understanding how variations in light, color, sound, and touch can influence the emotional response of the viewer. I was further interested in researching the various responses of the viewer to natural environmental stimuli in comparison to sounds, smells, sight, and tactile qualities from artificial spaces. To encompass these ideas, I created an installation by constructing a room that combined elements found in nature, while leaving the room distinctly recognizable as a manufactured space. This multisensory experience was achieved through the use of wooden boxes that housed sounds from underground activity. To engage the senses of smell and touch, grass lined the horizontal surfaces of the installation, while a video showed moving clouds. Through the creation of this installation, I expect to find that viewers will react with more engagement to a multisensory space and thus experience a positive emotional response.

Effect of Virtual Reality Headset for Pediatric Fear and Pain Distraction During Immunization – a Pilot Study.

*Emaan Sulaiman, Jillian Orden
Chad Rudnick*

Fear of needles is a well-known phobia among children and adults. Several distraction techniques have been used, but fear prior to and pain following immunizations remains a significant issue for children and their parent/guardian. We present the rationale, feasibility, and results of a pilot study applying a virtual reality (VR) headset aimed as a fear reduction and pain distraction during immunizations. Ratings of anticipated vs. actual fear and pain due to immu-

nizations improved following use of the VR headset in 94.1% of pediatric subjects. The Wong-Baker pain scale and McMurthy children's fear scale were used. Average decrease in fear score in subjects was 90% and 77% in pain score. The decrease in fear score as perceived by the parent was 77% ($p=0.05$) and 83% ($p=0.02$) in perceived pain. The use of a virtual reality headset was well-received and reduced overall fear and pain in children receiving immunizations.

SEA Skimmer: Developing a Sustainable Environmental Accumulation Skimmer to Extract Oil Pollution from a Variety of Geographical Locations

Vithulan Suthakaran
Javed Hashemi

Oil pollution is known to be one of the most detrimental forms of ocean contamination, which greatly affects large amounts of marine biodiversity. Current cleanup methods include using insufficient stationary oil skimmers and harmful dispersants to remove the pollutant from the water. In effort to create a sustainable oil collection process, it was proposed to develop an efficient autonomous oil skimmer, which has the capability of removing large quantities of oil in a short period of time. SEA Skimmer which is a Sustainable Environmental Accumulation Skimmer, first design iteration was developed this year. The SEA Skimmer is an autonomous robotic surface vehicle which has the capability of removing over 2.79 gallons of oil in one hour using a hydrophobic-oleophilic oil absorbent mat and a low-cost computer module. Overall, results showed that the SEA Skimmer collects double the amount oil than a modern-day oil skimmer used in oil spill cleanup.

Analysis of Water Bubble Collisions Caused by a Heat Source

Jason Swinton
Tsung-Chow Su

The purpose of this study is to figure out the effects that a source of heat would have on the collisions of water bubbles. This will be done by expanding on the well documented understanding of how heat propels a bubble toward that specific heat source.

Such information would be useful in many different fields from space exploration to energy conservation while also giving the world a better understanding of fluid mechanics. This research will involve looking closely at two water droplets. The goal is to analyze how the water droplets will collide with one another depending on how far apart a heat source is from one particular water droplet or the other.

Design and Synthesis of Novel 4-Aza-Podophyllo-toxin Analogues with Modified E-ring to Enhance Tubulin-Binding Activity and Anticancer Properties

Aya Tal-mason
Stéphane Roche

4-Aza-podophyllotoxin (APT) has been found to have anticancer properties, by acting as a microtubule-destabilizing agent. It binds to the colchicine site between α and β -tubulin monomers to promote tubulin depolymerization. Through structural modifications of the APT scaffold, a library of approximately 50 APT analogues was compiled. The six most potent compounds have been consolidated for further research. The current project development focuses on creating new molecules based on the 6 most potent compounds with enhanced binding to a cavity that protrudes into the β -tubulin colchicine site and that has been previously unexplored for APT optimization. More specifically, APT appendages are modified at the β -tubulin colchicine-binding site to study binding abilities of the molecules with tubulin. The aim is to implement rational drug design in order to enhance tubulin depolymerization and increase anticancer activity.

An Autonomous Seawater Sampler Using a Flexible Soft Material

Cuong Tran, Minh Nguyen, Nafisa Shikdar
Myeongsub Kim

Considerable global concerns including significant detrimental effects on marine ecosystems and human livelihood. The ultimate goal of this project is to design and fabricate an autonomous seawater sampler contributing toward real-time monitoring

of oceanic CO₂ levels. A transparent soft material, polydimethylsiloxane, will be used as a main body structure since the newly designed seawater sampler will be finally attached to the Jellyfish recently developed by the Ocean and Mechanical Department at FAU. In order to take seawater samples with target amounts at different depths, a CPU-controlled microvalve system will be combined with electroosmosis-based micropumps. The current work aims at designing flexible microfluidic chambers that will be attached to the Jellyfish as a sampler. In this presentation, our future plan, detailed working mechanisms, and expected research outcomes will be further discuss.

Markers of Mitochondrial Function and Cell Death in Models of Stroke Therapy

Paola Trujillo

Howard Prentice, Hang-Yen Wu

A stroke is a “heart attack” to the brain, where blood supply is cut off, causing what can be massive cell apoptosis. With a bilateral carotid artery occlusion (BCAO) surgical technique for 30 minutes, we are able to imitate the cell death found clinically in stroke, but using a mouse model. Granulocyte colony-stimulating factor (GCSF) is known to diminish the pathological effects of stroke through mechanisms that include decreased apoptosis as well as enhanced neurogenesis. We hypothesize that selected key regulators of mitochondrial function (Drp1 and OPA1) and of cell death (p53) will be modified in their expression in the brain by global cerebral ischemia in BCAO. Using immunochemical techniques we are measuring levels of expression of these three functional markers. The data will be further correlated with results from two behavioral assays (corner test and locomotor test).

The Effects of Disorientation on the Survival Rates of Emerging Loggerhead (*Caretta caretta*) Hatchlings Between the Nest and the Surf

Brianna Villegas Vindiola

Jeanette Wyneken

Loggerhead (*Caretta caretta*) sea turtles are classified as threatened in Florida. Current estimations of

nest productivity do not subtract hatchling mortality after nest emergence and before entering the ocean. After emerging from their nests, hatchlings orient away from tall, dark silhouettes to reach the surf. Disorientation due to light pollution increases their risk of mortality. This study addressed the magnitude and consequences of disorientation of loggerhead hatchling disorientation and misorientation events by analyzing a dataset compiled by the Florida Fish and Wildlife Conservation Commission. During 2016, direct observations in the field were used to categorize probable hatchling mortality. Data spanning 2011-2015 across six nesting sites (Canaveral National Seashore, Hutchinson Island, Tequesta Beach, Juno Beach, Boca Raton Beaches, and Miami Beach) were analyzed and showed that mortality and probable mortality of disoriented hatchlings increases with the level of urbanization where nests occur.

Influence of Metagenomic DNA Extraction Protocol on the Amount and Purity of Nucleic Acid and the Bacterial Diversity

Pimnitah Visitdesotrakul, Daniela Garzon-Aljure,

Daniela Garzon-Aljure

Nwadiuto Esiobu

Innovations in life sciences have enabled scientists to study microbiomes and their functions through the use of metagenomics. However, because most bacteria are not yet cultivable, the method used to extract these genomes is critically important to the outcome. In metagenomics, the direct extraction of community DNA is analyzed. This study compared the novel Owl protocol (method O) developed in our lab and the original PowerSoil MoBio protocol (method P) to determine the better procedure, using replicates of aquatic and soil samples. On average, the adapted method O yielded more DNA extracted per column used (31.5 ng/ μ L) than method P (14.14 ng/ μ L). Average DNA purity levels were similar (method P A₂₆₀/A₂₈₀= 1.97; method O A₂₆₀/A₂₈₀= 1.96). The diversity of organisms recovered will be contrasted and compared upon conclusion of the ongoing sequencing exercise. This poster discusses the implications of having a representative genomic DNA on reported microbiome communities.

Protein Replacement Therapy to Rescue Neuronal Structural Defects Caused by Mutation of the Autism Risk Gene PTEN

Vanessa Walters

Monica Maldonado, Damon Page

Heterozygous mutations in PTEN is associated with macrocephaly/autism syndrome, which display clinical features of head overgrowth (macrocephaly) and autism spectrum disorder (ASD). PTEN is a lipid phosphatase that regulates the PI3K-AKT-mTOR signaling pathway, which is crucial to cell growth and proliferation. In this study, we utilized a well-established mouse model of macrocephaly/autism syndrome (Pten haploinsufficient mice) to generate cultures of primary neurons that display structural defects (e.g. neurite overgrowth) as compared to neurons derived from wild type animals. We hypothesize that restoration of Pten levels in neurons derived from Pten haplo-insufficient mice will restore normal functioning of the PI3K-AKT-mTOR signaling pathway, which in turn will reverse the morphological abnormalities seen in these cells.

Flying Into Code: Evaluating the Effectiveness of a New, Hands-on Computer Science Educational Program

Janet Weinthal, Paul Morris, Benjamin Coleman
Tricia Meredith, Suzette Milu

In a world increasingly dominated by computers, there is a clear need to equip our students with confidence, interest, and ability in computer science. However, the few middle and elementary schools that do engage in computer science education rely on simplistic coding games in simulated environments. Flying Into Code is a new program that engages middle school students in computer science with a real-world application by teaching them to fly minidrones using JavaScript through their computers' commandline. We evaluated students' confidence and interest with a pre- and post- survey and their ability with a pre- and post- test. Our results indicate that despite a significant improvement of students' ability in computer science, their confidence and interest suffered slightly but significantly. A program which can both prepare and inspire students to suc-

ceed in computer science must be developed.

Sociological Analysis of Family Life in Sitcoms

Joseph Weisler

Gina Carreno-Lukasik

The public sphere has been long- saturated with the spectacle. Among the most prominent form of the spectacle on television is noted through infamous family sitcoms that work to explain the dynamics of family life. Sociologists have long questioned the role of the family, working to define it as an evolving institution. This qualitative deductive research study seeks to examine American family life and how it is sociologically interpreted on the screen. Using the sitcoms "Full House" to examine the role of fathers in the family; "Step By Step" to evaluate the dynamic of step-family life; "George Lopez" and "One Day at a Time" to observe Latino-American life; "Black-ish" to understand the realities of Black-American life, and "Boy Meets World" to determine the ways in which education is responsible for shaping identity; this study works to embed and question the depictions of sitcoms into an analysis of American family life.

Dimension Perception

Tristan White, Sebastian Vergara, Ian Pitters,
Tammy Knipp

Three-dimensional computer-generated imagery (CGI) has been the industry standard for two decades. There has been increased research in non-photorealistic rendering (NPR) techniques by industry leaders such as Walt Disney Animation Studios and Pixar. NPR is computer-generated imagery that is augmented to replicate a distinct art style. In this study, subjects are tasked to determine whether a series of animated clips are two-dimensional or three-dimensional. Participants are pooled into two groups of ten; half of the subjects within each group will receive prior instructions to the screening. Using eye-tracking software, the data will observe if an individual uses visual cues to draw distinctions between two-dimensional and three-dimensional forms.

Isolation and Biomimetic Synthesis of Bioactive Marine Natural Products

Shakia Williams, Arafat Bari, Stephanie Gulino
Lyndon West

While natural products have served as a prolific source of unique chemistry, supply remains a significant obstacle for drug discovery. The overall goal of this project is to determine whether isolation and semi-synthesis can provide adequate quantities for biological evaluation. Erythropodium caribaeorum is an abundant gorgonian in the Caribbean that produces two unique marine diterpenoids, erythrolides A and B, which have been shown to undergo photochemical transformations to yield more complex chemistry. In this project, erythrolides A and B will be isolated from E. caribaeorum collected off the coast of Boca Raton, Florida. These compounds will be exposed to ultraviolet light and analyzed to identify any chemical changes. New compounds will then be subjected to biological screening for cytotoxicity against human cancer cell lines. This project will not only identify new bioactive compounds but also provide a novel route for the large-scale production of medically relevant marine natural products.

Assessing the Public Health implications of High numbers of Staph aureus and indicator Bacteria in Fort Lauderdale Beach Sand, swash zone and recreational water

Tacianna Williams
Nwadiuto Esiobu

Previous reports found high numbers of some bacteria in recreational waters and beach sand. The significance of these bacteria remains an important question. This study enumerated Staphylococcus aureus and Enterococcus spp and examined their potential role as reservoirs of antibiotic resistance in Ft. Lauderdale Beach's dry sand, swash zone, and seawater. Susceptibility to commonly used antibiotics – vancomycin, imipenem, and ciprofloxacin was assessed. Population of Staphylococcus aureus ranged from 1.40E6 CFU/gram and 3.20E5 CFU/gram of dry sand and swash zone sand, respectively. The Staphylococcus aureus in the seawater could not be enumerated due to its abundance. The pop-

ulation of Enterococci ranged from 0.20E1 CFU/gram, 0.11E1 CFU/gram, and 0.47E1 CFU/gram of dry sand, wet swash zone, and seawater respectively. Twenty six percent of Enterococci were resistant to at least one antibiotic while 20% was multidrug-resistant. Beach quality assessment and management should include direct assay for pathogens and antibiotic resistance.

The Strength of A Living Ghost: The “Ghost” Narrative in the Works of Gabriel Garcia Marquez, Toni Morrison, and Ralph Ellison

Malyka Young
Sika Dagbovie-Mullins

Through the telling of a ghost story, an author is able to step outside the boundaries of expected reality, as well as beyond the realm of what constitutes living and dying. My thesis explores and analyses the different constructions and representations of the ghost story in Gabriel Garcia Marquez' novel, “100 Years of Solitude,” Toni Morrison's novel “Beloved,” and Ralph Ellison's novel, “Invisible Man.” Each text strives to tell an untold story, something which has been unconsciously or deliberately overlooked for the sake of maintaining white historical and literary hegemony. Each author battles against what Morrison calls “amnesia” which blocks out the stories of underrepresented people. In allowing ghosts or ghost-like characters to interact with other living characters, the writers affirm the ability of the unseen to have an actual effect on what is perceived as reality.

Design and Synthesis of Novel Substrate and Inhibitor of Human Hepsin - Enzyme Involved in Prostate Cancer Progression and Metastasis

Ruben Zapata, Aqiyl Mills
Maciej Stawikowski

Prostate cancer is the leading cancer diagnosed among men in the world while ovarian and breast cancers are among the most common in women. Hepsin, a type II transmembrane serine protease (TTSP) has been reported to be overexpressed

in both prostate and ovarian cancers. Hence, the development of novel hepsin FRET (Fluorescence Resonance Energy Transfer substrates) that allow for monitoring of hepsin activity in vitro and in vivo is highly desirable. Also, the development of potent hepsin specific inhibitors allowing for better understanding of the role of hepsin in metastasis process is actively sought. Presented here are the results of our efforts to design and synthesize a novel hepsin FRET substrate based on canonical binding loop characteristic to serine proteases and the modification of a proteinogenic SFTI-1 (sunflower trypsin inhibitor -1) scaffold to develop a novel and hepsin specific inhibitor.

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