Florida Undergraduate Research Conference

February 16-17, 2024

Hosted by UNF UNIVERSITY of NORTH FLORIDA

Welcome to FURC 2024

Welcome to the 14th annual Florida Undergraduate Research Conference and the University of North Florida! Since its inception in 2011, FURC serves as a multi-disciplinary conference through which undergraduate students from the state of Florida can present their research. Indeed, FURC is the largest conference of its kind in the United States and provides not only a platform for honing communication skills, but also networking with peers from across the state and graduate recruiters from across the country, and professional development through a variety of workshops.

This year's conference begins on Friday evening with a networking reception and keynote address by UNF Professor Dr. Heather Truelove, who will speak about her personal experiences as a student researcher and a mentor in her studies of the psychology of pro-environmental behavior. On Saturday, 580 posters will be presented to over 700 participants from 34 different colleges and universities from the state of Florida. Workshops ranging from career development to research advocacy, to funding and internships, to research integrity, to stress management provide an opportunity to develop as a research professional. Graduate recruiters from around the country will also be present to provide information about their various programs of study.

On behalf of the University of North Florida and the UNF Office of Undergraduate Research, I wish you a fantastic FURC 2024. Share your memories of your experience on social media with the tag #FURC2024.

Judith D. Ochrietor

Judith D. Ochrietor, PhD
Director, UNF Office of Undergraduate Research

Conference Schedule

Friday, February 16

Location: The Adam W. Herbert University Center (Building 43)

Time	Event
5:00 p.m. – 8:00 p.m.	Check-in
5:00 p.m. – 6:45 p.m.	Reception & Networking
7:00 p.m – 8:00 p.m	Keynote
8:00 p.m.	Dinner on Your Own

Saturday, February 17

Location: The John A. Delaney Student Union (Building 58)

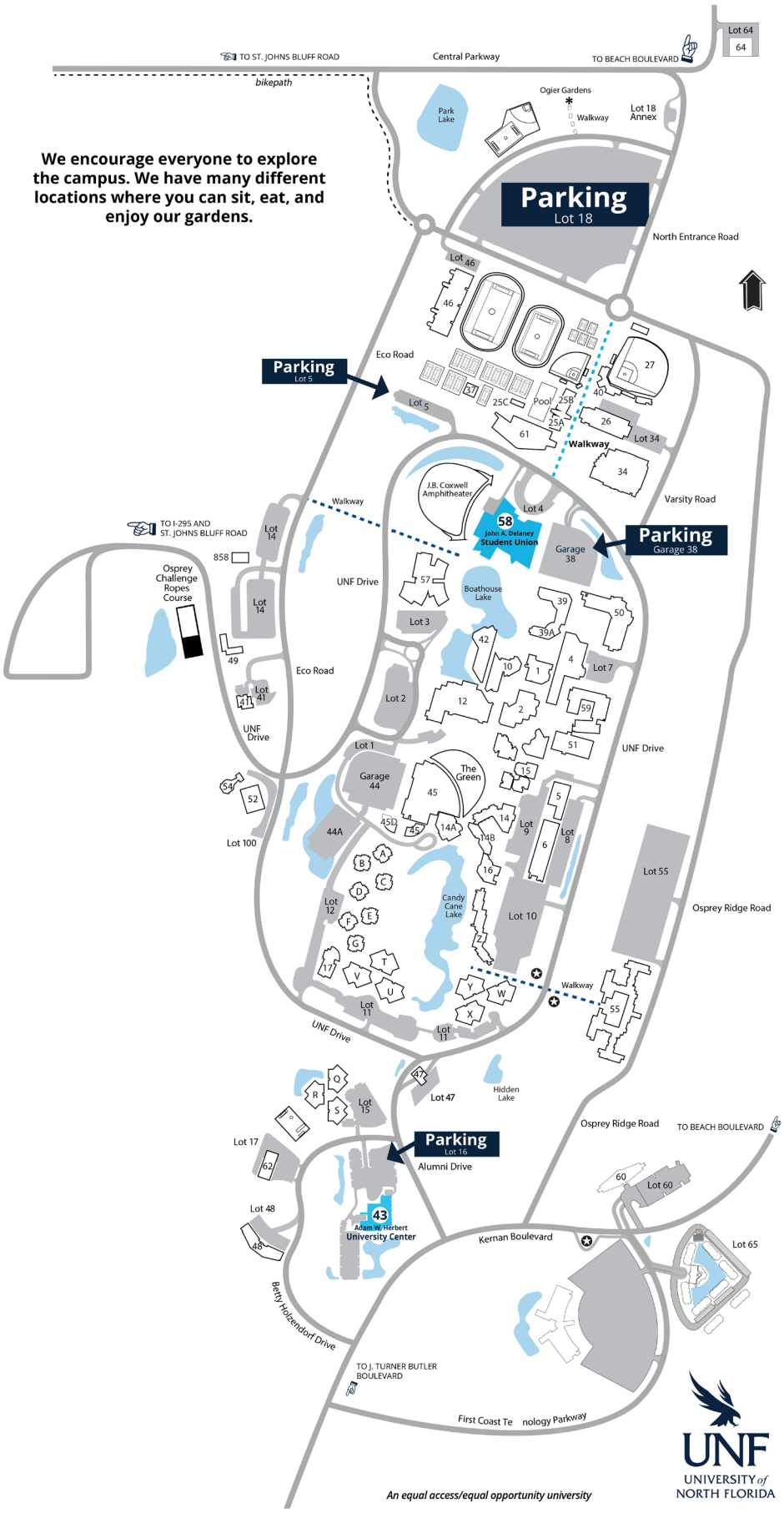
Time	Event
8:00 a.m. – 9:00 a.m.	Breakfast and Check-in
9:00 a.m. – 5:00 p.m.	Graduate School Fair
9:00 a.m. – 10:00 a.m.	Poster Session I
10:15 a.m. – 11:00 a.m.	Workshop I
11:15 a.m. – 12:15 p.m.	Poster Session II
12:30 p.m. – 1:30 p.m.	Lunch
1:45 p.m. – 2:45 p.m.	Poster Session III
3:00 p.m. – 3:45 p.m.	Workshop II
4:00 p.m. – 5:00 p.m.	Poster Session IV

Table of Contents

Campus Map

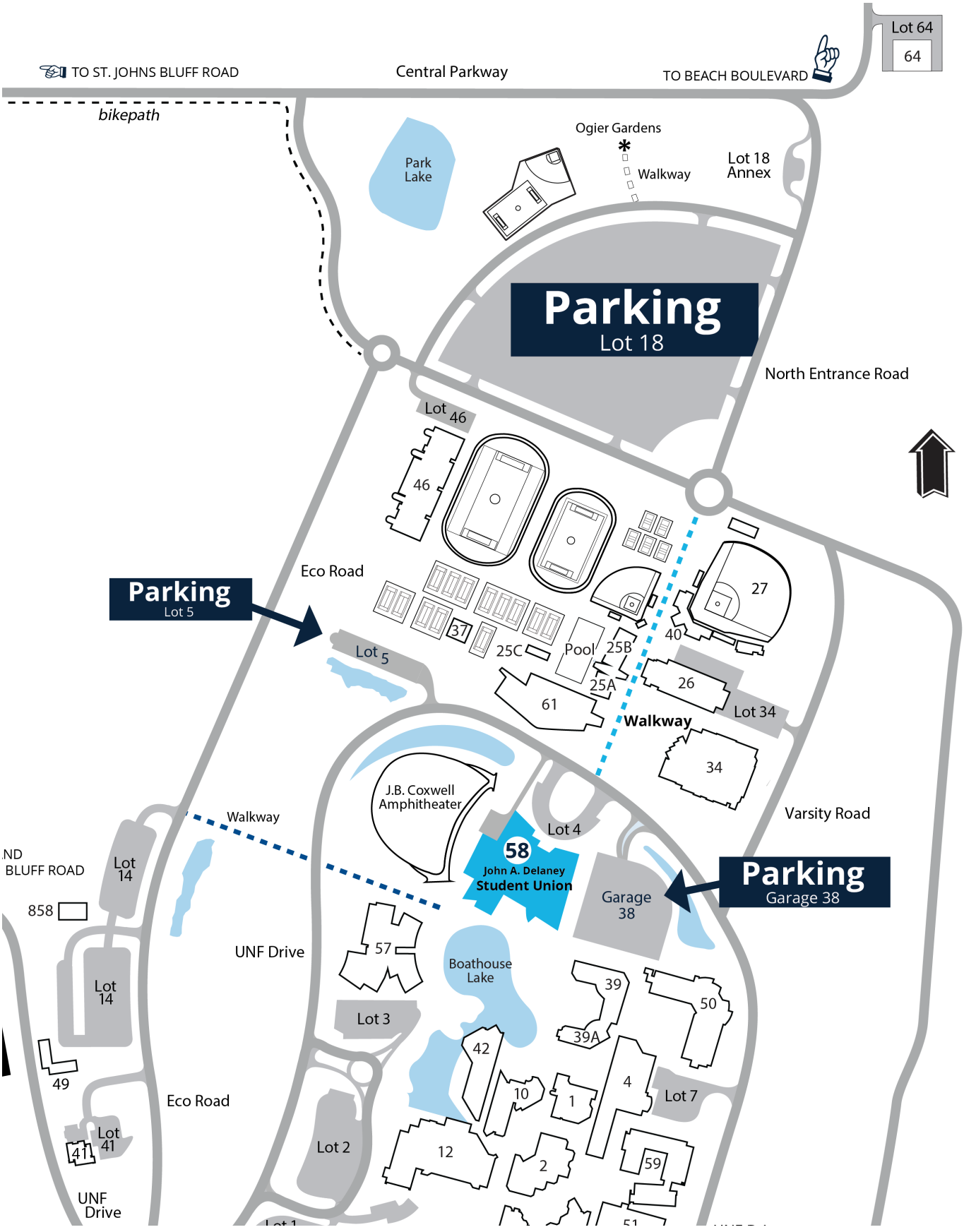
Campus FURC Map

Building Name	Building Number
J. J. Daniel Hall	1
Founders Hall	2
Skinner - Jones Hall	4
Physical Facilities	5
UNF Annex	6
Roy Lassiter Hall	8
Frederick H. Schultz Hall	9
Building 10	10
Thomas G. Carpenter Library	12
Andrew A. Robinson Jr. Building	14
Andrew A. Robinson Jr. Theater	14A
Housing & Residence Life	14B
John E. Mathews Jr. Computer Science Building	15
Osprey Commons	16
Osprey Clubhouse	17
Competition Pool Complex Building A	25A
Competition Pool Complex Building B	25B
Competition Pool Equipment Building	25C
UNF Field House	26
Harmon Baseball Stadium	27
Batting/Pitching Facility	28A
Softball Complex	31
UNF Arena	34
Tennis Clubhouse	37
Arena Parking Garage	38
J. Brooks Brown Hall	39
J. Brooks Brown Hall Addition	39A
Osprey Nest (Baseball)	40
Martin P. Garris Police Building	41
Coggin College of Business	42
Adam W. Herbert University Center	43
Fine Arts Center Parking Garage	44
Fine Arts Center Parking Garage Annex	44A
Fine Arts Center	45
Ceramics Lab	45
Photo Lab	45D
Hodges Stadium	46
Parking Administration	47
UNF Golf Complex at the Hayt Learning Center	48
UNF Preschool	49
Science and Engineering Building	50
Social Sciences Building	51
Parking Services	52
Ann and David Hicks Hall	53
J. M. Golden (Eco) Education Pavilion	54
Osprey Fountains	55
Tom and Betty Petway Hall	57
John A. Delaney Student Union	58
Biological Sciences Building	59
Alumni Hall	60
Student Wellness Complex	61
Housing Maintenance Building	62
Campus Maintenance Facility	64
The Flats at UNF	65
Cooper Beach Volleyball Courts	66
Ogier Gardens	*
Greenhouse	858
Osprey Village	A-G
Osprey Crossings	Q-S
Osprey Cove	T-V
Osprey Landing	W-Y
Osprey Hall	Z
Museum of Contemporary Art Jacksonville (MOCA)	99, see inset
Center for Entrepreneurship and Innovation	see inset



Friday Parking Map

Saturday Parking Map



Keynote Speaker

From Florida to Beyond and Back Again: A Research Journey in Conservation Psychology

Dr. Heather Truelove
Psychology
University of North Florida

In this keynote, Dr. Heather Truelove will trace her academic journey in the field of conservation psychology and highlight findings from her research program. She will describe her undergraduate research at UF and her graduate work at UNF, as well as her path outside of Florida, which included stints at Washington State University and Vanderbilt University, before culminating in a return to UNF as a professor. She will also discuss her research program which investigates the psychological factors that influence pro-environmental behavior. She will describe her research findings related to the design of interventions that are most effective at increasing environmentally friendly behaviors and discuss whether performing one pro-environmental behavior makes people more or less likely to do another.

Dr. Heather Barnes Truelove is a professor of Psychology at the University of North Florida and a joint faculty member in the UNF Institute of Environmental Research and Education. Her research centers on the psychology of pro-environmental behavior. Dr. Truelove has published her research in widely respected journal outlets such as "Nature Sustainability" and "Global Environmental Change" and her research has been supported by the National Science Foundation and National Oceanic and Atmospheric Administration. Dr. Truelove's research has been covered by major news outlets including NPR's All Things Considered, PRI's The World, and The Washington Post. She also serves on the Editorial Board of the Journal of Environmental Psychology. She received her B.S. in Psychology from the University of Florida, her M.A. in Psychology from the University of North Florida, and her Ph.D. in Psychology from Washington State University. Dr. Truelove completed postdoctoral work at Vanderbilt University in the Vanderbilt Institute for Energy and Environment and the Consortium for Risk Evaluation and Stakeholder Participation.

Graduate School Recruiters

University of North Florida

Florida International University
College of Engineering and Computing

University of Miami
Rosenstiel School

North Carolina State Univerestiy
The Graduate School

Florida State University (FSU)

Florida State University (FSU)
College of Communication & Information

University of Florida

NYU Tandon School of Engineering

Baylor College of Medicine
Graduate School

University of South Carolina

University of Miami
Miller School of Medicine- BMB

University of Rochester

University of Central Florida

The University of Alabama

Columbia Engineering

Florida International University
Herbert Wertheim College of Medicine

Florida International University

The University of Texas at San Antonio

Florida Atlantic University

University of Notre Dame

University of South Florida
Health Morsani College of Medicine

Florida Institute of Technology

University of Florida Pharmacology

Lynn University

University of South Florida

Jacksonville University

Missouri University
of Science and Technology

Bethune-Cookman University

Workshop Session I
10:15 a.m. - 11:00 a.m.

Advancing Undergraduate Research: Takeaways from the 2024 Florida Undergraduate Research Leadership Summit and Vision for the Future
Amanda Lopez and Amelia Chambers
Building 42, Room 1102

But Wait, There's More! Scholarships and Fellowships for Research-Experienced Students
Dr. Tiffany Kershner
Building 57, Room 1100B

Your Path to Graduate School & Career Success Starts Today
Betsy Crawford
Building 57, Room 2070

Get Funded to Conduct Research This Summer!
Emely Benjamin and Dr. Natalia Leal Toro
Building 42, Room 1111

Digital Humanities Institute Open House
Dr. James Beasley
Building 01, Room 1300

Art of Balance: Work/Life/School
Elizabeth Smalley, Christina Diley, Galvin Payton, Abhilasha Kumar, Andrea Cadavid and Ashley Smith
Building 57, Room 1100A

Advocacy and Research - Effectively Communicating Your Story
Dr. Ronnie Mack
Building 57, Room 2050

Research Integrity Trivia
Angela Jevince, Alicia Erchul and Dr. Bridgett Rahim-Williams
Building 42, Room 1113

Make New Mistakes, Make Enlightening Mistakes
Dr. Gregg Stanwood
Building 42, Room 1114

Workshop Session II
3:00 p.m. - 3:45 a.m.

How to Turn Science Into Policy Action
Dr. Adam Rosenblatt
Building 57, Room 2050

Research Integrity Trivia
Angela Jevince, Alicia Erchul and Dr. Bridgett Rahim-Williams
Building 42, Room 1113

Refresh & Reflect
Elizabeth Smalley, Christina Diley, Galvin Payton, Abhilasha Kumar, Andrea Cadavid, and Ashley Smith
Building 57, Room 1100A

Converting Undergraduate-Level Research into Graduate-Level Opportunities
Dr. Ali Gordon
Building 42, Room 1114

Get Published!
Dr. Melodie Eichbauer
Building 42, Room 1102

Leveraging Undergraduate Research to Build Towards a Meaningful Career
Jenna Molen
Building 57, Room 2070

Funding Graduate School: Options and Opportunities
Dr. Tiffany Kershner
Building 57, Room 1100B

Get Funded to Conduct Research This Summer!
Emely Benjamin and Dr. Natalia Leal Toro
Building 42, Room 1111

Workshop Session I — Descriptions

Advancing Undergraduate Research: Takeaways from the 2024 Florida Undergraduate Research Leadership Summit and Vision for the Future

10:15 a.m. – 11:00 a.m.
Building 42, Room 1102

Amanda Lopez and Amelia Chambers
Directors of Special Projects
University of Florida

The Florida Undergraduate Research Leadership Summit (FURLS) is a two-day intercollegiate summit hosted by the University of Florida since 2019. This event is the nation's first student-led undergraduate research conference. It is a wonderful opportunity for students from across the state to network and share ideas pertaining to the advancement of undergraduate research. The summit commences with a Friday evening reception with a keynote speaker, refreshments, and networking. Saturday is a full day of student-led workshops on topics pertaining to undergraduate research leadership and how we can apply these ideas to our respective institutions. We also host group discussions, Q&A panels with faculty or graduate students, and more.

FURLS 2024 was held on February 2-3 on UF's campus. In this workshop, we will provide an overview of this year's summit and topics discussed. We will also discuss our takeaways from the event and ideas for how the event will be conducted in the future. Students interested in participating in FURLS 2025 and faculty advisors interested in sending students are encouraged to attend.

But Wait, There's More! Scholarships and Fellowships for Research-Experienced Students

10:15 a.m. – 11:00 a.m.
Building 57, Room 1100B

Dr. Tiffany Kershner
Director of Office of Fellowships
University of North Florida

This workshop will introduce students to national awards, which provide opportunities to stretch your minds and skills to the fullest. For example, students will learn how to tap into their research experiences to secure funding for other extraordinary opportunities, such as study abroad, foreign language study, and research off campus. We will explore our options and share tips for preparing a competitive application.

Your Path to Graduate School & Career Success Starts Today

10:15 a.m. – 11:00 a.m.
Building 57, Room 2070

Betsy Crawford
Development Coordinator for Florida State's
College of Communication and Information
Florida State University

As an undergraduate student involved in research, you are already a strong candidate for competitive graduate school programs. Learn how earning a graduate degree can support career success and the steps to take now to boost your application. The workshop includes an overview of resources available to create an outstanding application and a preparation timeline that will keep you ahead of the game.

Workshop Session I — Descriptions

Get Funded to Conduct Research This Summer!

Emely Benjamin and Dr. Natalia Leal Toro
Academic Program Coordinator
and Director of Office of Undergraduate Research
University of Central Florida

10:15 a.m. – 11:00 a.m.
Building 42, Room 1111

What are you doing this summer? Are you interested in traveling? Exploring a new city? And getting paid? Summer research could be a great opportunity for you! UCF offers fully funded NSF summer research opportunities for students from across the nation. These special programs allow students to conduct faculty mentored research at a unique institution away from their home while being paid to do so. In this workshop we will discuss the REU programs available at UCF, what to expect when applying, and the benefits of summer research. Additionally, we will discuss other funded summer research programs and how to find one that's the best fit for you!

This topic will spread awareness of how students can become involved in funded summer research programs as well as sharing the opportunities available at the University of Central Florida.

Make New Mistakes, Make Enlightening Mistakes

Dr. Gregg Stanwood
Associate Professor of Biomedical Sciences
Associate Director, Graduate Program in Biomedical Sciences
Associate Director of the Center for Brain Repair
Florida State University College of Medicine

10:15 a.m. – 11:00 a.m.
Building 42, Room 1114

We learn more from our mistakes and missteps than our successes. Learn effectively and always make *new* mistakes. And *make your own* mistakes. In this workshop, we will explore ideas around "the best" approaches to scientific research and productivity, graduate and professional programs, and professional networking. Research-oriented individuals often have a too narrowly defined set of skills, goals and metrics to define their success. We will explore together how to enhance and cultivate your emotional maturity to improve your science and career, and how to use a Goldilocks approach in your professional development.

Art of Balance: Work/Life/School

Elizabeth Smalley, Christina Diley, Galvin Payton,
Abhilasha Kumar, Andrea Cadavid and Ashley Smith
University of North Florida

10:15 a.m. – 11:00 a.m.
Building 57, Room 1100A

This presentation delves into the significance of habit-building, emphasizing the "2-day rule" as a key principle. Drawing from psychological research, this workshop outlines a structured approach to forming healthy habits, including goal setting, consistent action, and environmental cues. Research suggests that habit strength significantly increases over time, particularly when individuals consistently engage in goal-congruent behaviors. In this presentation, we will discussion the challenges faced by college students in achieving a work-life-school balance, highlight strategies such as time management, prioritization, and seeking support. Practical skills and apps will be shared to facilitate scheduling, note-taking, social support, and mental well-being, ultimately advocating for holistic approaches to habit formation and overall balance in life.

Workshop Session I — Descriptions

Advocacy and Research - Effectively Communicating Your Story

Dr. Ronnie Mack
Director of Undergraduate Research,
and Adjunct Faculty
Embry Riddle University

10:15 a.m. – 11:00 a.m.
Building 57, Room 2050

Science communication is defined as, “the processes by which the culture and knowledge of science are absorbed into the culture of the wider community” (Mason & Merga, 2019; Bryant, 2003). In a 2021 study, out of 8,800 respondents only 57% stated science has a “mostly positive” impact on society (Viswanathan, 2023). Due to various factors, research is not effectively communicated to audiences outside the science community. In today's dynamic social landscape, access to accurate information empowers individuals, leaders, and organizations to make informed decisions. While researchers generate valuable knowledge, effectively communicating it to diverse audiences remains a significant challenge. This session presents actionable insights for researchers navigating information curation for wider engagement. By mastering effective communication strategies, researchers can transcend the constraints of scholarly journals, generating awareness across various markets and fostering collective advocacy for impactful local and federal policies. Remember, clear and concise communication bridges the gap between research and real-world impact, leading to positive change on both local and national levels.

Research Integrity Trivia

Angela Jevince, Alicia Erchul and Dr. Bridgett Rahim-Williams
Research Coordinators
University of North Florida

10:15 a.m. – 11:00 a.m.
Building 42, Room 1113

Many research projects require prior approval from the institution’s office of research integrity. These approvals may come from the Institutional Review Board (IRB), the Institutional Animal Care and Use Commitee (IACUC), and/or the Institutional Biosafety Commitee (IBC). Approval indicates to the research community that the project is being conducted following best practices for the field and in a way that allows others to be confident in the methods used and the results obtained. In this workshop, we will test your knowledge of research integrity through Research Integrity Trivia. Form teams and compete against each other to show who knows their stuff when it comes to ethical research practices! Prizes will be given for top teams!

Digital Humanities Institute Open House

Dr. James Beasley
Director of the Digital Humanities Institute
and Associate Professor of English
University of North Florida

10:15 a.m. – 11:00 a.m.
Building 01, Room 1300

The UNF Digital Humanities Institute (DHI) was established in 2015 to facilitate collaboration on projects that combine the use of technology with materials and methodologies from the Humanities, Fine Arts, and Social Sciences. The UNF DHI coordinates events exploring the theory and practice of Digital Humanities scholarship, and provides a forum for faculty, staff and students to work together on the design and implementation of digital projects. If you are involved in a digital humanities study or want to be, visit the UNF DHI (building 1, room 1300), to explore, network, and share.

Workshop Session II — Descriptions

How to Turn Science Into Policy Action

Dr. Adam Rosenblatt
Assistant Professor of Biology
University of North Florida

3:00 p.m. – 3:45 p.m.
Building 57, Room 2050

Scientists are traditionally seen as people who only think up questions, generate new knowledge, then publish that knowledge in specialized scientific journals. What happens with the knowledge after that, how it is communicated to the public and interpreted, is typically thought to be the responsibility of non-scientists like journalists and politicians. But in the modern world scientists are becoming increasingly vocal about the implications of their research for society because scientific understanding of important topics like climate change and vaccines frequently gets distorted and misused by others. In this workshop Dr. Adam Rosenblatt will discuss his experiences as a biologist who advocates for city, state, and national policies related to his scientific research and why becoming an advocate is the best decision he ever made.

Research Integrity Trivia

Angela Jevince, Alicia Erchul, and Dr. Bridgett Rahim-Williams
Research Coordinators
University of North Florida

3:00 p.m. – 3:45 p.m.
Building 42, Room 1113

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Refresh & Reflect

Elizabeth Smalley, Christina Diley, Galvin Payton, Abhilasha Kumar, Andrea Cadavid and Ashley Smith
University of North Florida

3:00 p.m. – 3:45 p.m.
Building 57, Room 1100A

This presentation examines students' strengths and areas of growth from the semester and proposes interventions to address student concerns. Drawing from reflective questions provided by educational resources, this workshop will emphasize the importance of introspection and self-awareness for identifying successful strategies and areas for improvement. Additionally, we will share practical self-care practices encompassing body, mind, and soul, such as mindfulness, movement, and sensory engagement. By encouraging students to reflect on their experiences and reset their systems, the presentation aims to empower them with skills for academic success and holistic well-being in future semesters.

Workshop Session II — Descriptions

Converting Undergraduate-Level Research into Graduate-Level Opportunities

Dr. Ali Gordon
Associate Dean of Graduate Affairs
Associate Professor in Mechanical and Aerospace Engineering
University of Central Florida

3:00 p.m. – 3:45 p.m.
Building 42, Room 1114

Congratulations on reaching the stage at which your research findings are presentable. What are the next steps? What other opportunities are available to you? Have you ever wondered how some undergraduate students are able to leverage their success in research to access graduate-level opportunities? With regards to engineering and computer science graduate programs, the answers reside with graduate faculty and the graduate program directors who represent them. While they are looking for the very best and brightest undergraduate students to populate graduate programs, they are also searching for specific attributes based on the needs of the program. This engaging presentation details how undergraduate research students can curate their activities leading up to graduation and their interactions with graduate program points of contact for maximum impact. This seminar also overviews the distinctive types of graduate-level opportunities available to undergraduate students.

Get Published!

Dr. Melodie Eichbauer
Interim Director of the Office of Scholarly Innovation & Student Scholarship
and Professor of Medieval History
Florida Gulf Coast University

3:00 p.m. – 3:45 p.m.
Building 42, Room 1102

Congratulations on presenting your study at FURC! But what are you going to do with it next?

Often, students publish their work in their university student research journal, but what are the other options? The Florida Undergraduate Research Journal (FURJ), published by the Florida Undergraduate Research Association, provides an opportunity to share their work with others beyond their campus journals. As a journal dedicated to publishing outstanding undergraduate research across all disciplines, FURJ, which is now live on the Florida Virtual Campus Library, provides students a next step. In this workshop, you will learn about author guidelines, the submission and review process, and how you can join the editorial board. Get information today about how to boost your resume by publishing!

Leveraging Undergraduate Research to Build Towards a Meaningful Career

Jenna Molen
Assistant Director
Center for Undergraduate Research
University of Florida

3:00 p.m. – 3:45 p.m.
Building 57, Room 2070

This presentation will challenge common assumptions about career planning. Students will be introduced to non-linear career models, tools for communicating their career trajectories, and challenges associated with joining a rapidly evolving workforce.

Workshop Session II — Descriptions

Funding Graduate School: Options and Opportunities

Dr. Tiffany Kershner
Director of Office of Fellowships
University of North Florida

3:00 p.m. – 3:45 p.m.
Building 57, Room 1100B

This workshop will introduce you to the options available to fund your graduate school education. First, I will give you an overview of the different opportunities available. Second, I will share some tips on how to make your application for national scholarships and fellowships as competitive as possible.

Get Funded to Conduct Research This Summer!

Emely Benjamin and Dr. Natalia Leal Toro
Academic Program Coordinator
and Director of Office of Undergraduate Research
University of Central Florida

3:00 p.m. – 3:45 p.m.
Building 42, Room 1111

What are you doing this summer? Are you interested in traveling? Exploring a new city? And getting paid? Summer research could be a great opportunity for you! UCF offers fully funded NSF summer research opportunities for students from across the nation. These special programs allow students to conduct faculty mentored research at a unique institution away from their home while being paid to do so. In this workshop we will discuss the REU programs available at UCF, what to expect when applying, and the benefits of summer research. Additionally, we will discuss other funded summer research programs and how to find one that's the best fit for you!

This topic will spread awareness of how students can become involved in funded summer research programs as well as sharing the opportunities available at the University of Central Florida.

Acknowledgments

Special thanks to the UNF Office of Undergraduate Research Staff – **Kaitlyn Minnicks**, for her coordination of all things FURC over the last year and a half, and **Rebeca Mata**, for her incredible graphic designs and for making this program.

Thank you also to the wonderful people in offices across UNF who helped make this event possible, especially

Kim Roberts
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Michelle Davis
Niam Jones
David Wilson
George Boston
Kathleen Leone
Mary Kelli
Amanda Ennis
and Joy Batteh-Freiha

The UNF FURC2024 Team performed various duties that contributed to the success of the event and are all highly appreciated. Most notably,

Dr. Michelle Boling
Dr. Steve Stagon
Dr. Willis Jones
Dr. Frank Smith
Dr. Jacqueline Meier
Dr. Katherine Hooper
Dr. Paul Fugelstad
Dr. Heather Truelove
Dr. Patrick Kreidl
Dr. Scott Brown
Dr. Suzanne Ehrlich
Dr. Marie Mooney
Dr. Szymon Ciesielski
Dr. Jack Hewitt
Alex Bartkowiak
Gabby Khazal
Natalie Clum
Bianca Opdenbosch
and Cam Young

who went above and beyond in terms of their devotion to this project.

Finally, thank you to the **Florida Undergraduate Research Association** for selecting the UNF Office of Undergraduate Research as the host for the 2024 Florida Undergraduate Research Conference.

Poster Session I
9:00 a.m. - 10:00 a.m.

1. **Driver Behavior Detection Using a Deep Learning Approach**
   Aldridge Kalenga, Shaquan Tyson, Chibundu Awandu, Santosh Lamichhane, Buchizya Mwase and Tianna Brown
2. **Face Detection and Recognition Using Viola-Jones Algorithms for Autonomous Cars**
   Buchizya Mwase, Tianna Brown, Shaquan Tyson, Aldridge Kalenga, Chibundu Awandu, Santosh Lamichhane
3. **Interest Objects Detection for Self-Driving Cars Using a Deep Learning Approach**
   Chibundu Awandu, Santosh Lamichhane, Shaquan Tyson, Aldridge Kalenga, Buchizya Mwase and Tianna Brown
4. **Design and Development of a Robotic Platform at Scale for Implementing Artificial Intelligence and Computer Vision Algorithms in Autonomous Vehicles**
   Shaquan Tyson, Aldridge Kalenga, Chibundu Awandu, Santosh Lamichhane, Buchizya Mwase, and Tianna Brown
5. **Lane Detection Using ANN for Self-Driving Car**
   Santosh Lamichhane, Chibundu Awandu, Shaquan Tyson, Aldridge Kalenga, Buchizya Mwase and Tianna Brown
6. **Lane Detection Using Artificial Vision for Autonomous Cars**
   Tianna Brown, Buchizya Mwase, Shaquan Tyson, Aldridge Kalenga, Chibundu Awandu, Santosh Lamichhane
7. **MB-Th: A Molecular Beacon Probe-Based DNA Nanosensor with Concentration Threshold Function for MiRNA Detection**
   Jisela Soto
8. **Intelligence on Investing**
   Alexander Georgiev
9. **A Qualitative Exploration of Early Interventionists Beliefs and Practices with Families from Marginalized Backgrounds**
   Ellie Helgeson
10. **Students Majors and Stress**
    Maria Fernanda Castillo Enriquez, Luis Buendia, Fernanda Castillo, Chabelys Castro, Kaytlan Connolly, Cevenya Henderson, Christopher Fogell and Jorge Quintanill
11. **Using Protein Modeling Software and Computational Analysis to Develop Novel JAK2 Inhibitor "Ruscholitinib"**
    Anna Schoenherr
12. **Exploring Diversity in Religious Repertoire Through Choral Music**
    Sophia Gannaoui
13. **Daily Tobacco Use is Associated with Higher Rate of Experiencing Health, Social, Legal, and Financial Problems Among Floridian College Students**
    Ambika Ramjawam
14. **There is Something in the Water**
    Aysel Khalil and Savannah Knight
15. **The Relationship Between PTSD (Post-Traumatic Stress Disorder) and Depression**
    Alyssa-Resha Williams
16. **The Effects of Finasteride on the Parity Rates of Female Drosophila Melanogaster**
    Miguel Bastos, Dominic Sandell and Zachary Young
17. **Sense of Belonging in General Chemistry Courses with Different Teaching Styles**
    Keila Muller
18. **Fashion in the Fast Lane**
    Ava Vignola
19. **Engineered Water Repellency for Resilient Road Pavement Infrastructure**
    Colton Boswell
20. **Possible Discrimination in AI Implementation for the Education Policy Sector: A Study on Massachusetts**
    Andres Davila
21. **Out of Gas: Unmasking the Power Play in Gaslighting**
    Kristen Engasser
22. **Examining Cultural Sensitivity of Brief Mindfulness Meditations for Chinese American Adolescents**
    Ana-Gabriela Osorio and Elias Latimer
23. **Is Forensic Paint Analysis Affected By Environmentally Friendly Products?**
    Emily Pintilie

Poster Session I
9:00 a.m. - 10:00 a.m.

24. **Investigating the Impact of Thymol, Carvacrol, and Anthocyanins on Canine Heart Cells In Vitro**
Isaiah Johnson

25. **Post-metabolites of Two Commensal Bacteria Suppress DNA Damage in an Experimental Model of Acid Reflux Disease**
Maanya Pradeep

26. **How Toxic Masculinity Affects Men**
Aliyah Tucker

27. **Critical Thinking to Dispel Conspiratorial Belief**
Charlotte Boyer

28. **Dithiocarbamate Synthesis Peptidomimetic Scaffold: Combating BCL-2 Cancer Complexes**
Ashley S Graham

29. **Anthropological Exploration of Overdose Prevention Perceptions Among People Who Use Drugs**
Maria Ocando Monaco

30. **Florida Scrub Species Identification Through DNA Barcoding**
Daniella Grace Jeanjaquet, Irfan Mahadi Sharif, Wendy Jiang and Jean F. Fleurimond

31. **Aboveground Biomass and Carbon Sequestration of Hardwood and Palm Trees at Pelican Harbor Facility, in Miami-Dade County, FL**
Ann-Adley Claveus

32. **The Effects of Nanobubbles for Ultrasound Targeted Gene Delivery for Osteoporosis Treatment on Tissues**
Abel Cordova Flores

33. **Breaking Language Barriers: Examining the Shortage of Healthcare Access and Interpreters in Hispanic Agricultural Communities**
Alejandro Ramirez

34. **Do You Like True Crime Documentaries?**
Mazzarina Succarotte

35. **Multi-Ratio Calibration**
Abigail Crossman

36. **Disability Representation in David Fincher's Fight Club**
Roy Chen

37. **Investigating Methylation Patterns Associated with Obesity in Danio rerio (Zebrafish)**
Alexandra Walz

38. **Saturday Scientific Literacy Enrichment Camp**
Ariana Lyles and Torianna Broaddus

39. **Investigating the Deficit of Veterinary Students Entering Equine Medicine**
Elena Tonkin, Gabrielle Ruiz, Zoe Strong and Andrea Barcia

40. **Grit and Impostor Phenomenon in College Faculty: How do Perseverance and Self-Doubt Relate?**
Gabriel Terwilliger and Daniela Rodriguez Suarez

41. **Analysis of Protein NSP15 for the Development of an Effective Neutralizing Antiviral**
Erika Ramirez, Bryan Cardenas, Roxana Perez and Valentina Perez

42. **The British Pet Massacre: A Forgotten Holocaust**
Habana Zarranz

43. **Long-Term Effects of Prenatal Fentanyl Exposure on Behavior and Gene Expression**
Chioma Uchegbu

44. **Psychological and Educational Differences Between Student-Athletes and Nonathletes**
Sean Blumenfeld, Gabriela Barber and Sophia Fiz

45. **Influence of Nature Contact on Stress Levels and Happiness**
Michael Wang

46. **How the Chinese Communist Party Maintains Control of the Tibetan People**
Caroline Klunk

47. **Annotation of Halloween Genes and Nuclear Receptors in the 20-hydroxyecdysone (20E) Signaling Pathway in Diaphorina citri**
Brandi Yip

Poster Session I
9:00 a.m. - 10:00 a.m.

48. **Effect of N-Acetyl Cysteine on Insulin Resistance and Adipokines in Children with Biopsy-Proven Nonalcoholic Steatohepatitis**
Justin Wilburn

49. **Impact of Agrochemicals on Mosquito Life Cycles and Immune Response**
Alexa Cooney, Angel Arnau and Madeline Butler

50. **The Use of a REV-ERB Synthetic Agonist for Th17-Based Cancer Therapy**
Alexandria Wilson

51. **CRISPR-Cas9 Knock-Out Model of NGLY1 Deficiency in Danio rerio Harbors Mild Phenotypic Changes Detectable With Automated Phenotyping**
Alexander Bartkowiak

52. **Assessing Food Web Dynamics in Tampa Bay Using Baited Remote Underwater Video and Chlorophyll A**
Emma Robbins

53. **DRIVE Mental Health Initiative**
Demar Williams, Damaris Robinson and Ashton Matthews

54. **Analyzing the Effects of Stress on the Gut Microbiome, Cognition, and Sexual Ornamentation of a Songbird**
Joseph Swaress

55. **What Medical Professionals and the General Public Should Know About PCA: From the Perspective of the Patients and their Caregivers**
Solange Gonzalez, Madelyn Belvo and Jo Movil

56. **"To Label or Not to Label Kids as Gifted": Examining the Experiences and Consequences of Being Labeled as Gifted**
Grace Craig

57. **Lane "What is Grief, If Not Love Persevering": Prolonged Grief Disorder, Complex Grief, and Fog of Grief in She-Ra and the Princesses of Power, WandaVison, and Agents of Shield**
Angelique Williams

58. **Advancing the Precise Mapping of Dendritic mRNA Localization Patterns Through Neuron Linearization**
Arlette Morcelo

59. **Assessing Cuticular Conductance in Southern Highbush Blueberry Leaves**
Ana S. Acosta

60. **Effect of Brake Lights Configuration on a Simulated Reaction Time Task**
Ashley Wilborn

61. **Portraits of Prostitution: An Examination of Sex Work and Working-Class Women's Experiences in Progressive Era New York City (1890-1920)**
Jillian Richarz

62. **Measuring Fish Contamination in Local Wild Life**
Jalen Thompson, Endi Carter and Keanna Forbes

63. **Extreme Heat in Texas: A Statistical Analysis of Record-Breaking Temperatures in 2023**
Isabella Prince Padron

64. **Viability of Convolutional Neural Networks for Detection of Parasites in Aquaculture**
John Nelson

65. **The Implementation of Effective Classroom Management: A Handbook for Secondary Level Teachers**
Charlottie Allgire

66. **Metabolism and Memory: Exogenous Ketone Supplementation to Offset Age-Associated Cognitive Decline**
Anvar Ashrapov

67. **Chemoenzymatic Synthesis of Diketopiperazine Isomer Natural Products**
Brian Grause

68. **Empowering Harmony: Linking the Impact of Worker Satisfaction and Prosocial Behavior Among Students at a Historically Black College and University**
Jayden Givens

69. **Cross-Cultural Perceptions of Child Abuse and Parenting Practices**
Helia Baez Armas

70. **Distribution of Healthcare in Puerto Rico: Supply and Demand of Physician Specialties**
Darya Sulkouskaya

Poster Session I
9:00 a.m. - 10:00 a.m.

71. **The Impact of Magnesium on the Stability and Function of the Stimulatory G Protein**
Cate Richardson

72. **A Racist Shooting Close to Home: A Content Analysis of Local, National Coverage of Jacksonville, Florida's Dollar General Shooting**
Carter Mudgett

73. **Insults and Compliments: How The Cross-Race Effect Extends to the Memory of Insults and Compliments**
Kristen Gatchalian and Sophia Brown

74. **Anxiety and Test Performance in General and Organic Chemistry**
Draven Ruiz, Gavin Winslow, Noor Alaraj and Marjan Roshandal

75. **Developing and Validating an Analytical Tool for Identifying Multimodal Mobility Hubs**
Eliana Duarte

76. **Developing New Workflows for Long-Term Monitoring of Coastal Shoreline Change**
Corey Kempinski

77. **If Mom Likes Dinosaurs Will You?: Investigating Parents' Influences on Children's Science Interest**
Madison Curtis

78. **Disassembly of Cholera Toxin by Protein Disulfide Isomerase**
Emily Abdelnour, Rebekah Mattson and Caitlin McKenna

79. **House Relocation in Relation to Future Sea Level Rise in Florida**
Emily Garnica

80. **Surface and Porewater Salinity Patterns Across a Coastal Landscape: Implications for Freshwater Wetland Resilience**
Elizabeth Terwilliger

81. **Enhancing Voter Equity in Volusia County Through Vote by Mail Enrollment and Reenrollment Research and Initiatives**
Mahogony Jules and Kamaih Nunn

82. **Bipartite Ramsey Number of Double Stars**
Gregory DeCamillis

83. **Fecal Samples as a Non-invasive Measure of Inflammation**
Gabriella Khazal

84. **Computational Study of the Interaction of the Antibiotic Sulfamethoxazole and 3-(2-aminoethyl)-3-aminopropyltriethoxysilane**
Maxwell Sultz

85. **Formation of Cage-Like Water Structures Catalyzes Organic Reactions**
Jack Suggs

86. **A Tail of Two Fishes: Exploring Population Structure in Two Fish Species Across the Galápagos Islands**
Hillary Quach

87. **TRIP13 Is Critical for Proliferation of Peripheral T-Cell Lymphomas and Other Hematological Malignancies**
Gene Pozas

88. **Gopher Tortoise Burrow Distribution Patterns in the High Human Activity Areas of Wickham Park**
Riley Renfro

89. **Trimethylaminuria**
Hanna Yilmaz-Rodriguez and Eva Lobaton

90. **Herbaceous Tea for Troublesome Times: An Experimental Design to Assess Efficacy of Camellia sinensis and Matricaria recutita in the Return of Neuronal Activity of Lumbricus variegatus to Homeostasis Post-onset of Traumatic Experience**
Kumush "Fatima" Ismatulla

91. **How the Anatomage Table Helps Biomedical Engineering Students Investigate Cardiovascular Anatomy**
Jacob Longway

92. **LSpatial and Temporal Extension of Green's Function Using Machine Learning Methods**
Hubert Pugzlys

93. **The Relationship Between Phobias and Workplace Anxiety**
Taikya Ducksworth

Poster Session I
9:00 a.m. - 10:00 a.m.

94. **Effect of Glyphosate on Development Time, Survival and Immunity in Culex quinquefasciatus.**
Natalia Menendez Vargas and Jennis Soto

95. **Effects of Distinct Gas Conditions on Neurocognitive Performance**
Christa Casey and Isabella Abad

96. **Molecular Docking Experiments as a Predictive Tool for the Binding of Dual H4-5 Warhead Peptoid Inhibitors in the PRMT1 Active Site**
Jordan Tucker

97. **Strontium Nitrate for Controlling Black Algae Growth on Concrete**
Nicole Clark

98. **Unraveling the Microbial Diversity of Ecosystems Under the Influence of Environmental Pollution**
Elik Esquilin

99. **Applications of Magnetic Nanoparticles and MPI in Blood Pool Imaging**
Isabelle Gerzenshtein

100. **Sexual Assault Disclosure: The Role of Survivor and Disclosure Recipient Race**
Nola Browne

101. **Structural Outlook and Molecular Docking to Probe Influence of Sensory Receptor's Charged Cytoplasmic Motif Involving Ionic Interaction in Anabaena PCC 7120**
Terence Oscar-Okpala and Providence Pangira

102. **An Adaptive Algorithm for Detection of Aortic Flow Onsets**
Mohammadreza Kazemi

103. **Coming Out in the Cold: The Johns Committee, Academic Freedom, and Moral Panic in Florida**
Jordan Dickens

104. **Team Composition and Performance in a Large-Enrollment Team-Based Learning (TBL) Introductory Chemistry Course**
Patria Marcano Maldonado

105. **Robo Replacement: AI in the Workplace**
Noah Rapson

106. **Consider the Children: Examining the Experiences of Individuals with Siblings with a Disability**
Lily Steed

107. **Immunologic and Transcriptome Analysis of Soft Tissue Sarcomas Treated With a Total Tumor RNA Nanoparticle Vaccine**
Julia Jamieson

108. **Navigating the Binary: How Do Transmasculine College Students Construct and Navigate, or "Do" Gender?**
Kiara Santos

109. **College Student's Perception of Motivations Behind Going Into Law Enforcement**
Riya Patel

110. **Inverse Cyborgs: Machines Re-envisioning Their Selfhood, from The TARDIS to The Terminator**
Cameron Myjak

111. **Odonata Abundance and Diversity Loss in Polluted Deland, Florida Environments**
Kelly Ashley

112. **NeuroSymbolic AI: Bridging Neural Networks and Symbolic Reasoning for Enhanced AI Transparency**
Matheus Kunzler Maldaner

113. **Wetland Field Botany at UNF's Sawmill Slough Preserve**
Max Strandes

114. **Hester Pulter and the Depiction of Vermin in Early Modern Culture**
Nadia Nolan

115. **In My End Is My Beginning: Mary Stuart and the Foundation of Her Religious Pragmatism**
Shantelle Clement

116. **Intraseasonal Distribution and Abundance of Pacific Hake (Merluccius productus) in the California Current Ecosystem**
Madelynne Reifsteck

117. **The Role of the GPBAR1 (TGR5) Receptor in Bile Acid-Mediated Antiviral Response Against MNV**
Neha Iyer

Poster Session I
9:00 a.m. - 10:00 a.m.

118. Forceful Meat-Reduction Messages Affect Men and Women Differently
Natalie Clum

119. Healthcare Access: A Journey of Discovery Towards a Healthier Society
Vedaant Mutha

120. "We Won't Put a Label on It": A Qualitative Investigation of Situationships
Savanna Rehmel

121. Creating Gazebo Simulations to Test Various Strides for Scansorial Terrestrial Aquatic Robotic Quadruped (STARQ)
Arinzechukwu Abanah

122. The Key Stressors Behind the Strain on Working Single Mothers
Siyean Paek

123. Identity Within Individualist Community
Serena Zamora

124. Lane Detection Using ANN for Self-Driving Car
Sia Rajput, Hunor Vajda, Alaguvalliappan Thiagarajan, Abelardo D. Montalvo and Aubrey Townsend

125. Tiamulin vs. E. coli: Who Would Win?
Sophia Vizoso

126. A Novel Combination Therapy to Target NSCLC CSCs
Skyeler Klinge

127. A Comprehensive Study Examining the Prevalence of Postpartum Depression Among Incarcerated Women
Sujehnna Walker

128. The Role of a Registered Nurse in Patient Understand of Glioma Prognosis
Payton Harris

129. Trends in Xylazine-Involved Overdose Emergency Medical Services Dispatches in the United States, 2022-2023
Portia Ludwig

130. Validation of the Multi-Channel Dilution Analysis Method Using Different Sample Matrices and Certified Reference Materials
Taylor Dessoffy

131. Increasing Low-Risk Ergonomic Positioning Using Video Feedback
Rachel Warren

132. Assessing Below Ground Response of Semi-Native and Improved Grazing Pastures in Central Florida Due to Precipitation Variability
Dunnel Fennell

133. A Reinforcement Learning Method for the Inverse Acoustic Scattering Problem for a Sound-Soft Obstacle
Tina Tran

134. Physician Assisted Suicide: The Morality of Restricting Access from Mentally Ill Patients
Trish Nguyen

135. Investigating the Impact of FtsQ on FtsZ Filament Curvature in the Mycobacterium tuberculosis Divisome
Ziya Tian

136. Unveiling a Mystery: Investigating the Chlamydia ipaM Gene Using the Model Organism Drosophila
Vedwattie Ramdeo

137. Impact of Nitrate to Phosphate Ratios on Growth of the Red Tide Dinoflagellate, Karenia brevis
T'Ahja Laing

138. Effects of Polysubstance Use on Cocaine Use and Relapse in Sprague Dawley Rats
Taylor Thomson

139. CDKN2A/B Homozygous Deletion in IDH-Mutant Glioma Promotes Vascular Formation in Vitro
Zaima Aline

140. Exploring the Interplay: Oral Microbiome Dynamics and Cardiovascular Well-being
Jesus Hernandez

141. The Potential Role of the Molecular Chaperones in Glycosylation Deficient Zebrafish
Zachary Jones

Poster Session I
9:00 a.m. - 10:00 a.m.

142. Seroprevalence of Babesiosis in Florida Shelter Dogs
Saachi Sharma

143. Anticancer Agents and Peptidomimetics: Pharmacological Biosynthesis
Abigail Baker

144. Breaking Stigma Through the Use of Artfully Designed Prosthetics
Viviana Arroyo Rodriguez and Nico Chen

145. Investigating the Relationship Between Interferons and Cryptosporidium parvum Infection of Intestinal Epithelial Cells
Victoria Karaluz

146. Fractionation and Antioxidant Analysis of Brazilian Peppertree (Schinus terebinthifolius) Bark Extracts
Javier Amaya

147. Card-Carrying Memories: Using Trading Card Games to Promote Science Retention
Ariana Harris, Jessica Gaehle, Margaret Clark, Eric Kenton and Kristen Pujol

148. Phenotypic Characterization of Staphylococcus aureus Strains from Carriage and Disease Among Pediatric Populations
Sachitaa Senthilkumar

Poster Session II
11:15 a.m. - 12:15 p.m.

1. **Quantifying the Patterns of CGRP Innervation in the Atria and Ventricles of Male and Female Mice**
   Adhithyaa Nair
2. **Structural Outlook of Hypothetical Protein TM1070 from Thermotoga Maritima: Comparative Analysis with Anabaena Sensory Rhodopsin Transducer**
   Ashly Dessources
3. **Researching Consumer Preferences: An In-Depth Analysis of Online and In-Store Shopping Trends**
   Alexander Grande
4. **SLIC: Sample-Length-Scaling Logarithmic Information Criterion for Automating Hyperparameter Selection in Data-Driven Model Discovery**
   Alen Zacharia
5. **Optimizing the Point Spacing for Multi-Channel Dilution Analysis**
   Adam Richardson and Sophie Lewis
6. **An Elucidation of Nicotine Patch's Influence on Quality of Life in Prader-Willi Syndrome: A Rigorous Examination and Assessment**
   Alexis Rosa and Kamalie Thomas
7. **Flash Flood Detection Using Satellite Data with a Machine Learning Approach**
   Buchizya Mwase
8. **Post-Disaster Building Damage Classification from Aerial-View Images**
   Alexis Amoyo
9. **Flow Through Reactor Design for Oxygen Diffusion Assessment of Silk Fibroin Hemoglobin-Based Oxygen Carriers (sfHBOC)**
   Travis Truong
10. **Differences in the Immune Cells of Canines With Heart Failure and Canines Without Heart Failure**
    Sahithi Kadari, Anthony Nong, Jada Prignano and Logan Bell
11. **Examining the Impact of Historical Legacies on Contemporary Anti-Americanism in Latin America**
    Ana Bello Marin
12. **Visual Perception and Bimanual Coordination**
    Carter Sale and Ryan Gross
13. **Investigating the Dual Role of Taxol and GAP-43 Overexpression in Promoting Neuronal Growth and Regeneration in N2A Neuroblastoma Cells**
    Danay Romero, Lorena Velazquez Diaz, Brooke McCann, Ashley Khouly, Fabianna Marin Gallucci., and Mariana Espinal
14. **Driver Behavior Detection Using a Deep Learning Approach**
    Anna Zhao, Ava Scemama and Daniel Roque
15. **Ketamine Treatment for Depression and Anxiety: Preliminary Comparisons of Patients Who Are, Versus Not, Prescribed Complementary At-Home Ketamine**
    Alexia Obrochta
16. **Investigation of Immune Related Gene Transcription Differences Associated with Obesity in Danio rerio (Zebrafish)**
    Alyssa DiPietro
17. **High-quality Dietary Protein Increases the Number of Eggs but Does Not Increase Egg Mass or Lipid Content in Lubber Grasshoppers**
    Alicia Horton
18. **Mapping Accessibility to Health Care Using Public Transportation**
    Bach Tran
19. **Myth or Reality: The Effects of Canceled Culture and How Media Can Make or Break a Public Figure's Career**
    Ivy'yon Simmons
20. **The Benefits of Participating in Exercise on Mental Health**
    Emily Woodhouse
21. **The Effect of Childhood Income and Education on the Executive Function of Individuals Who Grew Up in a Rural Area**
    Andrea Bautista and Helen Smith
22. **Evidence for Neurotoxicity and Oxidative Stress in Zebrafish Embryos/Larvae Treated with HFPO-DA Ammonium Salt (GenX)**
    Victoria Lopez-Scarim

Poster Session II
11:15 a.m. - 12:15 p.m.

23. **Probing Bio-assemblies on the Micron and Nano Scale**
Christian Rodriguez Figueredo, Chelsea Bermudez, Clara Lehki and Romi Hardin

24. **Plasmonic Metamaterials for Non-Linear Optical Applications**
Austin Anderson

25. **I'll Play It in the Background: The Impact of Media Multitasking on Academic Self-Efficacy and Self-Concept in Generation Z Undergraduate Students**
Cassandra Disharoon

26. **Screen Time and Stress**
Jaylen Draper

27. **Relationship Identification Between Triggers and Changes in the Brain and the Overall Human Electrophysiology During Migraines**
Dominic C Sandell

28. **Infection Resistant, Snail Mucin-Based Hydrogels for Wound Healing Applications**
Disha Iyengar

29. **An Exploration of The Viability of a Lactose Intolerance Gene Therapy Treatment in Mammalian Cell Culture**
Cassalynn Staats and Joseph Adely

30. **Investigating the Prevalence and Phenotypic Plasticity in an Invasive Dung Beetle: Digitonthophagus gazella**
Julius Allen

31. **Treating Brain Diseases: Curcumin Loading of Exosomes**
Danielle Bitter

32. **Optimizing the Solubility of Plodia Interpunctella Silk Fibroin for Biomedical Applications by Assessing Influential Parameters**
Andrea Orozco

33. **DNAJB1 and the Propagation of Alzheimer's Disease**
Cameron Young

34. **Answering Age Old Questions About Infectious Diseases**
Elisabeth Ngo and Peace Akinkunmi

35. **Commit Today, Transform Tomorrow**
Hannah Garner, Cassidy Espinoza and Amanda Destefano

36. **Daytona State College Students Perception of Body-Image and Exposure to Online Fitness Content**
Sophia Pisano, Sofia Avalo, Caleb Brower, Melisa Martinez, Alaycia Clinton and Madox Bovee

37. **From Regolith to Soil: Forging a Trajectory Towards Sustainable Martian Agriculture**
Cindia Marra

38. **Evaluation of Potential Damages Caused by Sodium Benzoate on Neuro-2a Cells via Morphology Changes, Cell Death, and Genotoxicity**
Emily Larson

39. **Engineering Genomics Database to Facilitate Artificial Intelligence in Cancer Research**
Arlen Larry Gyden

40. **"If Safety is Compromised, Education is Baseless" Students' Perceptions of Safety and Comfort on Campus at the University of North Florida (UNF)**
Charissa Moore

41. **Measuring Morphological Complexity in Teachers Instructional Dialogues**
Faith Collins

42. **The Price of Quality Care: Socioeconomic Disparities in U.S. Healthcare**
Joaquin Palacios

43. **Practical Applications for Living in a Tree: Growing Not Building**
Julie McClellan

44. **Using Phosphorus to Shape Food Systems of the High Country**
Elianna Tenace

45. **Educator Evaluation of Information Literacy and its Associated Initial Threshold Concepts in Postsecondary Chemistry Curricula**
Han Le

46. **Operation Diversion: How Social Media Controversy Interferes with the United States Current Events**
Monisha Charles

Poster Session II
11:15 a.m. - 12:15 p.m.

47. **Techniques in Primary Microglia Cell Culture and Analysis**
Grace Hickey

48. **Evaluating the Synthesis of Granular Silk Fibroin Scaffolds for Applications in Tissue Engineering**
Cathrine Beshay

49. **Qualitative Analysis of Students' Sense of Belonging in General Chemistry**
Zamira Torres

50. **Mercury Concentrations in Sandbar Sharks (Carcharhinus plumbeus) from the U.S. Atlantic Coast Over Four Decades**
Dakota Jacks

51. **Regeneration and Recovery of High- and Low-Microbial Abundance Sponges Under Heat Stress**
Kayla Filjon

52. **Clinical Outcomes and Patient Satisfaction of Platelet-Rich Plasma Injections in Regenerative Aesthetic Medicine**
Inah Cassandra Bascos

53. **The Interplay of Mechanosensitivity and YAP Expression in Non-Small Cell Lung Cancer**
Cole Mackey, Melissa Erdem and Quang Vo

54. **Hegel and Nature**
Emily Gnida

55. **Schrödinger's Mimic: Doubles, Shapeshifters, and Inauthentic Reality Infiltrating Sci-fi and Fantasy**
Sean Kohut

56. **Dasyatis Sabina**
Shakira Brown

57. **Understanding the Health Impacts of Vehicular Emissions in South Florida: A Comprehensive Analysis**
Janelle Ducheine

58. **Swipe for Heartfelt Connections: Examining the Relationship Between Online Dating and Physiological Health**
Hannah Grace Lee and Louden Masters

59. **Emotional Eating, Self-Esteem, and Resilience in Young Adults**
Gabriela Barber, Sean Blumenfeld and Sophia Fiz

60. **An Examination of the Mediating Role of Need for Closure**
Alyson N. Almeida, Sophia Sonkin and Mario Poerio

61. **High-Throughput Drug Screening for Disease-Modifying Arthritis Therapy**
Janapriya Vijayakumar

62. **"This Is Exactly the Type of Activity the Museum Should Be Doing All the Time.": Exploring an Interactive Museum Exhibit Through Activity Theory**
Elizabeth Riotto

63. **Transcriptional Differences between Normal and Obese Zebrafish Associated with Intrinsically Disordered Proteins as a Model for Human Disease**
Jusmary Mercado

64. **Dietary Isoleucine Restriction Increases Catabolic Flux of Valine and Leucine in Lubber Grasshoppers**
Haley Peters

65. **Constructed Treatment Wetland Systems as Effective Microplastic Mitigation Tools**
Katherine Johnsen

66. **"I Always Come Back" A Look into the World of Five Night's at Freddy's in Correlation to Generation Z.**
Emma Sigarto

67. **Gray Box Modeling for Improved Accuracy of Glucose-level Prediction for the Artificial Pancreas**
Jackson Steele

68. **The Relationship Between Pornography and Marijuana Use**
Tatiyana James

69. **Plasmonic Silver-Palladium Hollow Nanoparticles**
Keven Luciano

Poster Session II
11:15 a.m. - 12:15 p.m.

70. **Sublethal TCDD Exposure During Zebrafish Development Produces Multigenerational Abnormalities in Ovarian Histology and Gene Expression**
Emma Cavaneau and Amelia Paquette

71. **Pawprints on Purchases**
Madison Vignola

72. **Unraveling the Impact of Pre-existing Conditions on Maternal Mortality**
Adrienne Perez and Ivan Chavez

73. **Transcription and Editing Workshops for Digital Project Outreach**
Janaya Ferrer, Maya Blackin and Britney Griffith

74. **Use of Baited Remote Underwater Video Systems to Assess Fish Biomass and Food Web Differences Across Habitats**
Latyr McQuarters, Cory Rider and Emma Robbins

75. **Effects of Glyphosate on Mosquito Development, Survival, and Immune Regulation**
Laurent Sanchez Rodriguez and Otis Woolfolk

76. **An Investigation of the Impact of Animal Shelter Volunteering and Dog Training Programs on College Students**
Nancy Strever

77. **Invalidation as Trauma?: Posttraumatic Cognitions Relate to Invalidation and Suicidality**
John Askew

78. **Mathematically Modeling Multiple Myeloma—Immune Cell Dynamics to Predict Novel Therapy Options**
Giuseppe Scibilia

79. **Undergraduate Students' STEM Identity: Self Perception of Future Professionals Using a Deep Learning Approach**
Macayla Barnett

80. **Financial Modeling by Ordinary Differential Equations with Chaotic Analysis**
Warren Chapman

81. **The Correlation Between the Imposter Phenomenon and Grit in College-Aged Students**
Daniela Rodriguez Suarez and Gabriel Terwilliiger

82. **Examination of the Protective Effects of Religious Affiliation on VR Suicide Behaviors**
Joseph Ciancio

83. **Soft Skills in STEM**
Mariana Sorroza

84. **Molecular Evolution to Improve the Binding of Arrestin1 to Enolase1 as a Tool to Enhance Glycolysis in the Retina**
Hunter Hutchinson and Derek Breiner

85. **Does "Race" Influence Missing and Unidentified Person Cases?**
Kaitlin Segerstam-Ivey

86. **What's in Your Cup: Organism Diversity in Probiotic Beverages**
Maryn Shilale and Gavin Cooper

87. **Archaeological Analysis of the Burns Spoke Burial Mound (8BR58) at Cape Canaveral Space Force Station and the State of Florida**
Melanie Langgle

88. **Cosmic Muon Station for Outer Tracker Module Testing**
Elena Vlaskovic

89. **The Evolution of Citizen's Trust in the U.S. Supreme Court**
Julianna Manes

90. **A Behavioral Analysis of Injectable Therapeutic for Spinal Cord Injury In Vivo**
Izabela Zmirska

91. **Coping with Creativity: The Relationship Between Depression/Anxiety and Creative Coping in College-Age Students**
Nelly Dragu

92. **A Shared Experience: Systemic Discrimination Influencing Minority Stress and Suicidal Ideation**
Makayla Evans, Robert Rice, Jay Collar, John Askew, Max Ordenes, Patrick Tootle and Min Eun Jeon

Poster Session II
11:15 a.m. - 12:15 p.m.

93. **Econ vs Eco - The Public's Opinions on Economic Development's Influence on Environmental Protection.**
Pablo Fabregas Navas

94. **The Olustee Confederate Monument: A Broader Perspective**
Lindsay Bowyer

95. **Oral Delivery of Intracellular Proteins via Carbamoylated Guanidine Modified Polymers**
Natalie Martin

96. **Discussing the Synthesis and Utility of Amino Alcohols as Chiral Templates for Building Blocks in Peptidomimetic Cancer Research**
Emma Cartwright

97. **The Acute Effect of Running With and Without Blood Flow Restriction and Muscle Tissue Oxygenation**
Nihar Patel, Sean Lubiak, Anuj Prajapati, Niriham Shah, Christopher E. Proppe, Paola M. Rivera and Ethan C. Hill

98. **Investigation of Gene Transcription Modifications Associated with Obesity in Danio rerio (Zebrafish)**
Ruel Stephenson Jr

99. **Examining the Relationship Between Obsessive-Compulsive Symptoms and Substance Use Disorder (SUD) Outcomes in a Treatment Population**
Joshua Valan

100. **Increased Antimicrobial Activity of Silver Nanoparticles through Ultraviolet Light Irradiation**
Erina Okamoto and Jerson Zacarias

101. **Student Mental Health- Investigating the experiences of test-anxiety in students enrolled in lower division chemistry courses**
Noor Alaraj, Draven Ruiz, Gavin Winslow and Majan Roshandel

102. **An Anthropological Study of Gender Within Christian Communities in St. Augustine**
Madelyn Spalding

103. **Teacher Ratings in Early Learning Disabilities Prediction and Identification: Impact on Reading (K-3)**
Rory Durante

104. **The Art of Community: A Study of Artistic Leadership to Promote Accessibility in Theatre**
Molly Asmussen, Rachel Taylor, Christine Vu, Dawn King and Blythe Gouker

105. **Roles of Vacuolar Invertase Genes (Ivr1 & Ivr2) in the Pollination Biology of Maize**
Katherine Gray

106. **Mechanical Evaluation of Novel Biomimetic Prosthesis Models Designed After Bird Claw Configurations**
Pavan Senthil and Om Vishanagra

107. **Let's Play Dinosaurs! Impact of Play on Children's Memory**
Sofia Condorelli, Spencer Henning and Adriana Lutzio

108. **Mapping Urban Greenspaces Throughout Broward County, Florida**
Nyla Crawford

109. **Does Activin Receptor-Like Kinase 1 Serve As the Connection Between Vasculature and Degenerative Nerve Diseases?**
Isabela Potter, Alma Sanchez, Nicole McGrath and Agueda Mijares-Martinez

110. **Biofilm Characterization of the Walter Reed Klebsiella pneumoniae Multidrug-Resistant Organism Repository and Surveillance Network (MRSN)**
Robert Beckman IV

111. **Analysis of Endogenous and Transplanted Stem Cell Populations Following Traumatic Brain Injury in Adult Zebrafish**
Lauren Alcindor

112. **A Better Understanding of Role Conflict Resolution**
Paige Kehoe

113. **The Last Five Years in Quantum Computing: A Literature Review**
Vincent Stafford

114. **Creatine Monohydrate Supplementation Impact on Skeletal Muscle Reactive Oxygen Species and Microvascular Blood Flow**
Sequoia Ernst

Poster Session II
11:15 a.m. - 12:15 p.m.

115. A Study of Hand Dexterity for More Functional Upper Limb Prostheses
Samantha Migliore, Courtney Williams and Calvin MacDonald

116. Development of a Near-IR Telomerase Activity Assay
Michael Yao

117. Formation of Artificial Myoglobin Intermediates Encased in Silica Sol-Gels Towards Sulfur Removal
Emily Kiker and Allyson Ray

118. Development of an Improved Rare Earth Element Separations Method
Tatum Vomund

119. Machine and Deep Learning-Based EEG Signal Decoding for Visual Reconstruction: A Systematic Review
Thomas Trinh

120. Multi-Channel Dilution Analysis Using a Single Pump Channel
Robbie Huff

121. Excess Body Weight and Its Association to Diabetes Mortality Amongst Florida Adults
Shivanie Sharma

122. Quantifying Corticosterone in the Zebra Finch: Measuring Stress in Response to Social Isolation in a Gregarious Songbird
Diana Aliste

123. Effects of TNNI3K on Myocarditis in Novel Translational Mouse Model
Nick Farahani

124. Social Acceptance of Convenience Foods 1950-1970: Women's Agency and Influence
Carlye Mahler

125. Soils as Markers of Marsh Migration into Natural and Created Upland Islands
Shannon Brew

126. Cards and Confidence: Effects of Trading Cards in Bolstering Confidence in Science Literacy
Jessica Gaehle, Ariana Harris, Margaret Clark, Vanda Voroshazy, Malachai Jean and Shane Geraghty

127. Screening for Pseudomonas aeruginosa Efflux Pump Inhibitors
Sofia Angeloff Salerno

128. Development of an Assay to Assess Target Site Resistance in Organophosphates in Culex quinquefasciatus
Primrose Tanachaiwiwat

129. How Does Salinity and Habitat Type Influence Black Gill Disease in penaeid Shrimp?
Sophia Williams

130. Immunomodulatory Effects of Bioactive Glass-Ceramic Nanoparticles for Use in Regenerative Medicine
Sun Latt

131. Molecular Chaperone Tid1 in Maintenance of Mitochondrial DNA
Tania McCormack

132. Cryptococcus neoformans Glucuronoxylomannan Compromises Microglial Chemotaxis via Inhibition of Purinergic Receptors
Rafael Garcia

133. Positive Self-Talk versus Brooding and their Relationship with Creativity
Logan Denney

134. Expandable Music Recommendation Using a Joint Embedding Space
Tina Tran

135. Water-Resistant Products: Diving Into PFAS
Ernand Alzenor

136. Raising (S)hell: Investigating the Cedar Point North Shellworks
Victoria Hayes

137. Novel 3D Culture of Breast Cancer Cell Lines for Evaluating Drug Efficacy
Alexyss Savannah

138. The Impact of Telemedicine on Patient-Provider Communication at a University Student Health Center
Venkata Naga Sreelalitapriya Duvuuri

Poster Session II
11:15 a.m. - 12:15 p.m.

139. Effect of Self-Compassion Intervention on Negative Outcomes Associated With Social Comparison for College Students
Sadia Barua

140. Preserving Floridas Unique Biodiversity through DNA Barcoding
Rebecca Kesling

141. Dance and Tourism in Bali: How Processes of Sociocultural Change Impact the Instruction and Practice of Traditional Balinese Dance
Sarah Shiell

142. Perceived Discrimination, Test Anxiety, and Intelligence Mindsets
Trinity Bryant

143. The Future of Digital Marketing: Brand Advertisers on Twitter and the Deployment of Parasocial Relationships
Sophia Reynolds

144. Evaluating JWST's Ability to Detect Low-Abundance, Non-Equilibrium Molecules in Exoplanet Atmospheres
Sierra Sanne

145. Examining the Effects of Artemisia annua Extracts on Neuro2A Cells
Wesley Lim

Poster Session III
1:45 p.m. - 2:45 p.m.

1. **Rapid Synthesis of Porous Ceria Nanoparticles for Effective Drug Delivery**
   Agastya Mittal
2. **The Relationship Between Cultural Misorientation and Afrocentricity**
   Alyssa-Resha Williams
3. **Development of 3D Digital Twin Environments with Agent Behavior Modeling**
   Abigail Joseph
4. **Manipulation of Cohesive States in Active Colloidal Chiral Fluids**
   Allison Cornelius
5. **The Significance and Impact of Ancient Greek Medical Tradition**
   Alexander Theophilopoulos
6. **Make it Stand Out! Children's Memory for Dinosaur Facts**
   Adriana Lutzio, Sofia Condorelli and Spencer Henning
7. **Creating a Collaborative Digital Edition of Revista Tierra (1923)**
   Adele Manwell and Erin Garry
8. **Meedai and Need for Cognition**
   Alfredo Hurtado
9. **Hope is Not a Strategy: Challenging the Status Quo of How Colleges Are Handling the Campus Sexual Assault Crisis**
   Emma Diehl
10. **Age-Related Differences in Pain and Sleep Among Individuals in Treatment for Substance Use Disorders**
    Allison Vollmer
11. **Assessment Of Adverse Childhood Experiences (Aces), Violence, And Substance Abuse Prevalence Among Honduran University Students**
    Andres Felipe Gil Arana
12. **Analysis of Raman Spectra of Cu2ZnSnSe4 Under High Pressures**
    Daniel Garcia
13. **Assessing the Net Advantage of Living Shoreline Stabilization on the Ecological Success of a Restoration Method for Halodule wrightii**
    Angie Tasayco
14. **The Search for Happiness: Identifying Cortical Biomarkers of Optimism, Agency, and Connectedness using fNIRS**
    Alissa Vani
15. **Gender and Racial Bias in Representations of Scientists**
    Andrea Sanchez
16. **Innovative Grafting to Improve Dwarf Tomato Production**
    Andrew Raffenberg
17. **Effects of Celebrity Media Videos on Attitudes Toward Seeking Professional Psychological Help: Preliminary Results**
    Anne Jaeger
18. **OWL2 DNA Hybridization Sensor: Detection of Mutant Oncogenes**
    Antonio Perez
19. **Symphonic Tragedy: How Rap Music and Gun Violence Affects the African American Community**
    Bryan Linnen
20. **The Influence of Working Memory, Grit, and Personality on Resident In-Training Performance**
    Alexis Crowder
21. **C3forMe: Enhanced Self-Determination Training for Transition-Aged Young Adults With Disabilities**
    Dara Cohn
22. **Assessment of Training Game for Hands-free Wheelchair Control**
    Calvin MacDonald and Courtney Williams
23. **Exploring the Role of DNAJB1 as a Novel Oncoprotein**
    Baher Boktor

Poster Session III
1:45 p.m. - 2:45 p.m.

24. **The High-Quality Isolation of RNA from Zebrafish Skeletal Tissue for Transcriptomic Applications**
Ashley Guarino

25. **The Lived Experience of Time Dilation**
Luke Bleyer

26. **Student Perceptions of GTA Instructional Practices in Introductory Chemistry Labs**
Cynthia Georges

27. **Dedicated Edge Resource Utilizing Machine Learning & Zero Trust Principles to Secure Tactical Edge Network Environment**
Kevin Kostage

28. **"This Tastes Weird!" A Dive into the Correlation Between Drinking Water in the Tampa Bay Area and Head and Neck Cancer**
Danielle Abel

29. **Reassessing Foraminifera Density Sampling Used To Judge Benthic Oil Spill Recovery**
Aidan Webster

30. **Relationship with Dietary Inflammatory Potential, Dietary Quality, and Cognition in Elderly Adults**
Carole Stringfield

31. **Probiotic L. acidophilus Secretes Postbiotic Factors that Reduce DNA Damage in an Experimental Model of Gastroesophageal Acid Reflux Disease**
Divya Joshi

32. **Finance in the Age of Influence**
Gabriella Nicole Gallardo

33. **Death by the Badge: Race, Age, Gender, and Police Brutality**
Courtney Williams

34. **Evaluation of Quality-of-Life Measurements and Reporting in Randomized Controlled Trials of Pancreatic Cancer**
Chibeze Oguejiofor

35. **College Students and Nutrition Misinformation: Correlation Between Perceived Health and Social Media**
Hannah Kowanes

36. **Assessing Nitrogen Concentration and the Impact of Reclaimed Water on Turfgrass**
Juan Porras

37. **Epitope Mapping Novel Monoclonal Antibodies Against Borrelia burgdorferi Surface Proteins OspC and BmpA**
Eliza Doyle

38. **Shifting Presentation: How Nonbinary College Students Respond to Deadnaming and Misgendering**
Charlotte (Charlie) Arechederra

39. **Post-Covid Mental Health Rates: Have We Fully Recovered?**
Charity Rodriguez

40. **Does Social Media Affect Academic Performance and Self-Care?**
Luis Munoz

41. **Nicolas Olivari's Livro de Lecciones a Solo Violín: Historical Violin Pedagogy in Light of New Scholarship**
Michael Cherbini

42. **How do Personality Traits Correlate With Attitudes Towards COVID-19?**
Eric Haseman

43. **Unacclaimed Propagators: Female Ascendacy in the Office of War Information and the Resulting Feminine Influence on the Development and Dissemination of World War II Propaganda**
Dalia Dooley

44. **Collection and Analysis of River, Lake, and Ocean Water and Riverbank, Lakeshore, and Beach Sediments to Determine Types of Microplastics Present**
Raelin Kuhn

45. **Caring for Students as Thinkers: A Case Study**
Haley McCoy

46. **Motivations for Retaliatory Aggression on Social Media Among Borderline Personality Endorsers**
Hannah Grimes

Poster Session III
1:45 p.m. - 2:45 p.m.

47. **Validation of Sketching Survey to Study Student Mental Model of a Community of Practice**
Daniela Zavala

48. **Humpback Whale Behavior in Response to Boat Density**
Kaitlyn Ho

49. **Bench Press Performance During Visual Occlusion**
Fabianna Marin Gallucci, Mariana Espinal and Ashley Khouly

50. **Art or an Illusion: How Media Portrays One's Perception Versus Reality**
Jaida Haynes

51. **Trust in Virtual Supervision: Examining Probation Officer-Client Relationships**
Isabella Marcon

52. **Straightforward Synthesis of a Redox Active Polymer of Intrinsic Microporosity**
Ellen Forehand

53. **Passively Cooling Buildings with Barium Sulfate laminates**
Devin Wright

54. **Tilings of Three Dimensional Deficient Rectangles with L-Tetrominoes**
Ian Bridges

55. **Graph Neural Networks for the Identification of Novel Inhibitors of a Small RNA**
Ibrahim Gheit

56. **Students' End of Semester Perspectives of Online Adaptive Learning Modules**
Jennifer Miller

57. **2020 Armor: Descriptive Analysis Of Black Belt And Non-Black Belt Taekwondo Athletes**
Florianne Silva

58. **Evaluation of Tolerance of Milk Protein Versus Plant Protein Based Enteral Nutrition Formulas in People with Amyotrophic Lateral Sclerosis (ALS): A Retrospective Study**
Shreya Patel

59. **Memory Benefits of Being a Racial Ingroup Face and Judging Face Attractiveness**
Montserrat Corcino and Benjamin Marsh

60. **Receipts, Source of Phthalates?**
Grace Gouws and Camryn Brown

61. **Kinetic Study of DNA Structures Spatially Localized on a DNA Scaffold**
Katherine Taylor

62. **Architecture and Building Caretakers**
Erin Beck

63. **Changes in Mother-Infant Social Interactions Based on Food Type**
Jalina Hess

64. **MTS or Highwaters: Prescribed Fire Lessons for Multiteam System Training**
Kevin Llanos

65. **Predicting Suicide Risk Among Police Officers**
Kaitlynn Lee and Jada Brown

66. **Optimization and Characterization of Superconducting Niobium Nitride Thin Films**
Hudson Horne

67. **Explainability and Introspection in Deep Reinforcement Learning**
Gabriel Lucchesi

68. **CWISE J105512.11+544328.3: A Nearby Y Dwarf Spectroscopically Confirmed with Keck/NIRES**
Grady Robbins

69. **Mysticism in Medieval Society: Stories and Their Influence**
Lexi Schwartzberg and Gabriella Gomes

70. **Cancel Cancel Culture?**
Kerri Cohn

71. **Probing the Electronic Structure of Manganese-Protoporphyrin Proteins Using Different Spectroscopic and Imaging Techniques**
Brendon Le

72. **Examining the Influence of Climate Change on Wet and Dry Tropical Forests of Hawaii through Concentrations of Carbon-12 and Carbon-13 Stable Isotopes**
Katharine Thomas

73. **Untitled**
Isabella Macias

Poster Session III
1:45 p.m. - 2:45 p.m.

74. **Application of Vocal Biomarkers in the Study of Bilingualism and Language Learning**
Maria Gonzalez

75. **Pass The Mic: How Social Media Distinct Colorism in the Female Rap Industry**
Nei-Lani Saville-Russ

76. **The Characterization of Strontium Ferrite for Use as a Resonator In Microwave Device Applications**
Jessi Skaggs

77. **Identifying Mechanisms of Antioxidant Treatment on the Warburg Effect**
Sofia Ines Cuello

78. **Using the Bayesian Statistical Framework for Testing Paleomagnetic Reconstructions**
JJ Ruse

79. **Internet Gaming Disorder & Gamer Types: Uncovering the Stats**
Mathea Beltran

80. **Exploring the Uncharted Brain: Single Cell Analysis of Circuit Deficits in Fragile X Syndrome**
Melisa Sencer

81. **The Relationship Between Love and Family Relationships**
Taysia Palmer

82. **How the El Sistema Inspired Programs, Miami Music Project and the Youth Orchestra of Los Angeles, Directly Impact the Underserved Youth of Miami and LA**
Juan Florez

83. **Effects of Two Substrates on the Growth and Development of an Endangered Cactus**
Luke McCall

84. **Development of a Diagnostic Tool to Detect Branched Ubiquitin Chains**
William Forrest and Isabella Holt

85. **Assessing Preventive Care Utilization for Cardiovascular Disease Amongst US Latinos**
Melanie Paredes

86. **An Investigation of the Relationship between Income Levels and Vital Statuses among Asian, Black, and White Triple-Negative Breast Cancer Patients**
Esther Hoang Anh Pham

87. **Education, Awareness, and Confidence Levels of Anesthesia Providers to Evaluate Temporomandibular Joint in Patients Undergoing Orotracheal Intubation**
Kelly Turro

88. **Feelings of Entrapment: Better Understanding Suicidal Ideation in Sexual Minority Populations**
Patrick Tootle, Makayla Evans, Robert Rice, Jay Collar, Max Ordenes, Min Eun Jeon, Thomas Joiner and Anika Sigel

89. **Probing Hhydration Changes of the Responsive Polymer Poly(N-isopropyl acrylamide) Across the Demixing Transition with Fourier-Transform Infrared Spectroscopy**
Nicolas Harms

90. **Investigating Soil Bacterial Isolates From The Gainesville Area For Inhibitory Activities Against Rice Blast Disease**
Lainey Kemmerer

91. **Using Pressure Sensors and Finite Element Analysis to Simulate Pressure Distribution in Biomedical Applications**
MuhammadMahdi NabiZadeh

92. **Halifax River Oyster Project**
Christina Gabriel

93. **The Effects of Targeted Memory Reactivation on the Consolidation of Episodic Memories**
Paige DeForest

94. **Submaximal Exercise With Blood Flow Restriction Induces Similar Changes in Neuromuscular Function As Maximal Exercise**
Niriham Shah, Sean Lubiak, Anuj Prajapati, Nihar Patel, Paolo Rivera, Christopher Proppe and Ethan Hill

95. **Synthesis of a Biogenic Aldehyde, 3,4 Dihydroxyphenyl-acetaldehyde (DOPAL), a Toxic Dopamine Metabolite In Vivo: Implications for Parkinson's Disease Pathogenesis**
Savannah Page, Louise Sideras and John McLean

Poster Session III
1:45 p.m. - 2:45 p.m.

96. **Words Change Their Meanings: Conceptualizing Political Action through Greek Antiquity**
Izaiah Rines

97. **Sawfish on the Amazonian Coast: Presence and Local Knowledge**
Mika Charvet

98. **The Oral Microbiome's Influence on Obesity and Metabolic Health**
Sammi Rather

99. **Pulse Perspectives: A Cross-Sectional Analysis of Cardiovascular Outcomes and Disparities in Florida Residents**
Olivia Dionne, Maria Almonte, Zainab Quadri and Tatum Scanlon

100. **Conversations with My Comfort Character: Fictional Mentors in the 21st Century**
Kassandra Tramel

101. **The Impact of ESI on Reaction Time**
Vanesa Smielak

102. **An Evaluation of Existing Research Regarding the Role of Gender on Perceived Credibility**
Pedro Armona and Samuel Mallay

103. **Innovative Rehabilitation Through Haptic Engineering**
Patrick Flanagan and Kevin Greene

104. **Exploring the Influence of Language Readability on Sentiment Analysis**
Olivia Bronstein

105. **American Airpower: Historical Narratives, Museum Aircraft, and World War II in Asia**
Mary Brandt

106. **Catch My Drift? Effects of Herbicide Drift on Morning Glory Plants and Arthropod Communities**
Robin Pitilon

107. **The Effects of PAK1 Deletion on Cardiomyocyte Contraction and Ca2+ Release in Neonatal Mouse Ventricular Myocytes**
Priyanka Perumalraja

108. **Investigations towards the Design of a Self-Healing, Flexible Sensor Based on a Recyclable PDMS Based Polymer**
Forrest Dohner

109. **Predicting the Presence of Alzheimer's Disease Through Handwriting Utilizing Data Mining Techniques**
Sadie Griffin, Michaela Bird and Kenniece Harris

110. **Applying Artificial Intelligence to Neuropathological Assessment in a Mouse Model of Huntington Disease**
Samuel Moldenahuer

111. **Echoes of Silence: An Analysis of American Attitudes Towards Firearms**
Zack Brand

112. **In Vitro Antibacterial Activity of Piper auritum Extracts**
Daniela Ramos

113. **Polymer-Cerium Oxide Nanocomposites for Tissue Regeneration**
Shreya Pawar

114. **Evaluating the Bactericidal and Bacteriostatic Efficacy of Ayurvedic and Antibiotic Treatments Against S. pyogenes**
Priya Tomerlin and Skylar Mac Calla

115. **The Use of Costume Design Beyond Practicality**
Shelly Lindemann

116. **Undergraduate Students' Opinions and Attitudes Towards Abortion**
Morgan Gregg and Alexia Mort

117. **E-cadherin Expression as a Predictor of Epithelial to Mesenchymal Transition in Early Onset Colorectal Cancer**
Anika Bhandare

118. **Comparison of Gender-fluidity Acceptance Between Latine and non-Latine College Students**
Stephania Mondragon

Poster Session III
1:45 p.m. - 2:45 p.m.

119. Uncharacterized Gene, C17orf58, is Overexpressed in Peripheral T Cell Lymphomas and is Critical for Proliferation of Other Hematological Malignancies
Reem Abdelghany

120. Evaluating Biological Variation Among Coastal and Inland Sites in Japan Dating From The Middle To Final Jōmon
Rosalyn Wadsworth

121. Health Disparities in Post-Partum Pain Management: A Systematic Literature Review
Sylvia Chidera Obiagwu

122. Upregulation of SPAK and OSR1 Kinases in Glioblastoma Enhances Cell Migration, Proliferation, and Sensitivity to Chemotherapy
Yetzali Claudio Medina

123. Sustainable Growth Blanket: Testing Plant Growth with Soil Bacteria on Fiber Sheets
Leen Abu Ammour

124. Dysfluency is Less Likely to Occur in Bilingual Children
Sarah Hemani

125. Types of Instagram Use and Social Anxiety
Jessa Ward, Hailey Coronado, Sebastian Encalada, Samuel Scaccia, Mary Merris and Kyo Slaughter

126. Common Arm Position Signal Acquisition System
Trevor Overton

127. Exoskeleton Response During Infant Physiological Knee Kinematics
Breanna Macumber

128. The Covid Connection to Ischemic Strokes
Jarrod Wheelus

129. Quantifying the Patterns of CGRP Innervation in the Atria and Ventricles of Male and Female Mice
Sofia Villanueva, Lauren Robbins, Olivia Alintoff, Sarah Jenkins and Danielle Cruz

130. Optimizing the Formation of Metal Porphyrin Protein Intermediates as Possible Catalysts for Desulfurization Reactions
Ethan MacIsaac and Ashlee Harwood

131. Does Aesthetic Plastic Surgery Heighten the Likelihood of Nervous System Complications?
Alyssa Kiel

132. Addiction and Patient Care: A Novel Instrument to Assess Attitudes and their Change Across Treatment Among Impaired Professionals
Simran Lamba

133. MicroRNAs and Their Significance in the Field of Anesthesiology
Victoria Drews

134. Nutrivigilance: Current State and Regulatory Challenges in the US and Europe
Vijay Luthra

135. Social Media Detox and DSC Students Self-Reported Stress Levels
Mary Hogarth, Moira Hughes, Olivia Rodriguez, Aidyn Carey, Mario Griggs, Violette Gray and Valeria Gonzalez

136. Light-Responsive α-Fe2O3 Micromotors for Targeted Cell Therapy
Taiwo Sogbesan

137. Voice Controlled Generative Artificial Intelligence IOT
Omarhiyon Malcolm

138. Annotation of RNA Helicase Genes in Diaphorina citri
Maricela Bucio

139. Audiovisual Modulation of the Basal Ganglia in Parkinson's Disease Patients with Deep Brain Stimulation
Vedant Garg

140. Exploring the Invisible: Dark Matter
Jailynn James

141. Taekwondo as a Transformative Treatment Plan for Mental Disabilities and Disorders
William Breska

142. The Influence of Art Music on Modern Composer Alan Menken
Melissa Molano

143. Leveraging Syntactic Dependencies in Disambiguation: The Case of African American English
Wilermine Previlon

Poster Session III
1:45 p.m. - 2:45 p.m.

144. Childhood Trauma, Stress, Gender, and Depression's Impact on Suicidal Behavior
Emily Mezni

Poster Session IV
4:00 p.m. - 5:00 p.m.

1. **Collaborative Hybridization of Peppers (Capsicum baccatum) to Produce Polyresistant Cultivars**
   Palmer Short
2. **Designing a Recombinant Protein-Based Sensory Vesicle System**
   Adriana LaVopa
3. **Investigation of the Structure and Function of LARP-6 Protein Through Interactions With RNA**
   Ana Rodriguez
4. **The Relationship Between Infidelity and Family Relations**
   Amir Moore
5. **It's Not Me, It's You: The Rise of Therapy Speak and It's Role in Perpetuating Generational Trauma in Grimm and Charmed**
   Amanda Krack
6. **Synthesis and Assembly Dynamics of Tryptophan-Valine Block Copolymers: Towards Amphiphilic Micelle Formation**
   Sonya Babski
7. **Dark Triad, Self-Image, and Media Use**
   Alfredo Hurtado and Mazz Succarotte
8. **Consciousness Unbound: Beyond Physicalist Constraints**
   Aidan Burham
9. **Identifying Macrochelid Mites of Tampa Bay and Determining Their Relationship With Drosophila spp. Hosts Using Scanning Electron Microscopy (SEM)**
   Anngelyk M. La Luz Maldonado
10. **Diet to Death: Implications of Diet Related Imbalances in Oral Microbiome on Liver Health**
    Anthony Walden, Ely Hernandez and Dalton Johnson
11. **Tailored Temptations: Your Take on Personalized Advertising**
    Adin Garbowit
12. **Improving Quality of Life in Women with Polycystic Ovary Syndrome: A Randomized Control Trial**
    Anna Coffman, Meriam Naguib and Lauren Llerena
13. **Combinational Targeting Therapy Inhibiting MEK, BCL-XL, and EGFR Pathways in Pancreatic Cancer**
    Alexandra Crespin
14. **The Long-Term Effects of Simulated Spaceflight on the Internal Jugular Vein**
    Caitlin Parvizi
15. **Deep Leaning-Based Automated Road Crack Detection and Classification**
    Collin Easley
16. **Characterizing HA Degradation in 3D Tumor Models**
    Victoria Consalvo
17. **Study of the Structure and Evolutionary History of the Milky Way**
    Ashley Meglino
18. **Applying Blood Flow Restriction Does Not Affect Systemic Oxygen Demands**
    Anuj Prajapati, Sean Lubiak, Nihar Patel, Niriham Shah, Christopher E. Proppe, Paola M. Rivera and Ethan C. Hill
19. **Dinosaurs!: Children's Science Interest Driven by Gender and Age**
    Desiree Gray
20. **Music Mayhem: The Effects of Song Lyrics and the Behavioral Role it Plays on Gen Z**
    D'Aja Lordeus
21. **Role of Obesity, Race and Poor Socioeconomic Status on Traumatic Brain Injury Severity in Children**
    Justin Wilburn
22. **Do Students Feel They Belong? Measuring Student Sense of Belonging in General Chemistry**
    Camila Senespleda
23. **Evaluation of a Transgenic TDP-43 Model of ALS; Complications and Tribulations**
    Amanda Lopez
24. **Chinese Piracy in the Late 18th and Early 19th Centuries and its Contribution to the Fall of the Qing Empire**
    Benjamin Smith

Poster Session IV
4:00 p.m. - 5:00 p.m.

25. **Toward Data Pattern Mining for Regional-scale 3D Building Information**
Ariana Galindo

26. **From Passion to Action: Fast Fashion's Hidden Costs and Rethinking Fashion's Future Through Sustainability**
Dylan Patel-Qadir

27. **Examining the Effects of Route of Exposure in a Physiologically Based Pharmacokinetic (PBPK) Model of Chloroform in Rodents**
Daniel Alfonso-Travieso

28. **Inflammation on Endothelial Molecule Glycosylation and Function in Pulmonary Hypertension**
Andrea Maraone

29. **Using Ratings in Evaluative Affective Space as a Metric of Individual Differences**
Angie Cordova

30. **Exploring a New Technique for Photo Enlarger Use in Creating Dark Room Prints**
Carole Stringfield

31. **The Relationship Between Evening Screen Time Use and Objectively Measured Sleep Outcomes in U.S. College Students**
Donya Sedaghat

32. **Environmental Impact Assessment of Paint Equipment Washout in Terrestrial and Aquatic Ecosystems**
Elizabeth Eskildsen and Dallas Eskildsen

33. **Ecotoxicological Assessment of Fish Species**
Keanna Forbes

34. **SNP Genotyping for Pharmacogenomics and Evaluating Natural Products for Anti-Cancer Activity**
Amelia Rygh

35. **Prevalence of Screening and Assessment Tools in Agencies Serving Justice-Involved Individuals**
Ella Schmidt

36. **Using Mechanical Strength as a Indicator of Taphonomic Bias**
Brennen Sexton

37. **Conditional Dopamine D2 Receptor Loss Alters Excitatory Neuron Density in the Medial Frontal Cortex**
Giovanni Moraes

38. **Engineered Water Repellency for Resilient Sewage Systems**
Erik Anderson

39. **FTIR Spectroscopy of PVC in Variable Multiphase Mixtures**
Chloe Perednia

40. **How Does Right-Wing Authoritarianism Correlate With Attitudes Towards COVID-19?**
Eric Haseman

41. **Genetic Mechanism of Melatonin Biosynthesis and Physiological Effects in Plants**
Marlon Vargas Castillo

42. **Race Perception and Proximity**
Jennifer Martin

43. **Effects of Deep Space Radiation on Lymphatic Vessel Structure and Function**
Hanna Neustadter

44. **Efficacy of Administering Remote Vigilance Tasks**
Hanya Irfan

45. **Analyzing the Mechanistic Impact of Plasma Metabolomics on Cytotrophoblast Proliferation**
Chloe Van Horn, Caleb Faison and Joseph Tebou

46. **Stability, Structural Insight, and Characterization of Novel Photosensory Transducer Encoded by alr 3166 in Anabaena PCC 7120**
Providence Pangira

47. **Quantifying Diagenesis of Florida fish Scales Using IR Spectroscopy**
Brian Manzanares

48. **Scott Pilgrim vs. Adaptations: Cross-Media Storytelling from The Dark Knight to The Scott Pilgrim Universe**
Maryssa DeVincenzo

Poster Session IV
4:00 p.m. - 5:00 p.m.

49. **STEM Identity: How Students' See Themselves as Future STEM Graduates**
Jackson Ellis

50. **Of Donkeys, Elephants, and Dehumanization: Exploring Warmth and Competence Stereotypes about Major and Non-Major Political Parties**
Diya Gandhi, Melody Mackner, Theo King and Mackenzie Foster

51. **Effects of Environmental Disturbance on Bird and Parasite Presence**
Katherine Gutierrez and Alexandra Larson

52. **Leveraging Artificial Intelligence for Enhanced Environmental Sustainability in Urban Areas**
Danny Alice

53. **Addressing Medical Mistrust in the Black Community to Improve their Health Outcomes**
Jillian Weathington

54. **Acute Leukemia in Hispanic Children and Health Disparities in South Florida**
Emily Hernandez

55. **Quality Improvement in Pediatric Single-Location MRI: Immersive Therapeutic Play Preparation Using a Mock Scanner as a Low-Cost Replacement for Sedation**
Dawson Veghte, Shreya Mathur and Ansh Parikh

56. **Using CRISPR Technology to Create NGLY-/- in Human Brain Tissue Cell Lines**
Gabriel Springer

57. **The Role of Discrimination on the Gender Wage Gap**
Musarrat Shaira

58. **Gender and Psychosocial Differences in Posttraumatic Stress Symptoms Prior to Open-heart Surgery**
Ibukunolu Shofolu

59. **Juliana Huxtable Opens a Door for the Furry Community**
Atlas Chambers

60. **How to Buy an Oscar: Hollywood's Racialized Currency, Symbolic Annihilation, and False Meritocracy**
Katia Destine

61. **Exploring the Interaction Between the Cross-Race Effect and Political Ideology**
Luisa Januario

62. **The Decline in Syngnathid Populations Within the Indian River Lagoon**
Shaunace Bowen, Endi Carter and Senait Yusef

63. **Defining the Contribution of the galE Gene in the Virulence Potential of Porphyromonas gingivalis**
Emile Karam

64. **An Analysis of the Change of Students Expectations in a Reformed Physical Chemistry Course**
Kevin Morales

65. **The Effects of Sleep Extension on the Gut Microbiome**
Kiarah Brown

66. **Does semaglutide Suppress Overconsumption in a Rodent Model of Binge Eating?**
Jamila Guard

67. **Creation of Campus Culture & Community**
Isabella Mills

68. **Cranky Cardinals: Artificial Night Lighting and Aggression in Urban Songbirds**
Zion Szot

69. **Team-Based Learning in Chemistry: Exploring Team Function and Performance**
Linne Goberville

70. **Transcriptome Sequencing of the Eastern Oyster (C. virginica) in Stressful Salinity Conditions**
Luke Talham and Blake Busch

71. **Lost on the Map: Unraveling Geographic Illiteracy**
Kevin Martinez

72. **Disparities in Hispanics with Prostate Cancer**
Michael A Stokes III

Poster Session IV
4:00 p.m. - 5:00 p.m.

73. **Oral Manifestations and Obstructive Sleep Apnea (OSA) in College Students**
Maria Martinez

74. **Developmental Exposure to TCDD Alters Sperm Motility and Whole-body Hormone Parameters in a Zebrafish Model**
Gabrielle Gonzalez

75. **Cookie Cutter Girls: A Content Analytic Investigation of the "Clean Girl Aesthetic" on TikTok**
Kenson Moore

76. **High-Pressure Raman Spectroscopy Study of GdTe1.8**
Hannah Truong

77. **Effects Of Invigorating and Relaxing Music on Heart Rate Variability, Blood Pressure, Oxygen Saturation, and Heart Rate**
Matthew Faur

78. **Calcium Ions Effect on Planaria Feeding Behavior**
Jonathan Newman

79. **Effects of Microplastic Exposure in the Sea Anemone, Exaiptasia pallida**
Michael Smith

80. **Making Visible the Hispanic Hispanic Presence in North Florida through Oral History and the Online Publication of Historical Documents**
Johanna Asencio-Morcillo, Alondra Solares and Paola Ramos Maysonet

81. **Identifying a Cryptic, Invasive Species of Toad Under the Genus Rhinella**
Rachel Ryweck

82. **Optimization of Nutrient-Based Nanoparticles and Their Evaluation To Mitigate Mangrove Die-Off Caused by Pestalotiopsis spp.**
Melissa Deinys

83. **A Longitudinal Examination of Obsessive Compulsive Symptom Severity as a Predictor of Posttraumatic Stress Disorder Development**
Mia Mantei

84. **Maternal Nutrition, Obesity, and Infant Obesity Risk: A Comprehensive Analysis of Caloric Intake and Micronutrient Correlations**
Hannah Quintal, Bryanna Mirabal, Sionika Thayagabalu, Kathryn Humes, Carly Serlenga, Nicole Wang, Yulianices Fernandez, Alejandra Iglesias and Zara Haruna

85. **The Meat and Dairy Industry's Contribution to Female Exploitation**
Jahcinda Law

86. **Does Mangrove Encroachment on Oyster Reefs in The Indian River Lagoon Enhance Blue Carbon Storage?**
Nicole Boisson

87. **Apartment Ownership in the Neoliberal City: How Disinvestment, Urban Renewal, and Zoning Reshaped the Rental Landscape**
Katie Renzi

88. **Breaking the Silence – Combatting Campus Sexual Assault**
Danielle McFarkand

89. **Gravitational Wave Detection Using Machine Learning Algorithms with LIGO Data**
Isis Robinson

90. **Impact of Parent-Child Interaction on Adolescent Deviance**
Isabella Urena

91. **Rh-Catalyzed C—H Silylation of (Hetero) arenes with Siloxysilanes**
Noah Swann

92. **Whale, What Have We Here? A Meta-Analysis of the Impacts of Boating Activity on Orca Whales Orcinus orca**
Remi Siegel-Ventura

93. **Metaverse-based Platform for Enhanced Active Shooter Preparedness and Response in Developing Countries**
Laura Thomas

94. **Examining the Role of CteG Using Drosophila**
Om Patel

95. **Straight From Yaad**
Lydia-Rose Hanson

Poster Session IV
4:00 p.m. - 5:00 p.m.

96. **Gender Differences in Domain-specific Self-efficacy and Self-esteem in Middle School Children**
Sophia Fiz, Gabby Barber and Sean Blumenfeld

97. **Quantitative Comparison of Cardiac MRI vs. Echocardiogram for Radiation-Induced Heart Dysfunction in BC Patients**
Jonathan French

98. **Memory for a Dinosaur Exhibit: Retrieval-Based Practice vs. Restudy**
Spencer Henning, Sara Festini, Sofia Condorelli and Adriana Lutzio

99. **Breakfast Skipping in College Students and its Association with Eating Behaviors**
Rebekah May

100. **The Cage of Dismissal: Emotional Invalidation, Entrapment, and Minority Suicidal Ideations**
Robert Rice, Jay Collar, John Askew, Max Ordenes, Patrick Tootle, Makayla Evans and Min Eun Jeon

101. **Exploring Nesting Behaviors of the Gopher Tortoise at the FAU Preserve**
Martha Torres

102. **I'm Perceived, Therefore I Am: Dystopian Narratives, Self-Commodifying, and Generation Z's 21st-century Perception of Individuality**
Victoria Jackson

103. **Evaluating the Role of the Melatonin in the Mitochondrion-mediated Apoptosis in Thyroid Cancer Cell (MDA-T41)**
Jessica Crews and Colten Denby

104. **Eating Disorders, and Stress in College Students**
Naina Bayya

105. **The Pearl-Fect Solution**
Grace Domonkos

106. **Wearable Device to Track Astronaut Health Status Via Transdermal Interstitial Fluid Analyte Concentration Changes**
Yamila Diaz

107. **Evaluating Obsessive Compulsive Behaviors in Huntington Disease Model Mice**
Sabrina Lipkin

108. **Physics-Constrained Deep Learning of Atomic Diffusion in Inertial Fusion Experiments**
Juan Valderrama

109. **E. esperance: A Cell-Based Therapeutic for Trimethylaminuria (TMAU)**
Sai Devulapalli, Colton Keib and Christian Suastegui

110. **Enhancing Aircraft Recognition and Location Estimation Using Monocular Depth Estimation and Deep Learning**
Logan Luna

111. **TIM/TAM Receptors: A Potential Biomarker for Predicting Sensitivity to Zika Virus-Induced Oncolysis in Non-Small Cell Lung Cancers**
Shankari Somasekar

112. **Exploring the Role of K60 in Stabilizing the Open State of MscS**
Phuong Nguyen

113. **Mild and Efficient Cs2CO3-Promoted Synthesis of Silyl Carbonates and Silyl Carbamates**
Phillip Gray III and Colby Lavigne

114. **The AHEMD-IS as a Tool for Predicting Developmental Outcomes: A Review**
Victoria Rodriguez

115. **Formosan Alate Moving Undetected on an HBCU Campus: A Case Study Evaluating Precipitation and Isolated Colonies and Identification of Termites**
Jade Christie and Xharia Lipkins

116. **State Laws Mandating Pain Management Contracts for Opioid Analgesic Treatment**
Shriya Doranala

117. **Sex Differences in the Effects of Age on Prefrontal Cortex-mediated Cognition in Fischer 344 x Brown Norway F1 Hybrid Rats**
Madison Halcomb

118. **If Everyone Else Can Do It... So Can I**
Sarah Aker

119. **Dinosaurs! How Exhibit Visits Enhance Science Interest**
Stacey Hoffmeister

Poster Session IV
4:00 p.m. - 5:00 p.m.

120. System Involvement Among Fatal Overdose Victims
Stephania Mondragon

121. Early Studies on the Effectiveness of Industrial Hemp as a Phytoremediator of Polluted Waters
Liliana Plata

122. Preparation of Atomically Smooth SrTiO3 Substrate Surface
Monique Kubovsky

123. Public Perception of AI Integration in Healthcare: A Survey Study on US Citizens
Pranav Jambulingam

124. Small Interfering RNA Treatment for Estrogen Affected MCF-7 Breast Cancer Homologous Recombinational Repair and Proliferation pathways.
Thomas Scott

125. Generating Novel Drug-like Diketopiperazine Structures via Biosynthesis
Skyeler Klinge

126. The Lived Experience of Culture Shock
Avary McCann

127. Planets in the Stars: The Line Between Inspiration and Stealing Through the Music of John Williams
Timothy Berthiaume

128. Developing and User-Testing Educational Games for Literacy
Paul Grau Jr

129. Extremely High Levels of Prior Exposure to Those Outside Your Race/Ethnicity May be Needed to Reduce the Cross Race Effect in Change Blindness and Correct Line-up Identifications
Siera Karnes

130. Comparisons and Combinations of Traditional Antimicrobial and Metal Nanoparticles for Agricultural Applications
Samuel Eastmond and Naileth Gesto

131. Had I Known How to Save a Life
Theo Chapuis

132. A Critical Discourse Analysis of Dobbs v Jackson in Conservative News
Uma Sriram and Rutwa Shah

133. Engineering 3D Printed Tool for Relieving Body Tension
Mikylla Torralba and Wendy Jiang

134. Barbie Unboxed: A Feminist Critique of the Barbie Movie
Melanie Wright

135. Structural Studies of in vitro & Cell RNA Spliced Leader Sequences of the Red Tide Dinoflagellate Karenia brevis
Danielle Garzon and Alissa Stranberg

136. Detection of Postharvest Quality of Fresh-cut Lettuce Using Hyperspectral Imaging
Qiaowen Chen

137. Crystal Structure and Dielectric Properties of Aurivillius type: Bi3-xLaxFe0.5Nb1.5O9
Amanda Jessel

138. LDs and SUDs
Melony Orbach

139. 'Bioprinting Applications for Functional Hepatocytes Cultured in 3D on Novel Microfiber Scaffolds
Vivienne Zacher

140. Identifying Distinct Molecular Features of RIP2 Linked to ALOX5 Activity and Function
Vishanth Murugesan

141. How Does Artificial Grape Flavor React with the Cilantro Gene?
Sally Clavell, Edward Romero, Aakanksha Pathak, Justin Bolt and Kara Lane-Lightfoot

142. Conflict, Comparison, and Reality TV: An Examination of the Relationship Between Media Viewing Habits and Romantic Relationships
Riley Curie

143. Too Fast and Too Furious: The Rise of the Hollywood Blockbuster
Gabrielle Whyte

Poster Session IV
4:00 p.m. - 5:00 p.m.

144. Course Modality and Stress in College Students
Knatasha Beck, Navah Aaronson-Barr, Jade Brown, Crystal Moret, Griselda Guavara Lino and Julian Mascarella

145. Development of Manganese (II) Sulfide Nanoparticles for Pierce's Disease Management
Yael Faroud

146. Thermoregulatory Color Change in Anolis Carolinensis
Serena Price

Poster Session I — Abstracts

1. Driver Behavior Detection Using a Deep Learning Approach

Aldridge Kalenga, Shaquan Tyson, Chibundu Awandu, Santosh Lamichhane, Buchizya Mwase and Tianna Brown

Mentor: Dr. Juan Calderon

Road traffic accidents are one of the leading causes of death worldwide. According to the World Health Organization (WHO), nearly 1.4 million people are involved in car accidents worldwide each year, resulting in around 3,700 fatalities in traffic every day, primarily due to driver carelessness or errors in judgment. The purpose of this research is to design a next-generation driver monitoring system for vehicle management that utilizes Machine Learning (ML) and Deep Learning (DL) techniques. The goal is to decrease the accident rate caused by factors such as distractions and microsleep. The system utilizes in-vehicle cameras to analyze visual cues such as the driver's posture, expressions, and eye movements while driving. Convolutional Neural Networks (CNN) are part of the latest advanced models used for real-time prediction. The current stage of the project involves identifying the driver inside the vehicle, analyzing their posture, and determining the positions of specific points of interest, such as hands and face. Future work aims to enhance the detection of high-risk behaviors, such as cell phone use and microsleep, offering potential breakthroughs in road safety. This research not only contributes to automotive safety but also opens avenues for applying ML and DL in practical monitoring systems. The anticipated outcome is a substantial decrease in traffic accidents, thereby improving public safety and well-being.

Bethune-Cookman University (BCU)

2. Face Detection and Recognition Using Viola-Jones Algorithms for Autonomous Cars

Buchizya Mwase, Tianna Brown, Shaquan Tyson, Aldridge Kalenga, Chibundu Awandu, Santosh Lamichhane

Mentor*:* Dr. Juan Calderon

With the escalating advancements in autonomous vehicle technology, ensuring robust safety systems has become significantly important. This project aims to augment the safety features of autonomous cars through the utilization of advanced face detection and recognition techniques. By leveraging the Viola-Jones algorithms, recognized for their effectiveness in real-time face detection, the project aims to integrate these algorithms into the autonomous driving systems of vehicles. The primary objective is to enhance the accuracy and speed of face detection and recognition in diverse driving conditions, thereby assisting in crucial functions like driver monitoring. The project involves the development of an integrated system utilizing Viola-Jones algorithms to detect faces within the vehicle. This system is designed to identify the presence of a person in the vehicle and specifically determine the driver's identity. Implementing these algorithms in autonomous cars is expected to significantly contribute to accident prevention and improve security and theft prevention measures. The current phase of the project has successfully implemented the Viola-Jones face detection module, exhibiting promising results across various lighting and environmental conditions. The subsequent stage involves refining the recognition algorithms to accurately distinguish between different individuals, a critical step toward personalized driver settings. The anticipated outcome of this research is a groundbreaking enhancement in autonomous car safety features, setting a new standard in vehicular technology. This research not only advances the field of automotive safety but also underscores the potential of face detection and recognition technologies in practical applications, promising a safer future for road travel.

Bethune-Cookman University (BCU)

3. Interest Objects Detection for Self-Driving Cars Using a Deep Learning Approach

Chibundu Awandu, Santosh Lamichhane, Shaquan Tyson, Aldridge Kalenga, Buchizya Mwase and Tianna Brown

Mentor: Dr. Juan Calderon

In the rapidly evolving realm of autonomous driving technology, ensuring the safety and effectiveness of self-driving cars remains a top concern. As urban areas become increasingly congested, the ability to accurately detect and respond to various objects in complex environments is crucial. However, current detection systems often struggle with precisely identifying objects in diverse and dynamic settings, posing a significant problem for the safe deployment of autonomous vehicles. Addressing this challenge, our project proposes a sophisticated solution utilizing a deep learning approach, specifically leveraging the capabilities of You Only Look Once (YOLO) combined with Python programming. YOLO, renowned for its efficiency and accuracy in real-time object detection, is integrated into a Python-based framework to enhance the detection capabilities of self-driving cars. Our methodology involves training the YOLO algorithm with extensive datasets comprising various urban scenarios, ensuring robust object recognition. The system is fine-tuned to recognize a wide array of objects including pedestrians, other vehicles, traffic signs, and unexpected obstacles. Python, chosen for its versatility and extensive libraries, is used to interface with the YOLO algorithm, facilitating data processing and integration with the car's navigation system. The expected outcome of this project is a significant improvement in the detection accuracy and response time of self-driving cars, leading to safer autonomous navigation in complex urban environments. The implementation of this solution promises to be a substantial step forward in the field of autonomous driving, showcasing the potential of combining advanced deep-learning techniques with practical programming solutions.

Bethune-Cookman University (BCU)

4. Design and Development of a Robotic Platform at Scale for Implementing Artificial Intelligence and Computer Vision Algorithms in Autonomous Vehicles

Shaquan Tyson, Aldridge Kalenga, Chibundu Awandu, Santosh Lamichhane, Buchizya Mwase, and Tianna Brown

Mentor: Dr. Juan Calderon

The automotive industry has shifted towards electric vehicles in the past decade. Electric cars are beginning to dominate the market and are expected to become the global standard for mobility. This transition from gasoline vehicles to electric ones has facilitated the approach and development of autonomous driving systems. This project focuses on designing and developing a 10:1 scale electric vehicle platform, integrating multiple sensors and computer systems. The project has three primary objectives: (1) the development of an autonomous vehicle platform, (2) the exploration of artificial intelligence and computer vision algorithms, and (3) providing university instruction in autonomous vehicles (AV). The platform replicates AV features by incorporating electric motors, batteries, and essential sensors for AV, such as RGB cameras, LiDARs, depth perception cameras, and radar. An onboard computing system enables the evaluation of advanced artificial intelligence and computer vision algorithms in a controlled environment. The project involves the development and testing of algorithms for autonomous navigation, sensory data processing, and real-time decision-making. Simultaneously, the project aims to impact education by creating innovative teaching materials. The scaled platform will serve as an educational resource for undergraduate students interested in autonomous vehicles, artificial intelligence, and computer vision. This interdisciplinary approach aims to prepare the next generation of professionals in the emerging field of autonomous electric vehicles.

Bethune-Cookman University (BCU)

5. Lane Detection Using ANN for Self-Driving Car

Santosh Lamichhane, Chibundu Awandu, Shaquan Tyson, Aldridge Kalenga, Buchizya Mwase and Tianna Brown

Mentor: Dr. Juan Calderon

This research delves into the application of Artificial Neural Networks (ANN) for enhancing lane detection in self-driving cars. Our objective involves training the ANN on a diverse dataset that includes various road scenarios and factors such as lighting conditions and road markings, we aim to improve the vehicle's perception system. Rigorous testing would demonstrate the effectiveness of the model in real-world driving conditions, emphasizing its contribution to advancing autonomous driving technology. Unlike traditional pixel-wise segmentation approaches, our method draws inspiration from human perception, treating lane detection as an anchor-driven ordinal classification problem. This approach, utilizing global features and a sparse row-anchor-driven representation, addresses efficiency challenges and localization errors. We expect the method to exhibit high performance in both speed and accuracy, providing a promising solution for robust lane detection in diverse real-world conditions.

Bethune-Cookman University (BCU)

6. Lane Detection Using Artificial Vision for Autonomous Cars

Tianna Brown, Buchizya Mwase, Shaquan Tyson, Aldridge Kalenga, Chibundu Awandu, Santosh Lamichhane

Mentor: Dr. Juan Calderon

The automotive sector has shifted significantly toward electric vehicles over the past decade. This move has seen a rise in electric cars dominating the market, poised to become the global standard for transportation. This transition from traditional gasoline-powered vehicles to electric ones has paved the way for advancements in autonomous driving technologies. The future landscape of transportation is anticipated to heavily rely on the progression of autonomous driving systems, aiming to diminish both accidents and environmental pollution. This endeavor involves creating a lane detection algorithm designed to construct a lateral control system for self-driving vehicles. Utilizing a 360-degree artificial vision system equipped with cameras, the algorithm employs classical image processing methods like thresholding, Gaussian and Canny filters, Hough transform, and non-linear regression models. The subsequent phase of this initiative encompasses integrating the mathematical model of the vehicle with the lane detection algorithm, thereby incorporating it into the lateral control system of autonomous cars. Moreover, the project aims to enhance the development of the lateral control system by implementing car detection algorithms utilizing visual data.

Bethune-Cookman University (BCU)

7. MB-Th: A Molecular Beacon Probe-Based DNA Nanosensor with Concentration Threshold Function for MiRNA Detection

Jisela Soto

Metor: Dr. Dmitry Kolpashchikov

DNA nanosensors have emerged as a useful tool in the detection and analysis of health-related nucleic acid sequences. MicroRNAs (miRNAs) are a type of non-coding RNA involved in gene expression regulation (1). These miRNAs can behave as both tumor suppressors and oncogenes and are commonly dysregulated in cancer cells, making them suitable biomarkers for cancer detection. In this work, we have developed a DNA sensor with a threshold function, named MB-Th, that is capable of quantifying target miRNAs over a broad range of concentrations. This sensor functions through the hierarchical response of two sensing units, dubbed gates. Gate 1 produces fluorescence in the presence of low miRNA concentrations, while gate 2 starts responding only at high miRNA concentrations by forming four-way junction complexes with the fluorophore and quencher labeled universal molecular beacon (UMB) probes (2). The sensor shows a high degree of selectivity towards mutated target miRNA sequences containing two nucleotide variations and has proven to be robust, maintaining its thresholding function even when challenged with human serum albumin. MB-Th has advantages over other conventional hybridization probes, including improved specificity and selectivity and greater cost efficiency due to the UMB being independent of target analyte sequence. This novel sensor has applications towards the detection of cancers associated with the over- and under- expression of oncogenic miRNAs.

University of Central Florida (UCF)

8. Intelligence on Investing

Alexander Georgiev

Mentors: Dr. Monica Escaleras and Mr. Eric Levy

The stock market has been around for centuries however only in more recent times has there been a big increase in atention . Increasing modes of investing have also emerged such as owning cryptocurrencies and non – fungible tokens (NFT's). It is important for Americans to be knowledgeable about different investing opportunities, thus, this study aims to reveal the different factors that may affect someone's investing choices. It was anticipated that higher educated, younger people would be more likely and comfortable investing and saving for retirement. Whether that be their financial situation, knowledge about investing, or risk tolerance, everyone has different reasons why they do or don't. The objective of the study was to gain an insight on Americans choices when investing while looking at the different factors that may influence this. Using an 18 question survey, this study was sent out to US citizens over the age of 18 through Amazon Mechanical Turk. Receiving 202 responses the data was then analyzed using SPSS. After analyzing the results it is seen that people with a postgraduate degree were more likely to have a higher amount saved for retirement than those who have only some or no collegiate education. Younger people are also reported to have more knowledge and be more comfortable with investing and taking higher risk approaches to investing than older people are. These findings are important when addressing the need for America's education to include personal financial literacy.

Florida Atlantic University (FAU)

9. A Qualitative Exploration of Early Interventionists Beliefs and Practices with Families from Marginalized Backgrounds

Ellie Helgeson

Mentor: Ms. Diana Abarca

The study, "A Qualitative Exploration of Early Interventionists' Beliefs and Practices with Families from Marginalized Backgrounds", aims to analyze how early interventionists work with families from marginalized backgrounds, or more specifically, black and Latino/Hispanic families. Early interventionists can best be described as specialists who work with children aged 0-3 across several disciplines (speech therapy, occupational therapy, physical therapy, etc.) and are employed in statewide programs across the US. Participants underwent a series of 2 one-on-one interviews with a member of the research team and were asked a series of questions regarding two vignettes; these vignettes described somewhat ambiguous, but negative, situations that might occur when going into homes, and follow-up questions determined the interviewee's own cultural background. Afterwards, qualitative data analysis in the form of a coding system was used to determine "themes" among the providers' thoughts on culture and race in the context of early interventionism. Providers were differentiated based on their orientation towards families, their beliefs about their professional role, beliefs about culture, amongst other categories. The study is currently in the stages of data interpretation, as the research team spent the last 6 months interviewing participants, transcribing their interviews, and building codes to interpret these transcriptions. An academic paper to synthesize the given results is still in the stages of review.

Florida State University (FSU)

10. Students Majors and Stress

Maria Fernanda Castillo Enriquez, Luis Buendia, Fernanda Castillo, Chabelys Castro, Kaytlan Connolly, Cevenya Henderson, Christopher Fogell and Jorge Quintanill

Mentor: Dr. Benjamin Graydon

Researchers have previously explored intersections between college students' self-reported stress levels and declared majors (Ajinka, 2006; Ali et al., 2019; Hsu, 2021; Robotham, 2008). The present study aimed to analyze the relationship between students' self-reported stress levels and their declared majors at Daytona State College. The researchers used a modified survey based on the Perceived Stress Scale (PSS), initially developed by Cohen et al.(1983). Sixty-five students were surveyed and grouped into four categories: STEM, Arts and Humanities, Business, and Healthcare to facilitate the comparison of self-reported stress levels in relation to their declared majors. The study showed statistically significant results regarding the self-reported stress levels of STEM students, which were higher than those from students with a declared major in Business fields, ($p=0.020$). The study contributed to the increasing literature on stress among college students, emphasizing the need to consider the unique stressors within various academic disciplines to develop tailored approaches for promoting well-being. Future researchers should extend the data collection period, as well as use qualitative methods to investigate underlying stressors that might impact students within the non-STEM fields.

Daytona State College

11. Using Protein Modeling Software and Computational Analysis to Develop Novel JAK2 Inhibitor "Ruscholitinib"

Anna Schoenherr

Mentor: Dr. Kersten Schroeder and Dr. Simon Tang:

JAK2 is a tyrosine kinase responsible for generating blood cells, and if mutated, it can cause myeloproliferative diseases (MPDs) like primary myelofibrosis. MPDs are blood cancers which occur due to bone marrow dysfunction, causing excess growth of blood cells. This results in fatigue, shortness of breath, headaches, pain, and even heart attacks, strokes, and death. In most patients, MPDs occur due to a point mutation, V617F, in the amino acid sequence of JAK2. This results in a constitutively activated protein, which means that the bone marrow continuously creates blood cells. Currently, ruxolitinib, the standard of care, treats MPDs by binding JAK2 and inhibiting myeloproliferation. However, it binds to both the wild-type and mutated JAK2, indicating a need for an inhibitor that binds specifically to mutated V617F, as this could decrease side effects caused by ruxolitinib, such as anemia, while improving inhibition. Ruxolitinib's side effects are a result of its off-target effects, mostly due to the inactivation of the wild-type JAK2. This study focused on finding a novel inhibitor for JAK2 that will overcome the limitations of the leading treatment, ruxolitinib, through the use of various computational tools. To do so, the inhibitor was designed, modeled, and evaluated in silico for binding efficacy and inhibitory function. A novel inhibitor that demonstrates greater binding specificity and mutant JAK2 inhibition could prove to be a promising new therapeutic option. As such, a synthetic route was taken to produce "Ruscholitinib," which binds selectively to the active site of JAK2 V617F.

University of Central Florida (UCF)

12. Exploring Diversity in Religious Repertoire Through Choral Music

Sophia Gannaoui

Mentor: Dr. Guilherme M. Cesar

With the intention of supporting the American Choral Directors Association's vision for creating "powerful artistic experiences and [advocating] for cultural and educational change" to transform the lives of students, this project aims to bring exposure to diverse religious repertoire in choral music that enhances the cultural and educational experiences of students within the choral classroom, in addition to bringing forth representation for students that are followers of the religions that are exposed. This project specified criteria for what qualifies choral literature to be "diverse," providing choral directors the opportunity to discover diverse religious choral works outside of the recommendations this project offers. Examining existing works within the big three Abrahamic religions of Christianity, Judaism, and Islam- there is a lack of representation in choral music for Muslim populations. This is due to Islam having stricter regulations on music, and choral music typically referring to notated group singing which is common practice in the Western world. With the criteria offered to identify diversity in religious repertoire and providing examples of music that fit these criterion, this project supports and aims to inspire the creation of more choral music that represents underrepresented religions in the choral world in a respectful manner.

Florida State University (FSU)

13. Daily Tobacco Use is Associated with Higher Rate of Experiencing Health, Social, Legal, and Financial Problems Among Floridian College Students

Ambika Ramjawam

Mentor: Dr. Julia Soulakova

The use of tobacco products is prevalent among college students in the United States. In addition to causing health problems, tobacco use may be associated with social, legal, and financial problems. In this study, we investigated the association between daily (or almost daily) tobacco use and experiencing health, social, legal, or financial problems among college students who reported using tobacco products in the past three months. The study data were collected (as a part of the National College Health Assessment III) by the American College Health Association at a large Floridian university (with enrollment exceeding 25,000 students) in spring of 2022. The sample (n=105) included 18-20 year-old (36.19%), 21-24 year-old (51.43%), and 25-32 year-old (12.38%) students. About one fourth of students (24.76%) reported experiencing health, social, legal, or financial problems. Daily (or almost daily) tobacco use was significantly associated (Ï‡2= 14.36, df=1, p-value= 0.0002) with a higher proportion of experiencing health, social, legal, or financial problems relative to occasional tobacco use, i.e., weekly, monthly, once or twice (in the past 3 months). The corresponding proportions were 50.00% (SE=9.13%) among students who used tobacco daily (or almost daily) and 14.67% (SE=4.04%) among students who used tobacco occasionally. Our study results indicate that daily (or almost daily) tobacco use is associated with a higher prevalence of experiencing health, social, legal, or financial problems among college students in Florida. Future research is needed to identify other factors associated with experiencing such problems among college students.

University of Central Florida (UCF)

14. There is Something in the Water

Aysel Khalil and Savannah Knight

Mentor: Dr. Kimberly Dobrinski

Head and neck cancer, a set of malignancies impacting the upper aerodigestive tract, includes the oral cavity, pharynx, larynx, and associated structures. Risk factors encompass tobacco use, alcohol consumption, and genetic factors. However, amid rising oral cancer rates, recognition is growing that elements like water contamination could pose supplementary risks. Trihalomethanes (THMs) are disinfectant byproducts that are produced when free chlorine bonds with methane, produced naturally by organic matter in water. They generally are carcinogenic and are considered environmental pollutants. Chlorine is used to filter water sources, which creates a concentration of THMs that if digested, over time, causes cancer. Haloacetic acids (HAAs), disinfection byproducts in water, form when disinfectants react with organic matter, suggesting potential carcinogenicity, linked to mutagenic effects causing DNA damage. Although water treatment regulations maintain HAAs below harmful levels, some water treatments don't succeed in keeping those levels under their limits.
Free chlorine and free bromine levels are being measured via colorimeter. Deionized water is used as a control to only measure the byproducts. Collection has occurred at different zip codes within the Tampa Bay area. Samples are tested from multiple different buildings from each zip code to ensure accuracy. The objective of this research is to establish associations between head and neck cancer prevalence and the concentrations of free bromine and free chlorine in specific zip codes. Additionally, the study aims to investigate correlations between the incidence of oral cancer and the presence of Haloacetic acids and Trihalomethanes in the same geographic areas.

University of Tampa (UT)

15. The Relationship Between PTSD (Post-Traumatic Stress Disorder) and Depression

Alyssa-Resha Williams

Mentor: Dr. Kimberly Dobrinski

The proposed study will investigate the relationship between PTSD (post-traumatic stress disorder) and depression. There is a significant lack of research between PTSD (post-traumatic stress disorder) and depression. The study proposes two research questions: Does PTSD (post-traumatic stress disorder) significantly predict depression in college students at an HBCU? Do male and female college students at an HBCU have significantly different levels of PTSD (post-traumatic stress disorder)? The study will use a quantitative research methodology and a correlational research design. The sample will include 100 students at a southeastern HBCU. A correlation and independent sample T-test will be conducted. It is expected that in research question one, PTSD (post-traumatic stress disorder) will be found to be significantly related to depression. In research question two, the expected findings are that male and female college students will be found to be significantly different in their levels of PTSD (post-traumatic stress disorder).

University of Tampa (UT)

16. The Effects of Finasteride on the Parity Rates of Female Drosophila Melanogaster

Miguel Bastos, Dominic Sandell and Zachary Young

Mentor: Dr. Alesha Fleming

Finasteride has been tested for and is known to treat male pattern baldness and benign prostate hyperplasia; however,

the drug could treat female pattern baldness and polycystic ovary syndrome with the proper testing and investigation. The current database on the effects of finasteride on the female reproductive system is largely unknown and divided. This study aims to investigate the effects of finasteride on the female reproductive system using Drosophila melanogaster as the model organism. The female flies in this study were fed human dosage equivalents of 0.5 mg, 1 mg, and 5 mg of finasteride, with a control group of females who consumed no finasteride. Over the course of three trials, the female Drosophila were allowed to mate with undosed male Drosophila and after 24 hours all of the flies were removed from the vial after they laid their eggs. For two weeks following fertilization, the vials were checked every 8 hours and adult flies were removed. Adult Drosophila were counted, sexed, and frozen at -80°C to preserve their RNA. This study predicts that the results will indicate that finasteride will negatively impact the reproductive abilities of females and their male offspring. A follow-up study will be conducted using an RNA sequencer to investigate changes in gene expression among experimental groups. These results will help contribute to the research body that may ultimately be used to help determine treatment protocols for female patients suffering from pattern baldness.

Embry-Riddle Aeronautical University (ERAU)

17. Sense of Belonging in General Chemistry Courses with Different Teaching Styles

Keila Muller

Mentor: Dr. Tamra Legron-Rodriguez

Sense of belonging has been found to be a predictor of student performance, career goals, and perceptions of future courses. These factors have a greater impact for underrepresented groups in STEM, especially women. This study explored students' sense of belonging in undergraduate general chemistry courses at a large public university. The courses in the study applied different teaching styles, such as traditional lecture-based and active learning approaches. The attributes of the courses were determined using the classroom observation protocol for undergraduate STEM (COPUS) and included time spent on various classroom actions such as lecturing, posing and answering questions, and working in groups. Sense of belonging of students was measured using a six-point Likert scale survey given at the beginning of the semester and at end of the semester. Likert scale data was analyzed by finding frequency of responses and T-tests assuming unequal variance. Researchers compared the following variables: responses between the beginning and end of the semester for each class, beginning and end of the semester between teaching styles, and belonging uncertainty between males and females across both courses. Data was shown to find the impact of teaching styles on sense of belonging, and difference between male and female counterparts in belonging uncertainty.

University of Central Florida (UCF)

18. Fashion in the Fast Lane

Ava Vignola

Mentors: Dr. Monica Escaleras and Dr. Eric Levy

As the fast fashion industry grows worldwide, the effects of this industry grow in tandem. These companies' human rights violations and staggering environmental impacts force consumers to choose: purchase from fast fashion brands, or pay a higher price for more sustainable options? This study uncovers the views of Americans on the Fast Fashion industry. It was expected to find that many Americans don't consider the effects of their purchases from Fast Fashion companies, since the growth of these companies has been rampant. To compile these views, the study had 193 people complete a questionnaire on Amazon Turk that contained 16 questions about Fast Fashion and demographic questions. The study found that most Americans consider the price of an item to be more important than the ethics behind it, especially among younger and older Americans. It also found that females consider price to be more important than ethics at a much higher rate than males. Finally, it found that males are much more likely to disagree with the statement that fast fashion is unethical. Because there are such differences in the way demographics responded, this data can be used to potentially create new marketing strategies to encourage American consumers to purchase from sustainable companies. Fast fashion remains one of the most divisive issues of our generation, and this study atempts to determine the perspectives of Americans. The data from this study can be used to assist companies in determining the priorities of their consumers, and how to market sustainable clothing options.

Florida Atlantic University (FAU)

19. Engineered Water Repellency for Resilient Road Pavement Infrastructure

Colton Boswell

Mentors: Dr. Micheal Uduebor and Dr. Seneshaw Tsegaye

Florida's diverse climate and environment, characterized by frequent hurricanes, daily rainfall, and warm temperatures, presents unique challenges for road infrastructure, impacting residents, farmers, and the Department of Transportation (DOT). These challenges manifest as road damage, including potholes and washouts, primarily due to excessive soil moisture, leading to increased maintenance costs. This study proposes an innovative solution to enhance road resilience through the integration of Engineered Water Repellent (EWR) soils into road construction. EWR soils, by creating a moisture-repellent layer, significantly reduce the impact of water on roadways, maintaining their integrity even during extreme weather events. This research utilized hydrophobic soils, treated at a 1:40 ratio (OS: Soil) and tested using a column filled with both treated and untreated soil. These tests, simulating water entry from both above and below, demonstrated EWR's effectiveness in preventing water permeation in the soil. The application of EWR soils has shown potential in extending the lifespan of roadways, counteracting the effects of fluctuating water tables and heavy rainfall. This innovation not only promises to reduce the frequency of road repairs but also aims to decrease the overall maintenance costs borne by residents, farmers, and the DOT across Florida. This project is funded by the Whitaker College of Engineering Head Start Grant, with support from the Works in Scholarly and Experiential Research (WiSER) Student Research Assistant Program.

Florida Gulf Coast University (FGCU)

20. Possible Discrimination in AI Implementation for the Education Policy Sector: A Study on Massachusetts

Andres Davila

Mentors: Dr. Wenbin Zhang and Mr. Zichong Wang

The concept of artificial intelligence (AI) being implemented into the public policy field is an upcoming trend. Although there is limited research done on this concept, there has been an increase in government interest in AI implementations. These implementations can generate decision-making systems that will assist in education, healthcare, and housing. Education policy is important to shaping the future of studies

to the population. However, as AI becomes more prevalent in policymaking, growing concerns about its fairness and potential discriminatory outcomes are raising significant. Given that data has a history and AI decision-making system are prone to inheriting and amplifying biases, leading to potentially discriminatory outcomes. The possibility of it occurring is because of certain AI methods, such as machine learning or natural language processing, and their reliability on sources. To investigate the probability of discrimination in public policy, this paper will interpret machine learning, particularly a model that will interpret base rate fallacy and discrimination bias. The purpose of this paper is to introduce manners for AI techniques to be implemented properly and fairly among minority groups and how those techniques can be manageable. This paper will consist of literature on the use of AI in public policy, particularly education policy, and how machine learning can misrepresent minority groups. It will focus on the state of Massachusetts, and how machine learning bias can misrepresent minority groups when education policy frameworks are facilitated upon the model. It will further expand upon the issues of the education system in the United States, allowing for more insights into representing a population a government needs to serve and protect.

Florida International University (FIU)

21. Out of Gas: Unmasking the Power Play in Gaslighting

Kristen Engasser

Mentors: Dr. Martha Hubertz and Dr. Karen Mottarella

In 2007, Robin Stern published "The Gaslight Effect: How to Spot and Survive the Hidden Manipulation Others Use to Control Your Life," highlighting gaslighting as a form of psychological abuse that makes victims question the validity of their perceptions. Since then, gaslighting has primarily been tackled from a psychological perspective. Some sociologists, however, theorize that gaslighting is not simply a psychological issue but a sociological one as well. They argue that gaslighting may take place unintentionally when a perpetrator acts on their biases towards members of other social groups. As a form of intentional abuse, gaslighting has been established to have profoundly negative effects on its victims. However, there is a significant gap in research pertaining to the sociological aspects of gaslighting. This present study therefore aims to establish the connections between power, social identity, and gaslighting susceptibility. Given the assumption that gaslighting relies on a power differential, the questions in this study are designed to explore societal and interpersonal power differences. Ultimately, it aims to produce data that may be useful in linking psychological and sociological views of gaslighting behaviors. Those belonging to marginalized groups are expected to show cognitive symptoms of having been gaslit due to sociological gaslighting features, even if their answers do not necessarily indicate that they have experienced gaslighting as intentional abuse. Additionally, gaslighting behaviors will likely be reported more often in relationships with a clear power differential. Data collection is in progress.

University of Central Florida (UCF)

22. Examining Cultural Sensitivity of Brief Mindfulness Meditations for Chinese American Adolescents

Ana-Gabriela Osorio and Elias Latimer

Mentors: Dr. Shengli Dong, Dr. Chieh Li and Dr. Huijun Li

Recent discrimination against Chinese Americans has intensified amid the COVID-19 pandemic, further exacerbating the distress already experienced by Chinese American adolescents (CAA). Numerous studies have indicated the positive impact of mindfulness meditation on the mental health of adolescents, including Chinese American adolescents (CAAs). However, there exists a research gap surrounding cultural sensitivity reviews for mindfulness meditation apps in CAAs. Cultivating a culturally sensitive meditation (e.g., brief vs. long, concentration vs. guided), means facilitating specific cultural, linguistic, and developmental characteristics throughout the meditation content. We conducted a cultural review of five popular brief meditation videos (What is Mindfulness, Hello Breath: Listen, 3-Minute Breathing Space, Feel Calm and Relaxed, Experience Mindfulness) with 20 CAAs ages 14-18 from different socioeconomic backgrounds and gender. They reviewed each of the brief meditation videos from various aspects (e.g., background color and music, the voice of narrator, easiness and applicability of concepts and content) using an instrument that integrated the ecological validity and cultural sensitivity framework. Results from content analyses indicated positive perceptions across multiple dimensions: contents/concepts, presentation of characters, background music/color, cultural sensitivity, and effectiveness. Reviewers offered specific recommendations for improvement, particularly concerning age-appropriate content and difficulty understanding the narrator's accent. By examining cultural sensitivity, we hope to strengthen mindfulness meditation for CAA's as well as apply new ways to further define cultural sensitivity for other cultural groups. This study underscores the need for culturally adapted meditation tools for CAAs, providing valuable insights for practical applications and guiding future culturally sensitive research within a concise and viable framework.

Florida State University (FSU)

23. Is Forensic Paint Analysis Affected By Environmentally Friendly Products?

Emily Pintilie

Mentor: Dr. Erika Doctor

The forensic comparison of paint often provides key evidence in crime scene investigations. Paint analysis involves using attenuated total reflectance infrared spectroscopy (ATR-FTIR) to compare the chemical makeup of different chips of paint. Environmentally friendly paints are becoming more common in homes, and this study was conducted to determine if the brand ECOS Paints, which absorbs potentially harmful compounds from the air, changes its chemical makeup over time. ECOS Paints claims that its products are uniquely formulated without the harsh chemicals that can be found in other paint brands. The company claims that its paints have "a molecular sieve designed to stop harmful compounds from being released into the air" (Air Pure Learn). Four paints were chosen from ECOS Paints, the air-purifying primer, air-purifying drywall primer, anti-formaldehyde paint, and the air-purifying paint. The paint was applied to wood sticks in two coats and every two weeks the paint was analyzed using ATR-FTIR to determine if there was a change in the chemical makeup. These results will be presented at the conference.

Lynn University (LU)

24. Investigating the Impact of Thymol, Carvacrol, and Anthocyanins on Canine Heart Cells In Vitro

Isaiah Johnson

Mentor: Dr. Amy Bohan

This research project aims to elucidate the potential cardioprotective effects of thymol, carvacrol, and various forms of anthocyanins derived from Moringa and other

plants on canine heart cells in vitro. Thymol and carvacrol, potent phytoconstituents found in oregano and other herbs, have been reported to exhibit beneficial effects on cardiac health. Concurrently, anthocyanins, a class of flavonoids prevalent in Moringa species, are recognized for their health-promoting properties, offering protection against numerous chronic diseases. The central hypothesis posits that these compounds will augment the viability and function of canine heart cells in vitro. The experimental design involves cell culturing, preparation of stock solutions, treatment of cells, observation and documentation, assays, data analysis, and hypothesis testing. The study employs rigorous safety measures, ensuring all work with cell cultures and chemicals is conducted in a biosafety cabinet, using appropriate personal protective equipment. The implications of this research could be far-reaching, potentially paving the way for novel treatments for heart conditions in canines. If the hypothesis is validated, it would underscore the therapeutic potential of these compounds, warranting further investigation into their applicability in veterinary medicine. This research exemplifies the innovative and impactful studies conducted at the undergraduate level in Florida, contributing to the broader scientific discourse on natural compounds and cardiac health.

New College of Florida (NCF)

25. Post-metabolites of Two Commensal Bacteria Suppress DNA Damage in an Experimental Model of Acid Reflux Disease

Maanya Pradeep

Mentor: Dr. Claudia D. Andl

Gastroesophageal reflux disease or GERD, the regurgitation of stomach contents such as bile acid, affects 25% of the US population. It induces oxidative stress due to bile exposure, DNA damage, inflammation, and leads to Barrett's esophagus(BE). BE is a condition in which esophageal tissue is replaced with columnar epithelium like the stomach to adapt to repeated bile acid exposure, increasing the risk of esophageal adenocarcinoma. In 2020, there were 604,100 cases of esophageal cancer, making it among the most common cancers globally. Recently, the relationship between probiotics and the esophageal microbiome has been investigated. Resident esophageal bacteria are proven to reduce inflammation and protect the esophagus. Common bacteria in the esophageal microbiome include Streptococcus spp. and the probiotic Lactobacillus spp., however, they are less abundant during GERD and BE. Reintroduction via supplements could aid in reducing the likelihood of esophageal cancer and build a stronger microbiome to protect against BE. Previous research showed that Lactobacilli (L. acidophilus, L.plantarum and L. fermentum) reduced DNA damage suggesting antigenotoxic effects when exposed to bile treated human esophageal cells (STR). To determine if secreted metabolites induce this reduction in DNA damage or host-contact with live bacteria, we exposed the STRs to bacterial growth media (conditioned media) from Lactobacilli and S. gordonii. Using the histone pH2AX marker, our results indicate a significant acceleration of DNA damage repair when bile-stressed STR cells are exposed to conditioned media. Ongoing experimentation involves fractionating the conditioned media to analyze the nature of the secreted factor.

University of Central Florida (UCF)

26. How Toxic Masculinity Affects Men

Aliyah Tucker

Mentor: Dr. Andrea Marsden

Microsoft Excel was used to examine the current study's research question that What do you define masculinity as? Support was found for this question. Specifically, most of the interviewees indicated that masculinity has no clear definition. A word cloud was also generated using the program Word It Out. Larger words in the word cloud indicate a higher rate of frequency from participants and smaller words indicate a smaller rate of frequency from participants. Specifically, in this word cloud we can see spectrum is biggest word.

Beacon College

27. Critical Thinking to Dispel Conspiratorial Belief

Charlotte Boyer

Mentor: Dr. Amanda McGraw

Conspiracy theories are defined as a secret plot designed by two or more powerful actors, most often associated with the government (Douglas et al., 2017). They are considered misinformation to the media and have become a cultural phenomenon that can sometimes prove malicious in their intent (Craft et al., 2017). Conspiratorial thinking has been shown to correlate with lower levels of education (Bogart & Bird, 2003). However, we do not know the causes, and beliefs can be malleable, changing as we learn more critical thinking skills (Van Proojen, 2017). In this study, researchers ask two questions: Is critical thinking able to dispel conspiratorial belief, and is conspiratorial thinking connected to religious or political affiliation? To answer these hypotheses, I have devised an experimental design exposing people to critical thinking skills. All subjects will receive the Conspiracy Mentality Questionnaire (CMQ; Bruder et al., 2023), Centrality of Religiosity Scale (CRS; Huber & Huber, 2012), demographic questions including gender and political affiliation, and 27-question Critical Thinking Toolkit (CriTT; Stupple et al., 2017). Chosen randomly, the experimental group will read an excerpt from a psychology text that discusses critical thought. The control group will receive a reading on study skills. After reading, all participants will complete The CMQ questionnaire again. We live in an age where technology gives us misinformation, and it is up to us to decipher reality from conspiracy. This research aims to understand how education can weaken conspiracy theories and how a conspiratorial mindset can be changed.

Jacksonville University

28. Dithiocarbamate Synthesis Peptidomimetic Scaffold: Combating BCL-2 Cancer Complexes

Ashley S Graham

Mentor: Dr. Ralph N. Salvatore

With cancer consistently being one of the leading contenders in cause of death around the world, there remains a need for further research in novel cancer therapies and treatments. One common factor in the proliferation of different cancer lines is the ability for cells to evade the natural apoptotic pathways. One such pathway is the Bcl-2 family of proteins in the regulation of apoptosis. With Bcl-2 protein being commonly upregulated in the metastasis of acute myeloid and chronic lymphocytic leukemias, we propose a novel peptidomimetic therapy. The novel therapy adopts a dithiocarbamate backbone and serves to mimic the natural process of a protein but evades the natural degradation by hydrolysis and proteases. With the ability

for peptidomimetic to evade natural degradation, it is expected the peptidomimetic will increase oral availability in cancer treatments. The proposed dithiocarbamate backbone is expected to mimic the natural protein Bak with the intention to activate the cascade for mitochondrial apoptosis in the cancerous cell. After successful synthesis, the dithiocarbamate peptidomimetic is subject to biological assays with the known BCL-2 inhibiting drug Venetoclax (ABT199), shown to have a 60% progressions reduction rate in studied leukemia cases.

Southeastern University

29. Anthropological Exploration of Overdose Prevention Perceptions Among People Who Use Drugs

Maria Ocando Monaco

Mentor: Dr. Shana Harris

The United States is facing a critical overdose crisis, largely fueled by the combined use of multiple drugs and the potent synthetic opioid, fentanyl, resulting in a dramatic increase in fatalities and widespread impact across communities. This project explores how people who use drugs (PWUD) in Orlando, Florida, are responding to overdose in their community. Drawing on ethnographic research conducted at a syringe services program in Summer 2023, I argue that PWUD in Orlando actively take measures to prevent overdose and overdose deaths but are faced with many obstacles that challenge their overdose prevention efforts. I examine overdose narratives of PWUD to show how factors preventing effective overdose prevention are not just systemic but also cultural. In particular, the prevailing stigma of opioid use hinders the creation of a supportive environment for preventing overdoses and perpetuates the ostracization of PWUD in Orlando. Recognizing the profound influence of stigma towards the PWUD with whom I conducted research, I make the case for comprehensive overdose prevention training in Orlando to equip PWUD, their families, first responders, and the broader community with the knowledge, skills, and tools to address overdose. Such training also has the potential to recalibrate cultural misconceptions and biases toward PWUD. As Florida continues to experience an overdose problem, understanding cultural and structural challenges remains pivotal. This project demonstrates that, by integrating comprehensive training and combating stigmatization of PWUD, Orlando communities can prevent overdose and save lives more effectively.

University of Central Florida (UCF)

30. Florida Scrub Species Identification Through DNA Barcoding

Daniella Grace Jeanjaquet, Irfan Mahadi Sharif, Wendy Jiang and Jean F. Fleurimond

Mentors: Dr. Daniel Sanches, Dr. Joe Velenovsky, Dr. Mintoo Patel and Dr. James Hawker

DNA barcoding is a species identification technique that is useful within biodiversity studies, particularly in today's world, which is characterized by ever-increasing human activity. This technique is accessible to a broad range of individuals, including high school and undergraduate research students. As IB Diploma high school students interested in the biodiversity of our local Lake Wales Ridge ecosystem, we desired to gain hands-on DNA barcoding experience to broaden our molecular biology knowledge. For our investigation, we collected our sample from this ecosystem, which is a biodiversity hotspot. Using morphological characteristics, we identified the sample as a spider egg. However, using only morphology, it was not possible to identify the species that laid the egg. To resolve this issue, we performed DNA barcoding to identify the species of our spider egg. To do so, DNA from the sample was extracted, amplified using COI PCR primers, and sequenced through Sanger sequencing. Using the bioinformatic analysis platform DNA Subway and COI sequences from BLAST searches, we were able to determine that our spider egg most likely belonged to the species Emblyna roscida. Specifically, our BLAST searches showed that a COI gene sequence from Emblyna roscida had a sequence similarity value of approximately 98.5% with the sequence of our sample. Through this poster, we will discuss our taxonomic results, which showed how our Emblyna sequence related to COI sequences from other Emblyna species. Additionally, we will also discuss our experiences and perspectives with regard to this investigation.

South Florida State College (SFSC)

31. Aboveground Biomass and Carbon Sequestration of Hardwood and Palm Trees at Pelican Harbor Facility, in Miami-Dade County, FL

Ann-Adley Claveus

Mentor: Dr. Antonio Perez

Biomass is the mass of living organisms and their byproducts (such as carbon dioxide). According to the Intergovernmental Panel on Climate Change (IPCC), the amount of carbon dioxide stored in a tree is half of its biomass. Increased atmospheric carbon dioxide has resulted in global warming, as documented by Krogh in 2011. One effective way to combat Global Warming is to plant more trees and prevent deforestation, which has harmed our planet by contributing to increased carbon emissions and disrupting the process of photosynthesis, which converts carbon dioxide into oxygen. Pelican Harbor Seabird Station, a non-profit wildlife rehabilitation hospital in Miami, Florida, is planning to build a new building and parking space with an area of 1.37 Ha, without causing excessive environmental harm. To mitigate environmental harm in the construction area, we calculated the overall aboveground biomass and carbon stock of the 103 trees identified and each tree's contribution to the overall aboveground biomass and carbon stock. Assuming the carbon content of trees is 47% of the total aboveground biomass, we measured the Perimeters of hardwood tree species in centimeters using a Tailor's Tape as a first step to determining their biomass. We then transformed Perimeters into Diameters, and calculated biomass and carbon stock utilizing an allometric equation by Brown and Iverson, with Diameters at Breast Height (DBH). Statistical analyses were conducted using Microsoft Excel and an extension of it. The overall biomass and carbon stock obtained were 3,432,897.267 Kg and 1,613,461.71 Kg respectively. Hardwood trees contributed the most to the overall biomass and carbon stock (3,430,808.97 Kg and 1,612,480.22 Kg), while palm trees contributed the least (2,088.29 Kg and 981.5 Kg). With these results, Pelican Harbor is able to determine which trees to cut down to cause minimal environmental harm. As the hardwood trees found in the construction area make up about 99.9% of both the overall biomass and carbon stock, Pelican Harbor can plan to avoid cutting down hardwood trees and target trees with smaller contributions. This research may serve as beneficial assets to encourage the calculation of Biomass/Carbon stock of tree species, and to foster reforestation projects by academic and public institutions.

St. Thomas University (STU)

32. The Effects of Nanobubbles for Ultrasound Targeted Gene Delivery for Osteoporosis Treatment on Tissues

Abel Cordova Flores

Mentor: Dr. Mehdi Razavi

Nano-therapeutics have shown promise as an improvement on established drug/gene delivery treatments due to them being cost-effective and noninvasive. In terms of osteoporosis, treatments based on inhibiting osteoclast activity through oral medicine have not advanced due to severe side effects, Osteoporosis treatments are focused on reducing the progress of osteoporosis to improve quality of life and reduce the incidence of fractures. The direct cost of bone fractures varies but the prevalence of these bone fractures is estimated to cost USD 22 Billion annually in the US. This is why it is crucial to provide effective, safe, and administered treatments at a lower cost. This project aims to synthesize nanobubbles for siRNA delivery to silence Cathepsin K expression, a key osteoporosis gene, in an ovariectomized osteoporosis mouse model. In addition, we used low-intensity pulsed ultrasound (LIPUS) for nanobubble destruction to facilitate targeted siRNA release. LIPUS can also promote bone formation. We analyzed the difference between nanobubble-treated groups by studying microarchitecture changes in bone samples that were highlighted through different types of staining such as Masson's Trichrome, Hematoxylin & Eosin, tartrate-resistant acid phosphatase staining. Data was collected and analyzed to quantify changes in bone resorption using ImageJ. The major organs were studied to ensure systemic biocompatibility of nanobubbles. We observed nanobubble-treated groups to have an increase in the average cortical thickness and trabecular spacing with no significant increase in trabecular thickness. The major organs showed no morphological changes confirming the biocompatibility of nanobubbles and the ovariectomized mice model.

University of Central Florida (UCF)

33. Breaking Language Barriers: Examining the Shortage of Healthcare Access and Interpreters in Hispanic Agricultural Communities

Alejandro Ramirez

Mentor: Dr. Sharon DiFino

A considerably large population of agricultural workers in the United States are Spanish speaking immigrants. They live and work in rural areas and often lack the time and resources to learn English. A large issue, then, is created by the language barrier between the workers and their superiors. In cases of medical emergencies or problems, this barrier can prove dangerous. There are often no interpreters to help with communication between workers and their supervisors on the farms. In emergencies, the farmers can be left without proper care due to not being able to communicate their needs. Once they are with medical personnel, they face the same problem all over again. There are not nearly enough Spanish interpreters compared to the number of patients that would benefit from it.
To help with health disparities created by the language barrier, this research investigated the vocabulary and cultural differences in health communication between various dialects of Spanish (Spain, Mexico, Colombia, etc.); the research was conducted through a literature review and through speaking with natives from each area. These approaches revealed that hospitals in rural areas seldom utilize medical interpreters with professional training to assist patients with limited English proficiency, and instead they often leave these patients to rely on family members or untrained medical personnel to translate. Based on these findings, the most ideal direction for future recommendations would be to implement dialect-specific brochures/pamphlets in rural hospitals to minimize any potential misunderstandings amongst Spanish dialects.

University of Florida (UF)

34. Do You Like True Crime Documentaries?

Mazzarina Succarotte

Mentor: Dr. Karen Mottarella and Dr. Martha Hubertz

Humans have a long history of violence as entertainment. From Roman gladiator fighting in 105BC to the Salem Witch Trials in 1693, groups gathered to witness killings as entertainment. Today's popular true crime genre evolved from the 1970s and 1980s, during which killers such as Ted Bundy, Jeffrey Dahmer, and John Wayne Gacy became "pop-culture icons" with public fascination over these bizarreness and macabre cases (Murley, 2008, p.4). Currently, true crime abounds in documentaries, TV series, podcasts, and books. These captivating yet terrifying stories keep viewers eager for more (Murley, 2008). This study investigates personality traits associated with both interest in viewing this type of content and desensitization to it. This study explores personality traits attracted to and/or unalarmed by these violent acts. This research may contribute to understanding the links between personality characteristics and attraction to violent acts. We aim to understand different personality types thoroughly. Who is more captivated and fixated on violent acts? This study does not imply that true crime fanatics are murderers; however, does their personality type help them relate to criminals?

University of Central Florida (UCF)

35. Multi-Ratio Calibration

Abigail Crossman

Mentor: Dr. Willis Jones

Traditional sample analysis requires the meticulous preparation of standard solutions, each containing known concentrations of desired analytes to build a calibration curve. An instrument is used to analyze the standards and samples, and sample signals are compared to the standard solution signals to determine each analyte's concentration in the sample. While effective, traditional calibration methods do not account for matrix effects or time-sensitive variations in analyte response. Although usually correctable, these problems require labor-intensive preparation of additional and more complex sample and standard solutions, hampering sample throughput. Multi-ratio calibration (MRC) is a novel matrix matched analytical calibration method that requires the preparation of just two solutions. Each solution contains equal portions of sample, correcting for all matrix effects. The first solution also contains internal standards (species not already present in the sample) at known concentrations. The second solution contains an aliquot of all analytes at know concentrations, and an aliquot of the internal standards, but at different concentrations than the first solution. A calibration curve for MRC is prepared by plotting the measured signal ratios of the internal standards against the known concentration ratios. The measured analyte signal ratio is fit to the calibration curve and the known amount of analyte standard is used to calculate the analyte concentration in the sample. MRC has proven capable of accurate and precise analysis of a wide range of analytes in sample matrices that are traditionally difficult to measure, and in cases of significant change in instrumental parameters that typically make analysis impossible.

University of North Florida (UNF)

36. Disability Representation in David Fincher's Fight Club

Roy Chen

Mentor: Dr. Ashley N. Reese

American media traditionally portrayed characters with mental illnesses as violent, which increased stigma surrounding topics about mental disabilities. This research poster seeks to evaluate the accuracy and impacts of mental illnesses' portrayal in cinema. It will achieve this goal by comparing mental illnesses' cinematic portrayals with their real-life counterparts while analyzing the role of mental disabilities in the film. Specifically, in David Fincher's 1999 film, Fight Club, an unnamed narrator with dissociative identity disorder (DID) and schizophrenia forms a Fight Club to resist against the consumer culture that dominates his life. Some argue that the narrator's lonely struggle through his mental disabilities is portrayed accurately. Both DID and schizophrenia are portrayed through creative filming techniques, which match their real symptoms. The narrator's struggles both criticize consumerism's alienating effects and advocate for better mental health support. However, when Tyler, the narrator's alternate personality, arranges terrorist activities, Fight Club sacrifices accurate representations to criticize freedom achieved through self-destruction. The use of disabilities as plot devices reinforces the stereotype of villains with mental illnesses. Hence, despite Fight Club's effective criticism against constrictive consumerism and self-destructive freedom, its stereotypical portrayal of mental illnesses perpetuates the negative stigma around people with mental disabilities. Therefore, authors should take greater caution in their work's use of disability.

University of South Florida (USF)

37. Investigating Methylation Patterns Associated with Obesity in Danio rerio (Zebrafish)

Alexandra Walz

Mentor: Dr. Kimberly Dobrinski

DNA methylation is an epigenetic pattern that maintains and changes the integrity and expression of our genes. Mammalian methylation occurs at CpG locations where cytosine is adjacent to guanine nucleotides The patterns of genomic methylation can be quantified and analyzed with Reduced-representation bisulfite sequencing (RRBS). Bisulfite converts all unmethylated cytosines to uracils but is ineffectual on methylated cytosines allowing for methylation status analysis. The purpose of our study is to use Zebrafish (Danio rerio) as a model organism to compare methylation patterns between obese and control zebra fish livers. We used RRBS to observe how methylation patterns change and how they may affect gene expression in those suffering from obesity. We trimmed off the adaptor sequences of the RRBS data using Trim Galore and then aligned our data to a reference genome using the Trace RRBS alignment package. Following alignment we conducted methylation status analysis using the R package: Methylkit. Obesity is proven to be associated with nonalcoholic fatty liver disease, Type 2 diabetes, hypotension, etc. The aim of this study was to explore a possible molecular causative agent of the diseases associated with obesity.

University of Tampa (UT)

38. Saturday Scientific Literacy Enrichment Camp

Ariana Lyles and Torianna Broaddus

Mentors: Antoinette Destefano and Shawna Brooks

71 eighth grade students from Campbell Middle School were a part of a Scientific Visual Literacy Saturday Camp hosted by the Transdisciplinary Data Scholars Development Program in preparation for the Florida State Exams and Standard Assessments in STEM. The 4 sessions spanned over two months. The topics that were covered were: scientific laboratory equipment, forces, food pyramids, food chains, mitosis, meiosis, parts of an animal and plant cell, photosynthesis and the carbon cycle. The topics were provided from previous state exams.The activities were: bingo, crosswords, hands on food chain activity, hands on force activity, word search, matching, and a hands on carbon cycle game. Each session had a powerpoint which included videos on the topic(s), activities and a pre/post test. There are two groups in each session. Each group is in the session for two hours. According to the pre and post tests, session 1 increased by 49.67%, session 2 increased by 52.3%, session 3 increased by 17.5%, and session 4 increased by 49%. Overall, the students improved 58.7% from the pre to post tests which can be an indicator that the Saturday Camp was a success.

Bethune-Cookman University (BCU)

39. Investigating the Deficit of Veterinary Students Entering Equine Medicine

Elena Tonkin, Gabrielle Ruiz, Zoe Strong and Andrea Barcia

Mentor: Dr. Kelsie Bernot and Dr. Jonathan Yardley

This study investigates potential causes of why students choose not to pursue a career in equine veterinary medicine upon graduation from veterinary school. Many students enter veterinary school with the desire to become equine veterinarians yet less than 2% of graduates enter this field. Therefore, our study aims to investigate the reasons for the transition away from equine veterinary medicine as a career. Recent studies have shown that burnout and low salary are major factors leading to the decline in this field. However, these studies describe the reasons that current equine veterinarians are leaving the field but not why veterinary students refuse to enter equine medicine. To investigate this, three focus groups (n = 10 to 3-4 each) were conducted with graduating veterinary students at a midwestern veterinary school. Participants were recruited through convenience sampling. Following transcription and deidentification, thematic coding was performed both empirically as well as using the literature by a group of six researchers. We anticipate that our findings will help identify strategies for reducing the decline of veterinary students entering equine medicine.

Florida Atlantic University (FAU)

40. Grit and Impostor Phenomenon in College Faculty: How do Perseverance and Self-Doubt Relate?

Gabriel Terwilliger and Daniela Rodriguez Suarez

Mentor: Dr. Starlette Sinclair

Impostor Phenomenon was originally studied by Clance & Imes (1978) looked into 150 highly successful women who had PhDs in various degrees, however these women considered themselves impostors believing themselves to be unintelligent, undeserving of any recognition of their achievements. Hutchins & Rainbolt (2017) found that a key characteristic of faculty experience with IP was their overdependence on external factors (i.e. luck and assistance) when they did succeed which stopped them from experiencing an internal sense of accomplishment. This phenomenon has been studied in many different populations and has been studied widely in the academic world with professors and students alike. Another focus of our research is grit, which is defined as enduring determination and commitment towards long-range objectives beyond mere

assessments of talent (Duckworth, et al., 2007). This study will be working with the hypothesis that higher scores in grit have a negative correlation with IP score. In this analysis the focus will be on university faculty, specifically the way that grit and impostor phenomenon scores relate. Using a self-report questionnaire grit and IP scores were measured in both students and faculty, grit with the Grit-S scale by Duckworth and IP with CIPS by Clance. The subjects were chosen by convenience sampling due to the amount of time and resources that would be required to do probability sampling methods. It is likely that high grit would combat IP through a greater drive for their career and future career endeavors, leading to a negative correlation between the two.

Florida Gulf Coast University (FGCU)

41. Analysis of Protein NSP15 for the Development of an Effective Neutralizing Antiviral

Erika Ramirez, Bryan Cardenas, Roxana Perez and Valentina Perez

Mentor: Dr. Jessica Liberles

In December 2019 and January 2020, a new sequence of a genome of coronavirus, SARS-CoV-2 was identified after an outbreak of pneumonia cases in Wuhan, China. The coronavirus is composed of an oily membrane with the genetic materials necessary to execute viral replication. This is made possible by the RNA instructions that effectively hijack the infected cell and enable the translation into various virus proteins. As the global spread of the virus continued, the virus began to mutate. Mutations can be as simple as a change in one amino causing no effect to the virus while others destroy the virus. The identification of protein areas with few mutations or essential areas are critical to the development of effective antiviral treatments and vaccines to target these areas. In this study, eligible proteins were analyzed based on their function in the virus lifecycle along with their sequence conservation, evolutionary rates, and presence of pockets.The results of this research narrowed the focus to NSP14 and NSP15. These two proteins were analyzed by executing a conservation score extraction, and a Consurf analysis. Lastly, using Spyder, a boxplot formation was constructed to compare conservation scores. The analysis of the pockets of NSP15 found pockets P2 and P5 were the highest scoring with a Drug Probability score of 0.66 and 0.54 respectively. The evolutionary studies and the high sequence conservation of NSP15 illustrated how NSP15 is a strong target candidate for the development of antiviral drug treatments of SARS-CoV-2 and its variants.

Florida International University (FIU)

42. The British Pet Massacre: A Forgotten Holocaust

Habana Zarranz

Mentor: Dr. Wendy Chase

In 1939 Nazi Germany invaded Poland and with that World War II had begun. The then allies of Great Britain and France were forced to face the greatest evil the world have ever seen and both countries took extreme measures to prepare, but one method went unnoticed. My research explores the British pet massacre of 1939 in which roughly 750,000 pets were slaughtered in the name of food rationing. This presentation will also analyse the animal welfare laws of Nazi Germany which were implemented 6 years prior to the pet massacre. I will explain how this notoriously cruel regime ironically took remarkably good care of the most vulnerable creatures. These policies not only informed present-day animal welfare laws but continue to be some of the strictest in the entire European Union.

Florida SouthWestern State College (FSWSC)

43. Long-Term Effects of Prenatal Fentanyl Exposure on Behavior and Gene Expression

Chioma Uchegbu

Mentor: Dr. Devon L. Graham

The persistence of opioid abuse has become a prevalent issue affecting the health of individuals within the United States. One potent opioid, fentanyl, has had tremendous effects on the health and livelihood of individuals. Despite this, few studies have been done to evaluate the effect of fentanyl exposure on offspring development. This study evaluates the effects that fentanyl exposure has on both behavior and development. An array of behavioral experiments was performed on mice exposed to fentanyl (or vehicle control) prenatally. Additionally, RNA sequencing and Gene Ontology enrichment analysis were performed to evaluate and compare the genes of fentanyl-treated and control mice. Behavioral assessments revealed no significant changes in anxiety, mood, or cognitive behavior. However, we observed an increase in locomotor activity in fentanyl-treated mice in comparison to control mice. Male fentanyl-treated mice also demonstrated more submissive behavior in comparison to male control mice during tube test. RNA sequencing of the mice's amygdala revealed the presence of 220 differentially expressed genes (DEGs) when comparing fentanyl-treated and control male mice, with 68 upregulated DEGs and 152 downregulated DEGs in male fentanyl-treated mice. RNA sequencing of female fentanyl-treated and saline mice uncovered 200 DEGs with 33 upregulated DEGs and 167 downregulated DEGs following fentanyl treatment. Gene ontology enrichment analysis of the differentially expressed genes revealed enrichment of myelination and GABAergic processes, indicating effects on neural circuitry and transmission. The results of this study reveal the deleterious effects that fentanyl exposure has on brain development, as well as its long-term implications.

Florida State University (FSU)

44. Psychological and Educational Differences Between Student-Athletes and Nonathletes

Sean Blumenfeld, Gabriela Barber and Sophia Fiz

Mentor: Dr. Patrick Cooper

Research suggests that college student-athletes experience more psychological and academic stressors than non-athletes. Therefore, it is prudent for universities to understand and plan to combat the psychological and academic risks that athletes experience. The purpose of this study was to examine the differences in four psychological outcomes (stress, anxiety, depression, and resilience) and one academic outcome (GPA) for athletes (N = 44) vs. non-athletes (N = 207). The hypothesis for the study is that there is a significant difference in educational outcomes between student-athletes and non-athletes; however, there is no significant difference in psychological outcomes.

The methodology of the study was a survey sent out to 251 students within a university setting. The study participants included athletes (N = 44) and non-athletes (N = 207). The study also consisted of 132 females and 117 males. The results from a series of independent samples t-tests suggest that there were no differences in stress, anxiety, or depression. However, athletes had a significantly higher GPA and marginally significantly lower resilience. Furthermore, there is no difference in depression. A unique finding here

is that non-athletes reported slightly higher resilience, even though it is not statistically significant. This is surprising and warrants further research. More distinct is the finding that athletes had significantly higher GPAs. This finding makes sense, as many schools require athletes to maintain a minimum GPA to keep their scholarships and roster spots. Further implications of this research will be discussed.

Lynn University (LU)

45. Influence of Nature Contact on Stress Levels and Happiness

Michael Wang

Mentor: Dr. Andrea J. Marsden

The purpose of this study is to explore the effects of nature contact and appreciation of nature. Previous research has demonstrated that nature contact and appreciation of nature can make people happier and reduce stress. The current study interviewed eight participants. Data collection has finished, and by the time of the conference, data analyses will be completed. Initial analyses seem to suggest that nature contact and appreciation has benefits. Final research results, limitations and additional ideas for future research will be discussed.

Beacon College

46. How the Chinese Communist Party Maintains Control of the Tibetan People

Caroline Klunk

Mentor: Professor Allison Quatrini

In 1951, the area now recognized as the Tibetan Autonomous Region (TAR) was annexed by the People's Republic of China (PRC) creating a strained relationship between the eastern Han Chinese dominant Chinese Communist Party (CCP) and the native Tibetan population. Tibetans under Chinese annexation have a history of protest against the party-state in both a subtle manner with attempts to maintain Tibetan traditions and attention-grabbing political organization like that mass participation of the 2008 Lhasa protests. Despite the Tibetans' continuous push for freedoms not guaranteed by the party-state, the CCP persists in its goal to settle down and assimilate Tibet into Han Chinese culture. The three ways in which the CCP maintains control that are analyzed in this piece are the modernization and territorialization of the TAR, spiritualization of the party leadership, and the hard power used in handling unrest. While these methods have allowed the CCP to stay in power in the TAR, and may persuade future generations to accept CCP rule, they are not sustainable methods that will keep the current Tibetan people content.

Eckerd College

47. Annotation of Halloween Genes and Nuclear Receptors in the 20-hydroxyecdysone (20E) Signaling Pathway in Diaphorina citri

Brandi Yip

Mentor: Dr. Tom D'Elia

To combat the threat of citrus greening disease (Huanglongbing or HLB), it is essential to gain a thorough understanding of the Asian citrus psyllid (Diaphorina citri), the insect vector. HLB is caused by Candidatus Liberibacter asiaticus, which affects the phloem of citrus trees and hampers the efficient transport of nutrients. This ultimately leads to crop failure and the eventual death of the citrus tree. This project aims to identify specific genes that may be involved in the vector's ability to survive and reproduce. Characterization of these genes will provide a foundation of understanding their role in the insect's ability to vector the disease. The Halloween genes are involved in the biosynthesis of ecdysteroids, which play a crucial role in regulating the timing and progression of molting and metamorphosis in insects. The ecdysteroidogenic pathway feeds into the 20-hydroxyecdysone (20E) signaling pathway, which activates nuclear receptors which modulate numerous physiological processes. A total of 7 Halloween genes and 7 nuclear receptors in the 20E signaling cascade were identified in the D. citri genome. Comparative analysis of these genes showed predicted gene models to be accurate representations of gene structures. When compared to other hemipterans, the amino acid sequence length and conservation (percent identity and similarity) along with identification of core domains supported the completeness of the gene models. Accurate annotation of the gene models in D. citri provides a valuable resource for further functional and comparative genomics studies.

Indian River State College

48. Effect of N-Acetyl Cysteine on Insulin Resistance and Adipokines in Children with Biopsy-Proven Nonalcoholic Steatohepatitis

Justin Wilburn

Mentors: Dr. Md Lobayer Hossain and Dr. Babu Balagopal

Background: Insulin resistance (IR) is one of the major hallmarks of nonalcoholic fatty liver disease (NAFLD). IR typically accelerates the progression of NAFLD to more severe forms of liver derangements leading to nonalcoholic steatohepatitis (NASH) with its sequelae of liver scarring, cirrhosis and cancer. Preclinical and limited adult studies suggested beneficial effects of N-acetyl cysteine (NAC) in NAFLD/NASH. This study evaluates the effects of NAC on IR and critical adipokines in children with biopsy-confirmed NASH. Methods: In a randomized, double-blind, placebo-controlled trial of NAC in children (age: 8-18 years old) with biopsy-proven NASH (NAS Score >2). Participants (n=13) were randomized to one of the three groups of NAC treatment for 16-weeks, 600 mg NAC/day and 1200 mg NAC/day), and placebo. Fasting glucose, insulin, adiponectin, leptin, spexin, high-sensitivity c-reactive protein (hs-CRP) and interleukin-6 (IL-6) along with liver enzymes and liver fat fraction (LFF) were measured. Results: 16-week of NAC supplementation decreased HOMA-IR ($p<0.001$) and leptin ($p=0.04$) and enhanced spexin ($p=0.05$) in the intervention group. Changes in adiponectin were negligible ($p>0.05$). Baseline correlations between HOMA-IR and cardiometabolic factors like IL-6 ($p<0.01$), hs-CRP ($p=0.02$) and adiponectin ($p=0.02$) were observed. No correlations were found between HOMA-IR and liver enzymes, LFF, spexin, and leptin ($p>0.05$ for all) Conclusion: NAC-induced amelioration of IR and certain adipokines and the relationships between baseline HOMA-IR and markers of inflammation and adiponectin in this pilot study may suggest the need for larger confirmatory and mechanistic studies on IR and the effect of NAC in children with NASH.

Jacksonville University

49. Impact of Agrochemicals on Mosquito Life Cycles and Immune Response

Alexa Cooney, Angel Arnau and Madeline Butler

Mentor: Dr. Kenneth Fedorka

Agricultural lands are excellent breeding grounds for mosquito species, many of which transmit arbovirus diseases. However, agrochemicals used to improve food production may have unwanted or unknown biological impacts on these animals. For instance, the globally used herbicide, glyphosate (Round-up™), has been shown to

impact animal nervous systems. Notably, in the African malaria mosquito, Anopheles gambiae, glyphosate appeared to diminish phenoloxidase activity (PO; a component of insect immune defense) and escalate the risk of malarial transmission, suggesting that glyphosate may have profound impacts on vectored disease dynamics. However, there are potential limitations with this previous study. Specifically, it accounts for only one species that vectors a cellular protist and not arboviruses. Further, the size of the glyphosate dose used in the study, and the manner in which it was introduced, are biologically unrealistic. Here we assess the role of glyphosate on mosquito immunity using agriculturally relevant doses delivered in an environmentally meaningful manner. Further, we use the southern house mosquito Culex quinquefasciatus; an agricultural pest that vectors arbovirus diseases such as West Nile, St. Louis encephalitis, and Western equine encephalitis. To this end, we exposed larvae and adults to agriculturally realistic glyphosate doses, assessed their PO activity, immune gene transcription, and life histories. We found that glyphosate impaired larval survival and development time, indicating toxicity at field relavent doses. Further, glyphosate-exposed larvae exhibited reduced PO activity that persisted well into adulthood. This study underscores the detrimental consequences of agrochemicals on mosquito immunity and their potential to impact arboviral disease dynamics. Future research should assess the effects of agriculturally relevant glyphosate doses on arbovirus transmission rates.

University of Central Florida (UCF)

50. The Use of a REV-ERB Synthetic Agonist for Th17-Based Cancer Therapy

Alexandria Wilson

Mentors: Dr. Isabelle Cote and Dr. Matthew Hayes

Chronic inflammation causes damage to cell DNA and alters the way cells replicate and divide, which promotes cancerous tumor growth. Unresolved infections, for example, result in chronic inflammation and account for more than fifteen percent of malignancies globally. Th17 cells are a subset of T cells known to play a key role in driving inflammation. Th17 cells tend to accumulate within the tumor microenvironment, and, while their role in tumorigenesis is complex, they promote tumor growth in many cancer types. The REV-ERBs are a class of nuclear hormone receptors that was recently identified as a modulator of Th17 cell development. This experiment demonstrates that the use of a REV-ERB agonist reduces inflammation through the Th17 molecular network. We used qPCR to test the effects of a REV-ERB agonist on the relative expression of genes associated with Th17 cell differentiation and resulting inflammation. We used samples of mouse microglial cells (BV2 cells) cultured in a variety of conditions. When cultured in the presence of lipopolysaccharides (LPS), bacterial toxins, BV2 cells undergo an inflammatory response. The BV2 cells co-treated with LPS and a REV-ERB agonist expressed these genes (Il-1β, Il-6, Ccl2, Cox-2, Tnfα) to a lesser extent than the BV2 cells treated with LPS alone; thus, the REV-ERB agonist counteracted the effect of the LPS. These results indicate that REV-ERB agonists are worthy of future research into their utility as a means of cancer prevention and treatment.

University of Florida (UF)

51. CRISPR-Cas9 Knock-Out Model of NGLY1 Deficiency in Danio rerio Harbors Mild Phenotypic Changes Detectable With Automated Phenotyping

Alexander Bartkowiak

Mentor: Dr. Marie Mooney

Loss-of-Function variants in NGLY1 result in NGLY1 Deficiency, a rare recessive disorder with variable phenotypes. Human symptoms can include developmental delay, visual impairment, and deficits in neurological function. Animal models of NGLY1 Deficiency from invertebrates to mice are often lethal or infertile, though different genetic backgrounds can ameliorate these phenotypes. In contrast, zebrafish models of NGLY1 Deficiency are viable and fecund and display milder phenotypes. We created ngly1knock-out zebrafish using CRISPR-Cas9 targeted to exon 2 to generate a premature stop codon just outside the conserved PUB domain. Using Het x Het crosses and automated microscopy produced large image sets from single clutches with randomized genotypes. Phenotypes assessed included body length, eye size, and brain metrics (cortical area, ventricular area, optic tectal area, neuronal cell density), using measures made both manually and via automated processing with ImageJ macros. Automated microscopy and image processing revealed significant phenotypes with small effect between wild-type and ngly1-/- genotypes from the same clutch. Body length displayed dose-dependent reduction in ngly1-/- fish and a significant mean rank difference between ngly1+/+ vs ngly1-/-. Mean ranks for both eye area/radius and cortical area were also significantly reduced between ngly1+/+ vs ngly1-/-. This ngly1-/- zebrafish model reveals new, mild morphological phenotypes detectable through automated microscopy.

University of North Florida (UNF)

52. Assessing Food Web Dynamics in Tampa Bay Using Baited Remote Underwater Video and Chlorophyll A

Emma Robbins

Mentor: Dr. Heather Mason

Marine food web dynamics have long been a source of interest due to economic and ecosystem value. Most assessment tools in marine foodwebs are invasive; a more sustainable method to sample species abundance are baited remote underwater video systems(BRUVS) which observe marine life noninvasively. Phytoplankton, the primary producers, are commonly considered the foundation of the food web and are measured by abstracting chlorophyll a from the water column. The relationship between chlorophyll a concentration, fish abundance, and diversity were investigated across a range of shallow water habitats in Tampa Bay. In the first phase of this study chlorophyll a was isolated from water samples from benthic habitats including sand, seagrass, and mangrove. BRUVS were used to identify and quantify fish species observed in the sampling locations. There were no significant differences found between chlorophyll a and habitat but the experiment is ongoing and further replicates will be collected throughout the year. Chlorophyll a was also not significantly correlated with fish abundance or diversity, but future investigation in the larger data set will break fish into functional groups by feeding type to determine if phytoplankton presence relates to planktivores in the water column.

University of Tampa (UT)

53. DRIVE Mental Health Initiative

Demar Williams, Damaris Robinson and Ashton Matthews

Mentors: Dr. Danyell Wilson-Howard and Dr. Shirma Ramroop Butts

According to the American Psychiatry Association, Depression is defined as a common and serious medical illness that negatively affects one's emotions, cognitive abilities, and behavior. It can lead to a variety of emotional and physical problems and can decrease one's ability to function at work and home. Depression symptoms start during the teenage years. The symptoms of depression are usually a persistent feeling of sadness or loss of interest that characterizes major depression and can lead to a range of behavioral and physical symptoms that affect sleep, appetite, and energy levels. The prevalence of adults with a major depressive episode was highest among individuals aged 18-25 (17.0%). The initiative we started is D.R.I.V.E., which stands for Depression Requires Intervention Early. We planned to engage people in Volusia County through outreach events and refer people to our podcast, give positive affirmations, and teach people about depression. Our main objectives are to bring awareness to the community about depression to parents and young adults. Secondly, we want to refer people to seek treatment and raise the number of evaluations taken for depression. During the year 2023, we engaged with around 8500 people at 23 outreach events. A podcast was also created called D4FaithPodcast on Spotify and has received over 400 likes on Instagram and over 40 listeners.

Bethune-Cookman University (BCU)

54. Analyzing the Effects of Stress on the Gut Microbiome, Cognition, and Sexual Ornamentation of a Songbird

Joseph Swaress

Mentors: Morgan Slevin and Dr. Rindy Anderson

Our project examines how stress impacts the gut microbiome, which may lead to health and fitness variation among animals of the same species. Specifically, we will test the hypothesis that stress negatively affects the gut microbiome, which consequently negatively affects a variety of physical and physiological traits in songbirds. Zebra finches are gregarious and social isolation is a moderately stressful stimulus for them. We used social isolation to induce mild but chronic stress in captive zebra finches and quantified gut microbiome qualities, beak ornamentation, cognitive performance, and body mass before and after treatments for both cohorts of isolated and socially housed birds. I will present preliminary results comparing beak ornamentation, cognitive performance, and body mass between the two treatment groups and discuss our predictions for effects on the gut microbiome. These results will contribute to the growing body of evidence that stress can impact qualities of the gut microbiome, which in turn can affect other aspects of health and behavior. Our results may also be useful in situations when social species are isolated in wildlife hospitals or captive breeding programs.

Florida Atlantic University (FAU)

55. What Medical Professionals and the General Public Should Know About PCA: From the Perspective of the Patients and their Caregivers

Solange Gonzalez, Madelyn Belvo and Jo Movil

Mentor: Dr. Krystal D. Mize

Posterior cortical atrophy (PCA) is a neurodegenerative syndrome involving a progressive decline in visual processing and other posterior cortical functions. PCA is typically associated with the histopathological characteristics of Alzheimer's disease (AD), but the distribution of pathology differs from typical AD (Firth et al., 2019). Additionally, fewer PCA cases are associated with corticobasal degeneration, Lewy body disease, and prion disease. Although PCA does affect visual performance, it is not an eye-related condition. Due to visual complaints by the patients, even physicians may not recognize that the symptoms are indicative of a neurological condition, causing the diagnostic process of PCA to take anywhere from 5-10 years. This prolonged diagnostic process is detrimental to PCA patients as the available treatment options are more effective earlier on in the disease progression. It is important for the general public to have some baseline knowledge about PCA so that affected individuals can properly advocate for their symptoms, leading to a quicker diagnosis. The aim of this project is to use first-hand reports from people diagnosed with PCA and their caregivers to inform the public about the specific symptomology and etiology of PCA. The method of the research is through analyzing qualitative data gathered in semi-structured interviews of patients with PCA and their caregivers discussing specific symptoms, diagnosis stories, and daily struggles of the interviewees. Considering the perspective of PCA patients and their caregivers will serve to inform medical professionals and the public leading to quicker diagnoses and better care of PCA patients.

Florida Gulf Coast University (FGCU)

56. "To Label or Not to Label Kids as Gifted": Examining the Experiences and Consequences of Being Labeled as Gifted

Grace Craig

Mentor: Dr. Mickey Langlais

It is unclear how being gifted may influence young adult development, as being labeled is associated with increased pressure for some children. Additionally, less is known about the experiences of being labeled as gifted, despite calls from researchers. The goal of this study is to understand the experiences of being labeled as gifted and to understand the impact of this label for young adults' wellbeing, and social and academic functioning. To achieve this goal, a mixed-methods approach was used. Volunteering undergraduate college students participated in an online survey (N = 219) or an individual interview (N = 24). To participate in the interviews, participants had to have been labeled as gifted at some point in their childhood or adolescence. Participants answered questions on the survey regarding their academic motivation, mental health, social functioning, and experiences of burnout from elementary school to college. In the interviews, participants answered questions regarding the short-term and long-term consequences of being labeled as gifted. Quantitative results revealed that individuals who were tested and labeled as gifted reported significantly higher levels of middle school, high school, and college burnout compared to those who were not tested and not labeled as gifted. These results were supported by qualitative data where participants reported experiencing more pressure and feeling burnt out because of being labeled

gifted. Participants also reported feeling more motivated, different compared to others, including developing a superiority complex, while also performing better in school, but struggling in their social relationships.

Florida State University (FSU)

57. Lane "What is Grief, If Not Love Persevering": Prolonged Grief Disorder, Complex Grief, and Fog of Grief in She-Ra and the Princesses of Power, WandaVison, and Agents of Shield

Angelique Williams

Mentor: Dr. Warren Jones

Alternate fantasy grief cycle or lack thereof in popular narratives furthers character development and ultimately drives characters to take action of becoming a hero or a villain. Fictional characters often do not follow the well-established Kubler-Ross's model of grief (denial, anger, bargaining, depression, acceptance) but follow a fictional grief cycle in which the grief serves the plot around them. Prolonged grief disorder (DSM-5), complex grief (DSM-5) and/or April Reese's "Fog of Grief" are often character motivations instigating a split-second decision between becoming a hero or a villain. Wanda, from WandaVison, made her decision in a moment where she freed the people of Westview from her control and grief. Catra, from She-Ra and the Princesses of Power, becomes a hero through sacrifice because of her grief from Adora's betrayal. Jinx, from Arcane, in a fog of grief from the death of Slico, taking her final step in villainy through an act of terrorism. Daisy Johnson, from Agents of Shields, decides to rejoin Hive in her own grief. Through these characters and the events they endured, grief in the media is not a response; it's a motivation, allowing the way for powerful, emotional moments and offers a fast and effective way to change a character for the storyline.

Eastern Florida State College

58. Advancing the Precise Mapping of Dendritic mRNA Localization Patterns Through Neuron Linearization

Arlette Morcelo

Mentor: Dr. Junhyong Kim

mRNA localization is a process by which messenger RNA (mRNA) molecules are selectively transported and localized within a cell to allow specific protein synthesis and function. In neurons, its polarized structure utilizes RNA localization to modify synaptic features, therefore affecting synaptic plasticity, the cellular basis of learning and memory. However, wrongful localization can cause cognitive impairments. Prior studies aimed to investigate dendritic mRNA localization patterns in mouse neurons using standard neuron growth culture. Nevertheless, the visualization of mRNA localization using this method lacked the precision required for a detailed examination of dendritically-based RNA. To address this limitation and gain more insights, we sought to investigate the impact of patterned growth neurons on mRNA localization patterns. By employing hybridization chain reaction fluorescence in situ hybridization (HCR FISH), we were able to detect and visualize Shank1, a dendrite-based gene involved in the organization and function of synaptic stability, within photolithographically linearized mouse neurons. We observed that by cultivating neurons in a linear orientation, we successfully attained high-resolution capture of Shank1 localization withing the dendrites of linear neurons. This study demonstrates that culturing neurons in linearized patterned coverslips allows unprecedented capture resolution for subcellular sequencing experiments and effectively details spatial measurements utilizing single molecule RNA FISH (smFISH) technologies. Based on this information, automated quantification software will be used to compare mRNA abundance between linearized and control neurons to further investigate any differences introduced by patterned culture conditions.

University of Central Florida (UCF)

59. Assessing Cuticular Conductance in Southern Highbush Blueberry Leaves

Ana S. Acosta

Mentor: Dr. Gerardo H. Nunez

Plants control water loss using their stomata, closing them in the presence of hot and windy conditions to prevent drying out. However, plants also lose water from their epidermal cells through their cuticle (cuticular conductance), a process which plants cannot control. Young leaves do not have fully developed cuticles, which elevates their risk of excessive water loss and wilting. Cuticular conductance is an important factor in the growth of blueberry plants in Florida, where environmental conditions exacerbate water loss. However, no prior research has been done to quantify cuticular conductance in blueberry plants. We hypothesized that cuticular conductance rates vary among young and mature leaves and among blueberry varieties with contrasting stomatal traits. Three varieties of southern highbush blueberry plants with contrasting stomatal densities and sizes were selected (Vaccinium corymbosum interspecific hybrids varieties 'Colossus', 'Arcadia', and 'Optimus'). We placed 14 young and 14 mature leaves from each variety in a dark dehydration chamber to measure water loss when stomata remain closed. We periodically weighed the leaves as they lost water through their cuticle. Young leaves exhibited a higher rate of water loss and their fresh weight plateaued earlier than mature leaves, indicating a significant relationship between leaf age and cuticular conductance rates. Rates of cuticular conductance also differed among varieties. Understanding the role cuticular conductance plays in plant success can inform current and future blueberry cultivation practices.

University of Florida (UF)

60. Effect of Brake Lights Configuration on a Simulated Reaction Time Task

Ashley Wilborn

Mentor: Dr. Debbie Wang

Road safety is a worldwide concern, and vehicular brake lights play a pivotal role in preventing rear-end collisions. Recent research ventures out to explore the potential impact of incorporating additional stimuli into brake light configurations as a means of enhancing collision prevention. This study involved 22 undergraduate students from the University of North Florida to investigate the efficacy of brake lights featuring a cross-shaped stimulus. The experimental design included both schematic and real car photographs each presented with and without the cross configuration. Participants were positioned 60cm from a monitor, and underwent both practice and actual tests, with two independent variables: the presence or absence of brake lights. This study hypothesized that the cross configuration would yield an increased reaction time compared to a standard brake light lacking this additional feature. To ensure comprehensive analysis, gender (male, female) and group assignment (real car first, schematic car first) were introduced as between-subject variables. Participants used a chronos response box to document their reaction times. A practice test preceded the main

experiment, allowing participants to seek clarification from the examiner. Afterwards, the examiner administered the actual test, evaluating participants' reactions to brake lights with and without the cross configuration. Further exploration in this field is essential for a more thorough understanding of brake light configurations and their effective role in collision prevention.

University of North Florida (UNF)

61. Portraits of Prostitution: An Examination of Sex Work and Working-Class Women's Experiences in Progressive Era New York City (1890-1920)

Jillian Richarz

Mentor: Charles McGraw-Groh

Despite its dangers and degradations, prostitution paid more than the so-called "clean" labor that kept working-class women living below the poverty line. This poster reconstructs the social geography of prostitution to reveal another disturbing inequity in the wage-labor market during the industrial economy's maturation. Black women, who already experienced the least opportunity in the urban workforce, were similarly disadvantaged as sex workers. Unlike most fair-skinned women who benefited from the safeguards and, sometimes, even modern business practices, that defined brothels and dance halls, most women with dark complexions were forced to initiate sexual encounters on the streets or from the windows of their own lodgings. These findings are visualized through charts demonstrating the recorded complexions of sex workers in addition to recorded situations and locations of solicitation according to investigative and arrest affidavits from the Committee of Fourteen and Committee of Fifteen. Finally, there is a graph comparing weekly earnings from sex work and those from "clean"labor from the findings of a 1913 study conducted by the Bedford Hills Reformatory and establishes that sex work was a common occurrence for working-class women of this time. This research builds on the findings of Kathy Peiss, George Chauncey, and Elizabeth Alice Clement by presenting a more racially and ethnically diverse portrait of prostitution in turn-of-the-century New York.

University of Tampa (UT)

62. Measuring Fish Contamination in Local Wild Life

Jalen Thompson, Endi Carter and Keanna Forbes

Mentors: Antoinette Destefano, Sarah Krejci and Shawna Brooks

As field representatives, we work with the Ocean Research and Conservation Association. We are assisting with the collection of fish samples and recruiting bait shops to serve as new drop-off locations for any donated fish samples. In addition, questionnaires are being collected within the community to determine how frequently people catch fish and why/why not. The research and results from this project will be significant because we will be able to better determine whether the fish in the Volusia County waterways are safe to eat. It is critical to conduct study like this because the general public is often naïve and oblivious to little factors like this that could affect one's well-being.

Bethune-Cookman University (BCU)

63. Extreme Heat in Texas: A Statistical Analysis of Record-Breaking Temperatures in 2023

Isabella Prince Padron

Mentors: Dr. Eunsaem Cho and Dr. Ebrahim Ahmadisharaf

This study offers an in-depth data analysis of extreme heat trends in Dallas, Houston, and San Antonio, Texas, over a 30-year period from 1993 to 2023. By the use of annual maximum air temperature, exceedance probabilities and return periods were calculated by fitting generalized extreme value distributions. Maximum likelihood estimation was utilized for parameter estimation, and the Kolmogorov-Smirnov test was conducted to confirm goodness-of-fit. In 2023, Dallas experienced a record temperature of 110.1°F, estimated to have a return period of 32 years. Houston reached a record 108.3°F with a 17-year return period, while San Antonio's annual maximum was 109.9°F, with a return period of 6 years. These findings indicate a significant variation in the extremeness of heat events across these cities. This variability highlights the need for city-specific adaptation and mitigation strategies to address the unique challenges posed by escalating temperatures in different urban environments.

Florida State University (FSU)

64. Viability of Convolutional Neural Networks for Detection of Parasites in Aquaculture

John Nelson

Mentor: Dr. Ashley Spring

Gill flukes, also called gillworms, are monogenean trematode flatworms (Dactylogyrus sp.) that are a major problem among aquaculture facilities because infections smother the gills, resulting in death. The hypothesis of this research is that a trained convolutional neural network (CNN) can detect with statistical significance the presence of gill flukes using microscopic images of gill scrapes. A dataset of 1,000 published images was used to train a CNN, and an additional 40 unseen images were used for testing the success rate of the CNN. The results of this research show that, although there is great potential for use of a CNN to detect the presence of gill flukes, a larger and more varied dataset is required for development a CNN to accurately detect the presence of gill flukes.

Eastern Florida State College

65. The Implementation of Effective Classroom Management: A Handbook for Secondary Level Teachers

Charlottie Allgire

Mentors: Dr. Gina Gresham, Dr. Constance Goodman and Dr. Sherron Roberts

The purpose of this thesis is to research and discuss methods of effective classroom management at the secondary level. Often classroom management strategies are left behind in secondary classrooms due to the fast-paced nature of the content (Kalin, 2017). Secondary teachers may feel a sense of pressure when trying to plan or implement proper strategies. The strict and discouraging management style is rarely compatible with students. The benefits of classroom management can be too easily ignored in the world of academia. Effective management techniques do not only benefit teachers, but they also teach students a sense of discipline (Hoover, 2003). The precedent of how a classroom will operate is created by classroom management (Mcleod, 2003). Utilizing qualitative research methods, this thesis delves into the multifaceted realm of effective classroom

management at the secondary level. The approach involves a meticulous analysis of studies from educators, psychologists, and behaviorists, aiming to create successful classroom management strategies. By examining diverse perspectives, the research navigates the intricacies of secondary classroom dynamics, considering both the academic demands and the need for disciplined environments. The qualitative research methodology employed allows for a nuanced exploration of existing materials and the identification of gaps in resources tailored for secondary educators. It involves a comprehensive review of literature, synthesizing findings from various sources to inform the creation of original resources. This methodological approach ensures a robust foundation resulting in a handbook, grounded in both scholarly insights and practical applications. The handbook guide will provide different methods of classroom management, the philosophies that these styles are based on, plans /lesson plans for implementation in the classroom, syllabi, and supporting materials to use in classrooms.

University of Central Florida (UCF)

66. Metabolism and Memory: Exogenous Ketone Supplementation to Offset Age-Associated Cognitive Decline

Anvar Ashrapov

Mentor: Dr. Sara Burke

Glucose is a sugar molecule metabolized by the body as the main energy source of the brain. As our brains age, their ability to utilize glucose decreases, resulting in cognitive deficits. Ketone metabolism, however, remains the same across the lifespan, and the brain will break down ketones for energy in the absence of glucose. Inducing ketosis (a non-pathological increase of ketone levels in the bloodstream) helps mitigate the neuronal stress that is associated with normal aging by providing the brain with an alternative energy source to glucose. Ketosis is typically achieved by a high-fat, low carbohydrate ketogenic or "keto" diet. Since older populations face difficulty maintaining a strict ketogenic diet, our study investigates whether exogenous ketone supplementation will induce ketosis and whether this ketosis will mitigate age-related cognitive decline. We propose a dietary supplement consisting of two ketosis-inducing compounds widely available to the public: medium-chain triglyceride (MCT) oil, a fatty acid converted to ketone bodies in the liver, and beta-hydroxybutyrate (BHB), a ketone body synthesized in the liver. Aged rats experience the same neural impairments associated with age as elderly humans. We hypothesize that animals, particularly aged animals, receiving the supplement will perform better than their control counterparts on behavioral-cognitive assessments. To test this, four groups of Fischer-344 brown Norway hybrid rats (young females, young males, aged females, and aged males) were given BHB and MCT oil. Animals then underwent assessments of spatial learning, memory, and visual discrimination via mnemonic description and navigation tasks.

University of Florida (UF)

67. Chemoenzymatic Synthesis of Diketopiperazine Isomer Natural Products

Brian Grause

Mentor: Dr. Amy Lane

Actinomycete bacteria are promising sources of new natural product molecules with demonstrated promise as treatments for a variety of diseases. One biomedically promising group of natural products are 2,5-diketopiperazines (DKPs), due to the rigidity of their structures and resistance to degradation. Our lab previously identified novel genes and enzymes used by a marine actinomycete to assemble the nocardioazines, DKP natural products with anticancer activity. One enzyme (named NozR) from this biosynthetic pathway catalyzed DKP backbone isomerization during nocardioazine assembly. In the current study, we aimed to evaluate NozR as a biological tool for the isomerization of a library of DKPs. A plasmid encoding NozR was introduced into host actinomycete Streptomyces lividans; a separate S. lividans host was created with empty plasmid. Cultures of these hosts were supplemented with selected individual synthetic DKP isomers, fermented, and then resulting chemical extracts were analyzed through chiral liquid chromatography/mass spectrometry (LC/MS) to determine if isomeric products were formed. Thus far, we have determined that > 10 selected DKPs were isomerized by NozR in these experiments. These results so far are promising for future experimentation because they show a new route for the biological assembly of DKP isomers that may have usage in drug discovery to further enhance our pharmaceutical arsenal.

University of North Florida (UNF)

68. Empowering Harmony: Linking the Impact of Worker Satisfaction and Prosocial Behavior Among Students at a Historically Black College and University

Jayden Givens

Mentor: Dr. Mu-tor Flood

Understanding worker satisfaction is key to understanding it's impact on workplace chemistry, and the contentment of the employees. Meanwhile, prosocial behavior analyzes the actions of others that positively impact each other in their environment. Thus, allowing us to understand that workers who are satisfied in their workplace may feel more inclined to help each other. The objective of this study is to analyze and evaluate the link between students, prosocial behavior and their satisfaction in the context of historically black college and university. In conclusion, I believe that if the institution prioritizes the students satisfaction in the environment, they will be more likely to act pro socially towards each other, and the institution.

Bethune-Cookman University (BCU)

69. Cross-Cultural Perceptions of Child Abuse and Parenting Practices

Helia Baez Armas

Mentor: Dr. Maureen Kenny

Acceptable forms of discipline and treatment of children vary across cultures. The US has a robust system of laws governing the treatment of children and identifying certain behaviors as child abuse. Given the cultural diversity in the US, it is important to examine potential cultural differences in child-rearing practices and child discipline. Despite the US demographics including a large proportion of immigrant families, there is little cross-cultural research on differences in parenting practices. This study aims to fill this gap. Over one thousand students from a large Hispanic-serving institution in the southeast served as participants (83% females). They rated vignettes describing parental practices on a scale from 1 (not abusive or neglectful) to 3 (very abusive or neglectful). Data collection is complete, and analysis will commence. It is expected that there will be differences between cultural groups in ratings of parental practices. Specifically, Caucasians will be more likely to rate parenting behaviors as abusive. It is also expected that Hispanics have very high severity ratings for physical abuse, but lower for emotional abuse. Asians are expected to have lower severity

ratings for abuse than the previously mentioned cultural groups. Lastly, African Americans are expected to have the lowest severity ratings for abuse from any of the groups. It is also expected that there will be a consensus amongst cultures when it comes to acts of sexual abuse. Finally, while the sample for parents is small (n = 117), they are expected to provide different ratings than non-parents.

Florida International University (FIU)

70. Distribution of Healthcare in Puerto Rico: Supply and Demand of Physician Specialties

Darya Sulkouskaya

Mentor: Dr. Fernando Rivera

In recent decades, Puerto Rico has undergone numerous challenges in providing accessible medical care for its population. There have been major trends of physician migration from Puerto Rico, worsening healthcare disparities on the island. These disparities disproportionately affect rural and suburban areas most, with the majority of physicians located in more densely populated urban areas. In order to quantify this issue, the supply of physicians of 25 different specialties was compared to their projected demand by municipality and region. Data regarding the availability of physicians was obtained through a partnership with the Health Industry Information Platform of Puerto Rico, the largest database of physicians on the island. The resulting data has shown that only 36% of the investigated specialties have an adequate supply of physicians in Puerto Rico. However, these physicians are predominantly located in the Metro region of the island. Moreover, when accounting for rural and suburban populations as a whole, not a single specialty has an adequate supply of doctors. The specialties analyzed include some of the fields that require the most attention in Puerto Rico based on the prevalence of various chronic diseases, such as cardiology, endocrinology, and oncology. The supply and demand projections emphasize the need for healthcare reform as the system in place is unable to ensure the medical safety of its people. The resulting data can be used to aid in the training and placement of physicians in the most pressing areas of need to help address this problem.

University of Central Florida (UCF)

71. The Impact of Magnesium on the Stability and Function of the Stimulatory G Protein

Cate Richardson

Mentor: Dr. Matthew Eddy

Gα is the alpha subunit of a stimulatory, heterotrimeric G protein, which relays cellular signals from G protein-coupled receptors (GPCRs) through their interactions with guanine nucleotides, GDP and GTP. Magnesium has been shown to facilitate the binding of the G protein with guanine nucleotides and can enhance its GTPase activity. This research presents the use of biophysical tools, such as circular dichroism and intrinsic tryptophan fluorescence, to study the role magnesium plays in the thermal stability and function of Gαs and Gαs variants associated with diseases. We also explore the impact of magnesium on designed GA variants. We observe that magnesium decreases the stability of Gαs when bound to both GDP and GTP, with a more pronounced effect seen for complexes with GDP. Mutations of residues near the magnesium binding site showed varied results in both thermal stability and GTP activation compared to mutations of residues that do not interact with the binding pocket. Our results will provide a better understanding on the role that physiologically-relevant magnesium plays in the process of G protein activation and provide a better understanding of the interplay between magnesium and disease-causing mutations.

University of Florida (UF)

72. A Racist Shooting Close to Home: A Content Analysis of Local, National Coverage of Jacksonville, Florida's Dollar General Shooting

Carter Mudgett

Mentor: Dr. Anne E. Pfister

This study investigates how local and national news media outlets—particularly the Associated Press, CNN, the Florida Times-Union, and News4Jax—presented the "Dollar General Shooting" in Jacksonville, Florida on and after August 26, 2023. Far-reaching expectations for journalists call for a completely "objective"observer, an ideal that is nearly impossible given that collective and individual experience inform perceptions. Nonetheless, the original definition of "objectivity" described a transparent approach to evidence, a process to remove personal bias from reporting, which lends itself to a stronger journalistic product. This research analyzes how media bias shapes societal views against a backdrop of how news media influences personal perceptions of race. Focusing on two prominent national and two local outlets, this research will provide a comprehensive understanding of how different news media, one embedded in the impacted community and one not, tackle a particular race-related event. This research makes a unique contribution to the field because it addresses the dearth of research on how race-related stories are covered nationally versus locally.

University of North Florida (UNF)

73. Insults and Compliments: How The Cross-Race Effect Extends to the Memory of Insults and Compliments

Kristen Gatchalian and Sophia Brown

Mentor: Dr. Benjamin Marsh

The tendency to remember faces within their racial ingroup more accurately than their racial outgroup is a phenomenon called the cross-race effect (CRE) (Meissner & Brigham, 2001). This study tests if the size of the CRE is impacted by the type of message that racial ingroup and outgroup faces are paired with. Individuals remembering faces from their racial ingroup and outgroup is possibly dependent upon positive or negative experiences they associate with them. Forty White college-aged participants were shown 6 insults (e.g., you are disgusting) and 6 compliments (e.g., you are very sweet) paired with 36 faces and shown once with each race (Asian, Black, White). Participants' memories of message-face pairs were tested in a multiple-choice format. Results showed an interaction effect between the race of the faces and the type of message. Memory accuracy was highest for White-Insult (WI) and Black Compliment (BC) face pairs, suggesting that the CRE is strongest among faces paired with insults than those paired with compliments. Additionally, participants' level of concern with having an unpleasant experience with racial outgroup and racial ingroup members had contrasting relationships to memory for face-message pairs. The highest positive correlation was seen between memory accuracy for BC and concern about being misjudged by the outgroup. However, participants' concern with being misjudged by their ingroup was positively correlated with memory for WI. Moreover, those who noted that they had negative contact with their racial outgroup, remembered Black-Insult face pairs better possibly because they associated negative experiences with them.

University of Tampa (UT)

74. Anxiety and Test Performance in General and Organic Chemistry

Draven Ruiz, Gavin Winslow, Noor Alaraj and Marjan Roshandal

Mentor: Dr. Christopher Randles

This study analyzed the connection between test anxiety and test performance in organic 1 and general chemistry 2 students (N=77) at UCF using the TAI-5 survey and a modified version of the motivational section of the MSLQ. The MSLQ questionnaire separates questions into different subcategories: intrinsic and extrinsic goal orientation, task value, control of learning beliefs, self-efficacy, and test anxiety. Students during the Fall 2023 completed the combined survey before an exam in their respective classes, and their responses correlated against their performance on the subsequent exam. Cronbach's alpha for the survey was 0.776 indicating high reliability. The participant Likert-scale responses were averaged for each category. The average was compared using Pearson's to determine the correlation with the other categories. A higher intrinsic motivation is negatively correlated with test anxiety, (test anxiety category on the MSLQ = -0. 305; TAI-5 = and -0.385). The higher extrinsic motivation average does not correlate strongly with test anxiety, (test anxiety category of the MSLQ = 0.152; TAI-5 = 0.107). The results also show a negative correlation between self-efficacy and test anxiety, (test anxiety category of the MSLQ = -0.523; TAI-5 = -0.565). These results demonstrate students that are intrinsically driven towards the class material are less anxious on exams, but those who demonstrate low self-efficacy have more anxious feelings on exams. In the future, the survey may be modified to measure other behaviors, such as perfectionism, to determine their impact.

University of Central Florida (UCF)

75. Developing and Validating an Analytical Tool for Identifying Multimodal Mobility Hubs

Eliana Duarte

Mentor: Dr. Xiang (Jacob) Yan

In recent years, mobility hubs (MHs) have emerged as a novel concept to enhance multimodal travel. A mobility hub provides supporting infrastructure, amenities, and services for multimodal travelers at strategic locations, allowing seamless integration of various travel modes. While many cities and transit agencies have planned to develop MHs, an established methodology for selecting candidate sites for MH implementation is still lacking. We have developed a multi-criteria MH identification tool to locate ideal sites for MH development. The method has five steps: (1) cluster transit stops, (2) determine site selection criteria and variable weights, (3) compute composite score for each selected criterion, (4) construct suitability indexes for different levels of MHs (neighborhood, district, and regional) under different planning scenarios, and (5) identify a network of MHs for each scenario. This tool differs from previously developed MH identification tools in three key aspects: its unit of analysis focuses on transit stops, it can be used to classify the MHs into three levels, and it considers first-/last-mile connections as a primary criterion. Using this tool, we can create multiple MH networks under various planning scenarios, prioritizing different criteria such as public transit, first-/last-mile connections, existing infrastructure, equity, and spatial accessibility. To validate the method, we have developed an innovative survey that leverages crowdsourced mapping to seek community feedback on the proposed MH locations. The combination of data-driven and citizen science methods ensures that the final MH network is strategically placed and reflects the needs of the potential users.

University of Florida (UF)

76. Developing New Workflows for Long-Term Monitoring of Coastal Shoreline Change

Corey Kempinski

Mentor: Dr. Scott F. Jones

The National Park Service's Southeast Coast Inventory and Monitoring Network (SECN) currently uses an inventory and monitoring protocol that quantifies shoreline change across the southeast Atlantic USA to inform effective coastal management decisions. Previously used analysis and collection methods are phasing out and use proprietary software, limiting the ability to easily share and communicate monitoring data. Here, we demonstrate a new approach and workflow for collecting and analyzing shoreline change data, comparing results to previously used approaches to ensure consistency. We collected field data on American Beach on Amelia Island in September and October 2023. Field crews walked the tide line using three GPS devices following standard protocols used by SECN. Data were then analyzed using three analysis techniques, including several add-ons and packages in ArcGIS and R software. Newer GPS units provided enhanced precision over previous approaches, and shoreline change analysis was compared across all analysis software. Ultimately, this project will provide SECN and other Inventory and Monitoring Networks with information necessary to update shoreline monitoring protocols using cutting edge technology and software, supporting more precise and robust data for informing resource management in the southeast region.

University of North Florida (UNF)

77. If Mom Likes Dinosaurs Will You?: Investigating Parents' Influences on Children's Science Interest

Madison Curtis

Mentor: Dr. Jennifer Blessing

How children talk about science topics is tightly related to science-related conversations with parents (Leinhardt et al., 2002). Researchers have long been interested in this relationship and have explored how these interactions take place within museum exhibits (Blessing, 2003; Blessing & Crowley, 2003; Palmquist & Crowley, 2007). The current study aimed to follow families after their visit to the museum and involves families providing self-repots of activities and conversations that occur after their visit. The study designed was a large-scale study including multiple topics of analysis. One hypothesis being explored is that parents' own interest and support of science through conversations influences their children's interest in science. To gather data, we recruited families with a child between 4 - 9 years old after they had visited a new dinosaur exhibit at a local museum. We interviewed children to gauge their interest about dinosaurs and allowed the child to select one of two dinosaur toys. A week after their visit, an email was sent to the families which included a survey asking questions about post-visit activities related to dinosaurs and science. There was a total of 150 children that have participated in our study. To test the hypothesis, data analysis is currently ongoing, and we are examining parents' self-reports on their beliefs about science in general as well as how important they think science is for their child. A regression and an ANOVA is planned to be run in order to look at these variables.

University of Tampa (UT)

78. Disassembly of Cholera Toxin by Protein Disulfide Isomerase

Emily Abdelnour, Rebekah Mattson and Caitlin McKenna

Mentor: Dr. Kenneth Teter

Cholera toxin (CT) is a protein designed to cause life-threatening diarrhea. CT is classified as an AB-type protein toxin which contains multiple subunits. CTA1 is the catalytic subunit which is linked to CTA2 by a single disulfide bridge. CTB is the cell-binding pentamer. When the disulfide bond between CTA1 and CTA2 is cleaved, CTA1 remains associated with CTA2 and CTB. Protein disulfide isomerase (PDI) will recognize CTA1 and bind to it, causing PDI to unfold and expand its size. This results in CTA1 detaching from the CT holotoxin, which is required for the activation of cholera. Once CTA1 detaches, it increases cAMP levels in the host cell. The result of this signal leads to the release of chloride ions which causes the body to have diarrhea. The purpose of this project was to determine which domain(s) of PDI is necessary for the disassembly of CT. PDI has four domains and an x linker, organized as abb'xa'. Individual domains of PDI were produced with an epitope tag and purified. To verify the purification, a sample of each protein was used for SDS-PAGE. After verification, ELISA-based disassembly assays were performed to determine which specific domains of PDI disassemble CT. The results suggest that the a domain of PDI can disassemble CT. Experiments using Q3R present evidence that the b' domain is responsible for the regulation of the a domain. The results of this project can be implemented into further studies of therapeutic treatment to cure patients with this disease.

University of Central Florida (UCF)

79. House Relocation in Relation to Future Sea Level Rise in Florida

Emily Garnica

Mentor: Sarah Gamble

In Florida, the urgency of global warming is becoming more pronounced, as evident in rising shoreline levels, increased storm surges, and changes in coastal ecosystems pose heightened risks for residents. Coastal homeowners face the escalating risks of property damage, leading them to search for solutions, such as the historic practice of "house relocation." This may look like lifting your home, moving it to a different location within the same property, or transporting it to another property altogether. House relocation as a practice requires a permit, contractor, coordination with the city in certain cases, and (most importantly) time. Navigating unclear and often roundabout information about the subject, coastal property owners are left questioning how they can save their properties before it's too late. What individual and community benefits does house relocation provide historically and in context with rising sea levels? How can house relocation be used in response to rising sea levels? To answer these questions, this research project analyzes Pinellas County, Florida. More specifically, this project analyzes the current policy concerning house relocation in the major coastal cities of Pinellas County and trends of its occurrence. Then, this project identifies five case studies of homes and historic buildings being relocated in Pinellas County. Then, interviews are conducted with several officials across disciplines in connection to house relocation. Ultimately, this project reveals the shortcomings in current policy and provides alternatives for the county to increase accessibility so that homeowners are more able to plan for their futures.

University of Florida (UF)

80. Surface and Porewater Salinity Patterns Across a Coastal Landscape: Implications for Freshwater Wetland Resilience

Elizabeth Terwilliger

Mentor: Dr. Scott F. Jones

Coastal freshwater wetlands contain high species diversity and provide significant ecological services, including habitat provision for rare and listed species, nutrient cycling, and water storage. In Northeast Florida and globally, coastal freshwater wetlands are threatened by sea-level rise, saltwater intrusion, and severe storms. To manage these coastal resources into the future, resource agencies need information on the pattern of salinity intrusion over time and space; data that are often lacking. Here, we quantify baseline conditions of coastal depression wetlands across the Guana Peninsula at the Guana Tolomato Matanzas National Estuarine Research Reserve (GTMNERR). We analyzed surface water quality, soil porewater salinity, and resulting plant community diversity along transects in 9 distinct wetlands along a salt- to freshwater gradient. Surface water and soil salinity varied predictably and increased as wetlands were closer to salt marsh ecotones. Plant diversity and composition was highly variable among wetlands, with soil salinity and hydrology only partially explaining current plant distributions. Spatially-explicit baseline ecological information for GTMNERR coastal depression wetlands will support a better understanding of how these wetlands may change with shifting conditions. As the impacts of climate change continuously amplify, this information will be crucial to successfully manage for wetland resilience.

University of North Florida (UNF)

81. Enhancing Voter Equity in Volusia County Through Vote by Mail Enrollment and Reenrollment Research and Initiatives

Mahogony Jules and Kamaih Nunn

Mentor: Dr. Dorcas McCoy

This research poster presentation aims to delve into the motivations and barriers influencing registered voters' decisions to enroll or reenroll in the vote-by-mail program in Volusia County. Through the collection of qualitative data obtained from an administered survey, the study will examine factors such as convenience, safety concerns, and personal preferences that either motivate or hinder individuals from choosing to vote by mail. Additionally, the research will explore the demographics of voters who opt for this voting method and assess the impact of such choices on overall voter turnout and participation rates in elections. The primary research question driving this investigation is: What are the factors influencing voter reenrollment in the vote-by-mail program among registered voters in Volusia County, and how does this impact their participation in elections? The hypothesis posits that the decision to enroll or reenroll in the vote-by-mail program is shaped by specific motivations or barriers unique to registered voters in Volusia County. By scrutinizing these factors, the study aims to contribute valuable insights into the dynamics of voter behavior, potentially informing strategies to enhance civic engagement and electoral participation in the region.

Bethune-Cookman University (BCU)

82. Bipartite Ramsey Number of Double Stars

Gregory DeCamillis

Mentor: Dr. Zi-Xia Song

For positive integers n, m, the double star S(n,m) is the graph consisting entirely of the disjoint union of two stars together with an edge connecting their centers. Finding monochromatic copies of double stars in edge-colored complete bipartite graphs has attracted much attention. The k-color bipartite Ramsey number of a double star S(n,m) is the smallest integer N such that every k-edge-coloring of a complete bipartite graph with bipartition X,Y where |X| = |Y| = N contains a monochromatic S(n,m). The study of bipartite Ramsey numbers was initiated in the early 1970s by Faudree and Schelp and, independently, by Gyárfás and Lehel. The bipartite Ramsey number of double stars is known only for the simplest double star, a path on four vertices. Using a Turán argument in the bipartite setting, we prove that if k=2 or k > 2 and n > nm-1, then the k-color bipartite Ramsey number of S(n,m) is kn+1.

University of Central Florida (UCF)

83. Fecal Samples as a Non-invasive Measure of Inflammation

Gabriella Khazal

Mentor: Dr. Judith D. Ochrietor

Basigin is a transmembrane glycoprotein expressed on epithelial cells and blood vessel endothelial cells throughout the body. These types of cells often form barriers, like the blood brain barrier (BBB). A recent study by this laboratory suggests that Basigin gene expression on BBB endothelial cells is affected by an inflammatory stimulus. Epithelial cells of the intestines also form a barrier. It is possible that Basigin expression may be altered by inflammatory stimuli in this location as well. Because intestinal epithelial cells are shed into excrement, analyses of fecal samples may serve as a non-invasive measure of intestinal gene expression. The purpose of the present study was to determine if fecal samples can be used as a non-invasive measure of systemic chronic inflammation. We hypothesize that fecal samples accurately represent the expression of Basigin by intestinal epithelial cells and that Basigin expression in fecal samples correlates with systemic expression of the inflammatory marker trimethylamine N-oxide (TMAO). Colorectal samples from male and female mice at various post-natal ages were obtained and the contents were removed and served as the fecal samples for analyses. Fecal samples collected via the UNF Happy Gut Study (IRB # 1712254-1) were analyzed for Basigin expression and compared to the concentrations of TMAO measured using serum samples from the same participants. It was determined that Basigin in mouse feces correlates with that in mouse intestines at ages comparable to human adults. Comparison of Basigin found in human fecal samples with TMAO in the serum of those same participants did not show a correlation. Although the data suggest that fecal samples are a useful non-invasive method for measuring Basigin expression in the intestines, that expression does not correlate with systemic levels of the inflammatory marker TMAO.

University of North Florida (UNF)

84. Computational Study of the Interaction of the Antibiotic Sulfamethoxazole and 3-(2-aminoethyl)-3-aminopropyltriethoxysilane

Maxwell Sultz

Mentor: Dr. Giselle Dominguez

While bacterial infection was a near certain death sentence less than a century ago, the 1929 discovery of penicillin has brought forth both a period of treatment for bacterial illness and overuse of antibiotics as preventative medicine. Found nearly everywhere, antibiotic pollution increases the severity of hazardous algal blooms, disrupts marine ecosystems, and leads to the formation of antibiotic resistant pathogens which kill over a million people each year. Molecularly imprinted polymers (MIPs), flexible molecules used to neutralize substances, are being analyzed as a possible solution. The purpose of this investigation is to study the capacity of the monomer 3- (2-aminoethyl)-3-aminopropyltriethoxysilane to form a noncovalent pre-polymerization complex with the antibiotic sulfamethoxazole. The most stable geometries (optimized geometries), intermolecular hydrogen bonds, binding energies, solvation energies, highest occupied molecular orbital-lowest unoccupied molecular orbital (HOMO-LUMO) energies, and HOMO-LUMO energy gap were calculated by the computational method DFT (B3LYP/6-31G*). The stability of complexes at different stoichiometric ratios and the nature of interactions involved in the complex formation were investigated with the same method. In addition, the best solvent environment of a 1:1 complex was determined. For all the cases the software Spartan 20 was used. This computational study established the optimal conditions to obtain an efficient molecular imprinted polymer using 3- (2-aminoethyl)-3-aminopropyltriethoxysilane as monomer, for the remotion of the antibiotic sulfamethoxazole from contaminated waters.

Miami Dade College

85. Formation of Cage-Like Water Structures Catalyzes Organic Reactions

Jack Suggs

Mentor: Dr. Joshua Melko

The formation of cage-like water structures through hydrogen bonding is an important step in many chemical processes. These structures allow for a decrease in free energy within a system, thereby catalyzing a reaction. We present experimental data involving two molecules with trifluoro groups, one featuring an aromatic ring and a thioester. We use these molecules to show how cage-like water structures can catalyze reactions differently based on changes in the leaving group. We calculate the energy requirements of these reactions using computational chemistry methods and suggest reaction mechanisms in line with our experimental and computational results. This research is important because these water structures catalyze a variety of important atmospheric and biological reactions, and can be used as a reference for future research in those fields. Additionally, we seek to provide specific data on the potential energy surfaces of these reactions that can help elucidate more specific reaction mechanisms.

University of North Florida (UNF)

86. A Tail of Two Fishes: Exploring Population Structure in Two Fish Species Across the Galápagos Islands

Hillary Quach

Mentors: Dr. Michelle R. Gaither and Dr. Robert Lamb

The Galápagos Islands, a UNESCO World Heritage Site and a biodiversity hotspot with high levels of endemism, is home to over 440 species of fishes. Marine conditions across the Archipelago are greatly influenced by ocean currents in the region. The Pacific Equatorial Undercurrent, South Equatorial Current, and the Humboldt Current deliver waters rich in nutrients across the three major regions within the Galápagos (northern, western, and central). These conditions create a dynamic environment close to the equator, enabling diverse species to thrive in distinct parts of the Galápagos. Despite the rich biodiversity in the region and diverse oceanographic conditions, there has been limited research examining the genetic connectivity of marine populations across the Galápagos Islands. The objective of this study is to examine population structure in two fish species located across the three regions of the Galápagos: the southern white tail major (Stegastes beebei) and the blacktip cardinalfish (Apogon atradorsatus). These species differ in reproductive strategies and the length of their dispersive larval stage, offering a unique opportunity to study the interplay between ecological conditions, reproductive strategies, and population dynamics. Here we use restriction-site Associated DNA sequencing on 55 individuals from each species across the three major regions. We analyzed both neutral and potentially selective loci to provide valuable insight into how species adapt to their environment, which have important implications for conservation and fisheries management in the Galápagos.

University of Central Florida (UCF)

87. TRIP13 Is Critical for Proliferation of Peripheral T-Cell Lymphomas and Other Hematological Malignancies

Gene Pozas

Mentors: Dr. Rene Opavsky, Mr. Julian Tobon and Jana Opavska

Lymphomas, which originate from lymphocytes and are driven by oncogenic mutations, induce profound cellular transformation. These malignancies account for 20,000 annual deaths among 81,000 Americans. T-cell lymphomas (TCLs), known for their aggressiveness, limited treatment options, and low survival rates, necessitate a deep understanding of the genes crucial for TCL progression. Using gene expression profiling of ten primary TCL samples, we identified roughly 400 consistently overexpressed genes. Through bioinformatics approaches, especially the DepMap analysis, we highlighted around 80 genes critical to TCL proliferation. Based on existing literature, seven genes, including C17ORF58 and TRIP13, were pinpointed for their potential role in supporting tumor cell viability. Targeting these genes could hinder T-cell lymphoma growth. We directed our attention to the Jurkat leukemia cell line, known for its high transduction efficiency and significance in hematological malignancy research. For tracking the modified cell growth, Fluorescent Activated Cell Sorting (FACS) with co-expression of the red fluorescent protein mCherry was used. The effects of gene knockdown were gauged using cell count analyses, BrdU incorporation assays, Annexin V staining, and FACS analyses. Knockdown efficacy was evaluated via Real-time (RT) qPCR and Western Blot assays and confirmed with independent shRNA constructs. Significantly, the knockdown of TRIP13 effectively triggered apoptosis and cell cycle arrest in both PTCL-NOS and Jurkat cells. This in-depth research offers hope in identifying genes crucial for lymphoma cell survival, paving the way for potential drug development. The ultimate aim of this study is to enhance therapeutic strategies and reduce mortality rates in TCL and related lymphomas.

University of Florida (UF)

88. Gopher Tortoise Burrow Distribution Patterns in the High Human Activity Areas of Wickham Park

Riley Renfro

Mentors: Penny McDonald and Dr. Ashley Spring

Gopher Tortoises, Gopherus polyphemus, are a species of threatened chelonian native to Florida. They are known as keystone species and environmental engineers because of the 4.5 meter (15 ft) long burrows they dig. A survey done covering 0.656 sq km of high human activity areas of Wickham Park analyzed correlations between burrow location, status, size, and other factors. Out of the 165 burrows surveyed, the dimensions for active burrows were much larger (by average) than inactive ones. Furthermore, a new phenomenon (observed in three different locations around the park) was discovered. Manmade elevation areas had extremely high burrow densities, even when the habitat had sub-par food resources. These areas created Gopher Tortoise burrow hot spots and were the only locations where juvenile sized burrows were found. This information is a huge step in Gopher Tortoise behavioral analysis and has many conservation applications.

Eastern Florida State College

89. Trimethylaminuria

Hanna Yilmaz-Rodriguez and Eva Lobaton

Mentor: David Montez

For quantification of trimethylamine, there are many methods such as HPLC, GC-MS, ion chromatography, and more. The 2023 FSU iGEM team used liquid chromatography with high frequency mass spectrometry to measure the amount of trimethylamine before and after oxidation with our plasmid. We built three plasmids with three oxidation enzymes. The enzymes we found in literature to give us the best oxidation activity were the Roseovarius sp. 217 Trimethylamine monooxygenase, Rugeria pomeryoi Trimethylamine monooxygenase, and the human Flavin-containing monooxygenase 3 enzyme. The plasmid of choosing was the Roseovarius species 217 because according to literature it has the best enzymatic activity out of the three enzymes. The results of the trimethylamine oxidation assay were unclear due to human error. We assume that the plasmid with the Roseovarius sp. 217 TMM successfully oxidized TMA, but the amount of TMA oxidized is unclear.

Florida State University (FSU)

90. Herbaceous Tea for Troublesome Times: An Experimental Design to Assess Efficacy of Camellia sinensis and Matricaria recutita in the Return of Neuronal Activity of Lumbricus variegatus to Homeostasis Post-onset of Traumatic Experience

Kumush “Fatima” Ismatulla

Mentor: Dr. Jennifer Krill

This experiment investigates the neurobiological effects of a Stressful Life Event on adult Lumbricus variegatus

(earthworms) and explores the potential therapeutic benefits of herbal teas in mitigating post-traumatic physiological consequences. Traumatic experiences, defined as discrete events disrupting an individual's usual activities, have known implications on the neurobiological systems, particularly the sympathetic nervous system. Stress, a key response to trauma, activates biological markers such as conduction velocity and refractory periods. In this study, traumatic experiences are induced through vigorous shaking and exposure to bright light, simulating a Stressful Life Event. The earthworms' neuronal activities will be measured through conduction velocity and refractory periods, serving as indicators of stress. To assess potential remedies, Camellia sinensis (matcha) and Matricaria recutita (chamomile) are introduced into the environment post-trauma. Three groups—control, matcha, and chamomile—are observed over a week to evaluate the efficacy of each herbal tea in restoring neuronal activities to pre-trauma levels. Understanding the neurobiological impact of trauma on earthworms provides valuable insights into stress responses and potential long-term physiological consequences. Furthermore, assessing the effectiveness of herbal teas in promoting recovery offers practical implications for developing strategies to restore homeostasis in living organisms exposed to traumatic experiences. The study aims to contribute to the broader understanding of stress physiology and promote the exploration of natural remedies for trauma-induced neurobiological disruptions.

Florida Atlantic University (FAU)

91. How the Anatomage Table Helps Biomedical Engineering Students Investigate Cardiovascular Anatomy

Jacob Longway

Mentor: Dr. Emily Bradshaw

Anatomage is a 3-D educational tool that shows a life-sized human cadaver. This tool has been incorporated into many anatomy laboratories and surgical courses, and it has been shown to increase anatomical knowledge for these students. UCF Biomedical Engineering graduate students are required to take Biostructures I and II courses, which integrate anatomy and physiology concepts. We hypothesize that biomedical engineering students will benefit from utilizing Anatomage to investigate the cardiovascular system, specifically measuring cardiac hypertrophy. Students were surveyed about their experience using the Anatomage table. Results show that students enjoyed using the Anatomage table and it was helpful to investigate the cardiovascular system with 100% of students responding that they enjoyed visualizing organs using the Anatomage table, as well as 100% of students responding that they felt confident using the measurement tools to measure cardiovascular anatomy such as ventricular wall thickness. Overall, the Anatomage technology can help students create an engaging environment where students can investigate cardiac anatomy and pathology.

University of Central Florida (UCF)

92. LSpatial and Temporal Extension of Green's Function Using Machine Learning Methods

Hubert Pugzlys

Mentor: Dr. Chunjing Jia

Obtaining the spectrum and dynamical responses of quantum materials can be fundamental to microscopic understanding of their physical properties. For quantum magnetism, the dynamical responses of certain simple systems can be calculated analytically; however, this cannot be acquired for numerous complex many-body systems. While numerical methods, such as exact diagonalization and density matrix renormalization group, exist for such systems, the time evolution algorithms often propagate errors that depreciate the accuracy of the spectra at long time and space intervals. In addition, the computational cost of these numerical methods drastically increases with the size of the system, preventing us from studying systems approaching the thermodynamic limit. In this project, we employ machine learning algorithms to extend the dynamical spin correlations in both temporal and spatial dimensions with improved resolution. We train the models using Time-dependent Density Matrix Renormalization Group (tDMRG) simulated for XXZ model on a finite-size one-dimensional latticedata. We benchmark our machine learning obtained spin dynamical correlation results against those obtained from analytical calculations of solvable models such as the XXZ model. After assessing the accuracy of our machine learning model, we hope to analyze other strongly interacting many-body systems that do not have an analytical solution using this method. This method aims to enhance the understanding of the dynamical spin correlation with much higher resolution and for systems approaching the thermodynamic limit.

University of Florida (UF)

93. The Relationship Between Phobias and Workplace Anxiety

Taikya Ducksworth

Mentor: Dr. Mu-Tor Flood

The proposed study will investigate the relationship between phobias and workplace anxiety. There is a significant lack of research between phobias and workplace anxiety. The study proposes two research questions. Does phobias significantly predict workplace anxiety in college students at an HBCU? Do male and female college students at an HBCU have significantly different levels of phobias? The study will use quantitative research methodology and correlational research design. The sample will include 100 students at southeastern HBCU. A correlation and independent samples T-test will be conducted. It is expected that in research one, phobias will be found to be significantly related to workplace anxiety. In research question two, the expected findings are that male and female college students will be found to be significantly different in their levels of phobias.

Bethune-Cookman University (BCU)

94. Effect of Glyphosate on Development Time, Survival and Immunity in Culex quinquefasciatus.

Natalia Menendez Vargas and Jennis Soto

Mentor: Dr. Kenneth Fedorka

The off-target effects of glyphosate, the most used herbicide worldwide, are largely unknown. Previous research (Smith, 2020) has shown that glyphosate can suppress mosquito immunity and increase malarial burden when mosquitoes were exposed to glyphosate in unrealistic doses or when glyphosate was delivered in an unrealistic manner. Here we tested realistic amounts of glyphosate as recommended by the manufacturer. Throughout our experiment, we used two modes of glyphosate delivery methods: a dosage placed into the larval habitat to represent what growing up in run-off ditches would be like, as well as a spray method that simulates the spraying of the herbicide out in the field as adults. One week after adult exposure, adults were separated by sex and assayed for PO activity (an important component of insect immunity) and immune gene regulation via qPCR. We saw a significant impact of glyphosate on

mosquito development time and survival during the larval stage suggesting glyphosate is toxic at doses recommended by the manufacturer. We also showed that glyphosate exposed mosquitoes had reduced PO activity and altered immune gene regulation. Our results suggest that glyphosate induces mosquito stress which leads to slower development, lower survival, and impaired immune function. Suppressed mosquito immunity potentially leads to the increase of disease transmission to humans, but further testing focusing on the correlation between mosquito immunity and increase of zoonotic diseases should be done.

University of Central Florida (UCF)

95. Effects of Distinct Gas Conditions on Neurocognitive Performance

Christa Casey and Isabella Abad

Mentor: Dr. Rachael Seidler

Due to constraints regarding the control of the partial pressure of CO2 (ppCO2) aboard the International Space Station (ISS), ppCO2 levels largely fluctuate between 2.3 and 5.3 mm Hg. This is a significant shift from the 0.3 mm Hg on Earth. CO2 fluctuations on the ISS have been linked to headaches and impaired operational performance (Law, 2014). Other extreme work environments (like high altitude) result in hypoxic conditions, which can also decrease cognitive performance (Li, 2022). We are measuring the effects of breathing distinct gas conditions on neurocognitive performance by utilizing the Defense Automated Neurobehavioral Assessment (DANA) Rapid test battery and physiological monitoring. Twenty-seven healthy adults were studied in two eight-hour sessions and were randomly assigned to a gas breathing condition (12 hypercapnic, 15 hyperoxic), counterbalanced with an ambient air session. Subjects completed the DANA three times per session, recording their reaction time and accuracy. Cognitive efficiency is calculated as accuracy rate divided by the completion time of the task. We hypothesize that cognitive efficiency will decrease in correlation with changes in pulse oxygenation, blood pressure, heart rate, and respiratory rate between ambient and gas days. A better understanding of the effects of distinct air gas mixes on neurocognitive functions can be used to help facilitate and maintain astronaut health and performance on board the ISS.

University of Florida (UF)

96. Molecular Docking Experiments as a Predictive Tool for the Binding of Dual H4-5 Warhead Peptoid Inhibitors in the PRMT1 Active Site

Jordan Tucker

Mentor: Dr. Bryan Knuckley

Protein arginine methyltransferases (PRMTs) constitute a mammalian family of nine enzymes that catalyze the post-translational methylation of arginine residues in certain peptide substrates. These substrates include the N-terminal tails of various histone proteins. PRMTs are overexpressed in several different cancers, and their activities contribute to oncogenesis and metastasis. High PRMT1 expression is implicated in causing breast, pancreatic, and colorectal cancers, among others. Therefore, inhibitors of PRMT1 have drawn much interest as potential novel anti-cancer therapeutics. Previous work has revealed histone H4-based peptoids (poly-N-substituted glycines, a type of peptide mimetic) to be PRMT1 inhibitors. The PRMT1 enzyme is known to form a homodimer in vivo. Based on this information, it is hypothesized that a peptoid containing two chloroacetamidine warheads will be a more potent inhibitor if it can covalently bind to both active sites of the dimer. The warhead replaces the guanidinium moiety of the arginine side chain and possesses a reactive chlorine atom which forms a bond with a cysteine residue in the active site, making the inhibitor irreversible. Two peptoid sequences have been designed: Twin α, a tandem H4-5 sequence, and Twin β, a palindromic version. The current docking experiments aim to explore binding energy and efficiency as well as binding location and inhibitor orientation. The results will be verified by synthesizing both Twins and using each in an IC50 assay.

University of North Florida (UNF)

97. Strontium Nitrate for Controlling Black Algae Growth on Concrete

Nicole Clark

Mentor: Dr. Swadeshmukul Santra

The aesthetic degradation of buildings and other concrete structures due to algae growth has a considerable economic impact due to the loss of property value and the cost of upkeep. One of the most prominent of these species is Gloeocapsa sp., a cyanophyte that appears black when growing on concrete. While there are effective short-term solutions to remove black algae, a long-term solution has yet to be developed. Strontium nitrate (Sr(NO3)2) has been shown to reduce the water absorption of concrete and make it more resistant to surface abrasion, making the surface potentially less susceptible to adhesion by algae and cyanobacteria. In this study, the algacidal effects of strontium nitrate were analyzed against Gloeocapsa sp. growing on concrete. Concrete cubes were sprayed with Sr(NO3)2 solution (30%) and were inoculated with the algae for 7 days under a laminar flow hood with fluorescent lighting on a 16-hour light/dark cycle. Distilled water and a zinc oxide nanoparticle-based antimicrobial effective against algae were used as controls. The algae growth was then quantified by spectrophotometric determination of chlorophyll concentration using a standard curve . The results of this study could potentially provide a more permanent solution to this issue.

University of Central Florida (UCF)

98. Unraveling the Microbial Diversity of Ecosystems Under the Influence of Environmental Pollution

Elik Esquilin

Mentor: Dr. Tammy Laberge

Escalating pollution levels continue to inflict critical threats to the delicate balance of ecosystems worldwide, including those in South Florida. Investigating the repercussions of pollution on bacterial diversity within these waterways is paramount for devising effective strategies to combat its adverse effects. This study aims to shed light on the impact of pollution on bacterial biodiversity by analyzing environmental DNA (eDNA) extracted from water samples collected from polluted and unpolluted South Florida sites. Using advanced DNeasy PowerWater DNA extraction kits, DNA sequencing, and DNA Metabarcoding via DNA Subway, this research aims to identify distinct bacterial species from various locations and highlight significant differences in bacterial diversity and composition. Although the project and its findings are still ongoing, our current results reveal an overall impressive diversity of bacteria from all samples as a whole, with a total of 4125 DNA fragments identified. This quantity of diversity is significant, as it provides a robust dataset for our ongoing analyses. Further, our research aims to continue identifying

specific trends in bacterial abundance and distribution from the separated polluted and unpolluted sites and potentially pinpoint key indicator species that could serve as markers for pollution levels and environmental health. For instance, we have identified a bacteria commonly found in bioremediation processes in previously restored superfund sites. By comprehending the intricate interplay between pollution and bacterial biodiversity, this study hopes to contribute to the development of proactive measures aimed at mitigating the proliferation of harmful contaminants, safeguarding the integrity of South Florida's waterways, and preserving the region's diverse ecosystems.

Miami Dade College (MDC)

99. Applications of Magnetic Nanoparticles and MPI in Blood Pool Imaging

Isabelle Gerzenshtein

Mentors: Marisa O. Pacheco, Dr. Whitney Stoppel and Dr. Carlos Rinaldi-Ramos

Efficient and reliable assessment of the blood-pool is essential in the diagnosis of patients across a variety of conditions. Current imaging modalities used to visualize the blood pool as a tool for diagnosis and treatment include ultrasound, PET, and MRI. Limitations such as limited imaging depth, and long scan times continue to motivate development of novel imaging modalities. Magnetic particle imaging (MPI) is a promising tracer-based imaging modality that detects linearly quantitative signal of superparamagnetic iron oxide nanoparticles (SPIONs) due to the opposing magnetic fields generated by the instrument. MPI is well-suited to overcome constraints of other imaging techniques by allowing for high temporal resolution, nanoscale spatial resolution, and minimal tissue background signal. Blood pool imaging requires tracers with varying circulation half-lives and properties tailored for MPI signal generation, ensuring accurate detection and diagnosis. This literature review summarizes the current state of MPI as it relates to blood pool imaging, highlighting recent developments in the field of MPI tracer optimization, as well as analysis of the current state of standard imaging technologies. In short, MPI has demonstrated potential in blood imaging related to ischemia, stroke, internal bleeding, and cardiovascular complications. Future research should focus on establishing replicable synthesis methods of blood pool optimized tracers with reproducible results, as well as ensuring repeatability across animal models and instruments.

University of Florida (UF)

100. Sexual Assault Disclosure: The Role of Survivor and Disclosure Recipient Race

Nola Browne

Mentor: Dr. Amie Newins

To date, the majority of the research regarding barriers to disclosing sexual assault disclosure has utilized samples composed predominately of heterosexual, white women (Fedina et al., 2018). As a result, there is a need for research that examines sexual assault disclosure within diverse populations. Leading to the purpose of this study, which is to examine how survivors' race/ethnicity is related to whether they disclose their sexual assault to others of various races and ethnicities. The following study will recruit undergraduate college students from the UCF Psychology Department Sona System, a study recruitment platform that will answer questions related to past experiences (including unwanted sexual experiences) and who they have told about past experiences. These findings would support more diverse hiring practices in clinics, law enforcement agencies, and specific departments on college campuses in order to increase the likelihood of disclosure of sexual assault by survivors of various races and would suggest that further research examining experiences of disclosure by race may be warranted.

University of Central Florida (UCF)

101. Structural Outlook and Molecular Docking to Probe Influence of Sensory Receptor's Charged Cytoplasmic Motif Involving Ionic Interaction in Anabaena PCC 7120

Terence Oscar-Okpala and Providence Pangira

Mentor: Dr. Vishwa Trivedi and Dr. Brandon Vernier

Anabaena Sensory Rhodopsin, ASR, a hepta-helical integral membrane photoreceptor with retinaldehyde as its chromophore, is present under di-cistronic operon with another soluble protein in fresh water cyanobacteria, Anabaena PCC 7120. Besides the transmembrane atomic resolution structure of ASR [1XIO], the structure of 35 cytoplasmic residues beyond 226 [227-261 amino acid sequence] is not established. Our predicted model for this motif is to be alpha helical extension. In this study, we used systematic approach using motif structural prediction for cytoplasmic domain [DeepMind's alphaFold] of receptor and molecular docking [CABS docking] to outline the influence of this region [227-261] in interaction with cytoplasmic cognate transducer. Interestingly, the oligomeric transducer with partial structural outlook as missing key structural insight is vital in proposed protein-protein cross talk. In contrast to few known microbial sensory rhodopsin, ASR interacts with the transducer within cytoplasmic regions rather than established transmembrane region interaction towards signaling. It mimics a eukaryotic-like model in the bacterial system. We focused on presence of series of positively charged residues [7-Arg (20% of motif sequence)] and 7 polar Ser/Thr] in this cytoplasmic extension of sensory rhodopsin to potentially preferred in interaction with cognate transducer. Preliminary docking results supported our model with 10 consensus modes of sensory receptor-transducer interaction. We observed the close proximity of charged residue using distance in most consensus models. It validates our hypothesis that ionic interactions play crucial role in sensory receptor-transducer interaction. Our future plan is to attempt force computations including coulomb interactions are expressed with tools like PyTorch.

Bethune-Cookman University (BCU)

102. An Adaptive Algorithm for Detection of Aortic Flow Onsets

Mohammadreza Kazemi

Mentors: Taylor E. Baum and Emery N. Brown

Information about the cardiovascular system (e.g., duration of the cardiac cycle, heart rate, cardiac output, etc.) can be obtained from aortic blood flow (ABF) waveforms. Accurate characterization of such information requires extraction of each individual pulse from the ABF waveform. This task is difficult due to variability in ABF pulse morphology over time because of the changing dynamics of the cardiovascular system. We propose an adaptive pulse detection algorithm capable of detecting the onset of ABF pulses. By introducing an adaptive refractory period and thresholds, the proposed framework is robust to changes in ABF pulse shape and heart rate. For an ABF pulse to be detected, the amplitude of the pulse should cross a certain threshold which is determined by the algorithm based on the amplitude of the previous ABF pulses. Additionally, after each pulse is detected, there

is a refractory period reflective of the average heart rate to prevent detection of false positive pulses during the same cardiac cycle. Preliminary validation of our algorithm on ABF recordings yielded high sensitivity and positive predictability. Overall, our method provides a highly reliable and computationally efficient framework for detecting the onset of ABF pulses.

Florida International University (FIU)

103. Coming Out in the Cold: The Johns Committee, Academic Freedom, and Moral Panic in Florida

Jordan Dickens

Mentor: Dr. Steven Noll

In 1956 the Florida State Legislature formed the Florida Legislative Investigation Committee to investigate the influence of communism in state institutions. Commonly known as the Johns Committee, what followed was a reign of oppression against LGBTQ+ students and faculty at Florida universities. Building on previous scholarship, this project seeks to examine the political and cultural situation that allowed for the Johns Committee to occur, specifically the wider Red and Lavender Scares of the mid-20th century. Additionally, it seeks to explore the role that mobilization and activism played in the downfall of the Johns Committee. Through this analysis, my study finds that a number of trends, including hostility to academic freedom and increasing moral conservatism, made Florida a fertile space for the Johns Committee to target LGBTQ+ people within state institutions. Additionally, activism played a much larger role than previously believed in the Committee's downfall, as represented by the actions of individual victims and the mobilization of groups like the American Association of University Professors (AAUP) and American Association of University Women (AAUW). The study concludes with an analysis of how we can see similar trends emerging today in Florida, as represented through legislative decisions impacting academic freedom like the 2023 Higher Education Bill banning diversity, equity, and inclusion (DEI) programs at public universities.

University of Florida (UF)

104. Team Composition and Performance in a Large-Enrollment Team-Based Learning (TBL) Introductory Chemistry Course

Patria Marcano Maldonado

Mentors: Dr. Julie Donnelly and Dr. Tamra Legron-Rodriguez

It has been suggested that a lack of fidelity of implementation (FOI), or not using the "essential elements" of a particular evidence-based instructional practice, leads to less than exciting results and prevents faculty from sustaining the adoption of the practice. TBL is a method many instructors use to add more responsibility to their students, by creating accountability to know the material before class for themselves and their peers since this will affect both their individual and team performance. TBL requires four fundamental principles in order to have a functioning team: 1) teams should be formed intentionally and fixed throughout the course, 2) students should be accountable for being prepared and working effectively with their team, 3) assignments should allow both content learning and team development, 4) students should receive frequent, immediate feedback. A challenge of implementing TBL is intentionally forming heterogeneous teams in large enrollment courses. The main goal of this research is to describe how team composition affects individual and team performance. In this project, teams were categorized into different levels of heterogeneity. Some teams were heterogeneous in terms of gender and academic ability; some in terms of race/ethnicity and academic ability some in terms of gender, race/ethnicity, and academic ability; and some that lacked any kind of diversity. Our results reveal the relationship between team diversity and performance, which will inform best practices for team formation in large-enrollment courses. This will be valuable to instructors who perceive team formation as a significant barrier to implementing TBL.

University of Central Florida (UCF)

105. Robo Replacement: AI in the Workplace

Noah Rapson

Mentors: Eric Levy and Monica Escaleras

With the rise of powerful AI tools like OpenAI's ChatGPT and Microsoft's Bing AI, people are beginning to question what this means for their careers and the job market as a whole. In order to find out how people feel about the rise of AI and its implications for the job market, people across the nation were surveyed to gather their opinions on the effects of AI. A 15 question survey was created and distributed using Amazon Mechanical Turk, getting roughly ~184 responses from Americans 18 and above. The data was then analyzed with SPSS. From these responses, it was gathered that income played a role in determining the fear that people felt about AI taking their job positions, with people of higher income levels being more fearful. Furthermore, it was gathered that gender played a role in the desire to consume different kinds of AI media/art, with males being more likely to consume both AI art and media while females were more apt to consume only media. The implications of these results suggest that people are more likely to fear AI if they have higher income levels because they have more to lose to AI, while people of lower income levels do not have as much to lose. Furthermore, the data suggests that if AI companies wish to branch out into entertainment, they should go into media production as opposed to art, as results show that media has a wider appeal among males and females.

Florida Atlantic University (FAU)

106. Consider the Children: Examining the Experiences of Individuals with Siblings with a Disability

Lily Steed

Mentor: Dr. Mickey Langlais

Research on families of children with disabilities reveals that there are significant hardships associated with raising a child with a physical and cognitive disability, particularly for parents. However, it is unclear how individuals are impacted by having a sibling who has a cognitive and/or physical disability. Theoretically, when there is a child with a disability, if the family is ill-equipped to assist the child, the family may experience disequilibrium. Yet, few studies have examined these relationships. Therefore, the goal of this study is to understand the experiences of having a sibling who has a physical and/or cognitive disability, and to examine the relationship between having a sibling with a disability and interpersonal and relational well-being. This study uses a mixed-methods approach. Approximately 13 individuals who had a sibling with a physical or cognitive disability participated in one-on-one interviews. Additionally, 65 individuals who had a sibling with a disability completed an online survey. Results from the interviews illustrated two broad themes. Participants wanted more attention from their parents, but they also felt that having a sibling with a disability was a worthwhile investment in the family. Results

from the online surveys showed a negative relationship between having a sibling with a disability and mental wellbeing, as measured by depressive symptoms, anxiety, and stress. This study provides information on understudied family relationships and identifies a potential need to provide support to individuals with a sibling with a physical and/or cognitive disability.

Florida State University (FSU)

107. Immunologic and Transcriptome Analysis of Soft Tissue Sarcomas Treated With a Total Tumor RNA Nanoparticle Vaccine

Julia Jamieson

Mentor: Dr. Coy Heldermon

Introduction: Soft tissue sarcoma is a rare cancer that can result from diverse tissue types of mesenchymal origin. The five-year survival rate is 65%, and immunotherapy has emerged as a promising treatment. Purpose: The purpose of this study is to investigate the efficacy and effects of a total tumor RNA (ttRNA) nanoparticle as a sarcoma vaccine. Methods: We utilized mice modeling the spontaneous growth of sarcoma by harvesting sarcoma tumors grown on Trp53 null mice and subcutaneously implanting them into Trp53 wild type mice. The tumors were passaged through Trp53 wild type mice and the ttRNA from two tumor samples was extracted and coated in DOTAP multi-lamellar nanoparticles, then delivered via tail vein injection into mice implanted with the same tumor. Results: The treated groups had significantly smaller whole tumor growth and smaller tumor wet weights ($p<0.05$) than the untreated groups. The expression of ten cytokines revealed that IL-6, IL-12, and CCL-4 in treated mice were significantly different ($p<0.05$) than untreated mice. Samples from both tumors and non-treated controls underwent RNA sequencing, which revealed that sarcomas treated with the nanoparticle activated pathways including humoral immune response, fatty acid metabolic processes, and immune effect processes while repressing DNA repair and chromatin organization pathways. Conclusion: The ttRNA vaccine has repressed tumor growth by altering the immune response and gene expression. RNA sequencing results can identify the pathways to target in immunological therapies. Significance: This ttRNA vaccine presents a promising treatment that could be leveraged to improve therapeutic outcomes for sarcoma patients.

University of Florida (UF)

108. Navigating the Binary: How Do Transmasculine College Students Construct and Navigate, or "Do" Gender?

Kiara Santos

Mentor: Dr. Jenny Stuber

As transgender identities and the overall understanding of identity and expression evolves, it's important for the literature to evolve and grow alongside it. The idea of "doing" gender is integral to sociology as a discipline, but also to society as a whole, as it's something that everyone does, albeit subconsciously. To exist within a social institution involves taking on and "doing" these gender roles, often sticking to the norms and expected behavior, and the act of subverting expectations, such as identifying as transgender, is still a form of "doing" gender. I seek to understand how transmasculine individuals in particular "do" gender. I make the argument that, despite gender being an inherent behavior and falling under the same "transmasculine" label on paper, no two individuals will do gender exactly the same, and that transmasculinity should be seen as fluid a spectrum as gender identity itself. Using in-depth qualitative interviews from multiple college students who identify as transmasculine, both transmen and nonbinary individuals, I seek to understand the unique experiences, perception and construction of gender amongst transmascs. These findings will contribute to the small body of literature surrounding transgender students in a sociological context, and how different identities and experiences effect our understanding of "doing" gender.

University of North Florida (UNF)

109. College Student's Perception of Motivations Behind Going Into Law Enforcement

Riya Patel

Mentors: Dr. Deborah Beidel and Dr. Christine Seaver

There has been an increasingly large gap with trust between law enforcement officers and civilians, which has been further influenced by social media. Although law enforcement officers may follow a "rescue personality" (i.e., being highly dedicated, risk-taking, and desire to aid others), law enforcement officers are seen in a feared manner, which is more pronounced within urban areas than rural or suburban areas (Salters-Pedneault et alk, 2010; Wynveen et al., 2007; Benedict et al., 2000). A previous study examined the motivations behind the pursuit of careers within law enforcement, showing more positive motivators to pursue the career: job security, benefits, and the desire to aid others (Schuck, 2020). To understand how large the discrepancy is between the reality and the public view of motivators to become a law enforcement officer, two hundred undergraduate students at the University of Central Florida will take a survey about their perceptions of motivators behind pursuing a career in law enforcement. Correlations and ANOVAs will be used to measure relationships between geographical factors and past experiences with and perceptions of law enforcement. More specifically, this study hypothesized that individuals who come from urban areas will have more negative perceptions of law enforcement officers and that more positive, past interactions will be positively correlated with perceptions of law enforcement. After understanding this, there is more ability to make effective community and law enforcement changes to create a better civilian and law enforcement dynamic.

University of Central Florida (UCF)

110. Inverse Cyborgs: Machines Re-envisioning Their Selfhood, from The TARDIS to The Terminator

Cameron Myjak

Mentor: Dr. Warren Jones

Utilizing concepts of mutability, mergeability, and elasticity allows for a problematizing yet deeper understanding of Cyborgs as depicted in The Expanse, MCU, Star Trek, and the Terminator franchise. Expanding from Haraway's criteria and definition of a cyborg to Gray et al.'s Modified: Living as a Cyborg (2021) allows us to recontextualize cyborg as many other possibilities beyond the typical trope of the 1900s cyborg, where man relies on merging with machine, such as in The Expanse and Star Trek (2009) as well with Bucky's replacement arm and Steve Austin's bionics. A less commonly identified type of cyborg is that of the inverse cyborg, such as The Vision, Data, or Carl (Terminator: Dark Fate), where they have a need/desire to acquire a sense of self. Other cyborg forms such as Robot from Lost in Space (2018) or Hugh in the Star Trek Universe seek not humanhood, but rather personhood, an autonomy of existence outside of their collective machine worlds. Less anthropomorphized cyborgs

seek a singular sense of self without desiring to become human, such as the TARDIS in Doctor Who and EDI in Mass Effect. These inverse cyborgs, and others, seek to evolve or grow from their original state to become more alive, but not necessarily more human.

Eastern Florida State College (EFSC)

111. Odonata Abundance and Diversity Loss in Polluted Deland, Florida Environments

Kelly Ashley

Mentor: Dr. Haleigh Ray

Impacts of anthropogenic pollution can be seen throughout our environment by studying bioindicator organisms who are potentially affected by changing ecosystems. In Deland, Florida, multiple retention ponds exist in highly trafficked areas. These areas are highly susceptible to both physical and chemical pollution, as chemicals present nearby will be washed down into the ponds with rainfall. The invasive muscovy ducks (Cairina moschata) that inhabit local ponds likely contribute to bacterial pollution as well as they excrete Escherichia coli into water and surrounding vegetation. In contrast, many ponds in nearby Ocala National Forest are largely undisturbed by humans and we can assume are less polluted. Odonata nymphs from Deland and Ocala were collected to compare the diversity and abundance of dragonfly and damselfly genera between polluted and preserved environments. Water samples were taken and tested for levels of Nitrogen and Phosphorus, and the volume of E. coli colonies present in each water sample were estimated using coliform plates. Deland ponds had a higher abundance of damselfly nymphs, though with a low diversity of individual genera and fewer dragonflies, while the ponds in Ocala National Forest had a high diversity of Odonata genera. Water samples suggest elevated abundances of both Nitrogen and Phosphorous in the Deland ponds than those in the national forest, with high levels of E. coli present as well. These results suggest that Odonata nymphs could serve as reliable bioindicators of anthropogenic activity in these wetland habitats.

Stetson University (SU)

112. NeuroSymbolic AI: Bridging Neural Networks and Symbolic Reasoning for Enhanced AI Transparency

Matheus Kunzler Maldaner

Mentor: Dr. Damon L. Woodard

This research focuses on the integration of neural networks with symbolic reasoning within the emerging field of NeuroSymbolic AI (NSAI), aiming to address the challenge of AI explainability. The objective is to develop a NSAI model that marries the adaptability of neural networks with the logical clarity of symbolic reasoning. This endeavor is crucial for advancing towards Artificial General Intelligence (AGI) with transparent decision-making processes, vital for establishing trust in AI systems among users and stakeholders. The inspiration for this project arises from the current 'black box' nature of AI decision-making, especially in critical sectors demanding transparency, like defense and judiciary. By blending the intuitive data processing capabilities of neural networks with the explicit logic of symbolic reasoning, NSAI emerges as a promising pathway to more interpretable AI systems. The research methodology includes a comprehensive literature review on neural networks, symbolic AI, and their convergence in NSAI, with an aim to synthesize these findings into a publication. Additionally, the project involves testing and analyzing the "CLEVRER" NSAI library to compare NSAI models with traditional neural network models in terms of efficiency and explainability. A further comparative study evaluates NSAI models against traditional methods, focusing on performance metrics pertinent to explainability. Finally, the research seeks to identify specific improvement areas in NSAI, especially concerning real-world applications, and propose potential advancements in NSAI models. This study seeks to contribute to the evolution of AI towards greater reliability and clarity, addressing a critical concern in the field of modern AI applications.

University of Florida (UF)

113. Wetland Field Botany at UNF's Sawmill Slough Preserve

Max Strandes

Mentor: Dr. Scott F. Jones

The North American Coastal Plain is a recently-recognized global biodiversity hotspot, containing a unique mix of habitat types and many endemic plant species. Despite harboring large numbers of plant species, the distribution, abundance, and ecology of plants in the Southeast USA remain understudied compared to other regions nationally. Due to difficult field conditions, wetlands are especially under-sampled. Here, we leverage University of North Florida's unique access to natural habitats at the Sawmill Slough Preserve. We sampled plant community composition and abundance using 1 m2 quadrats along environmental gradients in wetlands, from deep water swamps to upland edges. We also collected voucher specimens to assist in identification and validation. Samples revealed a variable plant community, with several dominant herbaceous species occurring in patches that correlated with environmental conditions. These data help fill in the gaps of botanical information in northeast Florida, and lay the groundwork for long-term monitoring of plant community changes expected with shifting climate over the next century.

University of North Florida (UNF)

114. Hester Pulter and the Depiction of Vermin in Early Modern Culture

Nadia Nolan

Mentor: Dr. Molly Hand

This project began by taking a close look at seventeenth-century woman poet Hester Pulter's emblematic poem, "The Bishop and the Rats" (Emblem 46), as part of the larger, ongoing Pulter Project. This poem included particular emphasis on rats and other vermin to serve as metaphor. Thus raising the question: how were rats and other vermin depicted in early modern culture? I will pay extra attention to fables and emblem books which would have served culturally significant roles and were recognized by many people throughout the period. In addition to primary emblems and fables, my research will draw from contemporary sources, such as Mary Fissell's "Imagining Vermin in Early Modern England," to distinguish between our modern notion of vermin as compared to how those of Pulter's time would have understood vermin. The difference between how one in the early modern period would have thought of vermin and how we think of vermin today is an important distinction in framing our thinking about the culture connected to the depiction of such creatures.

Florida State University (FSU)

115. In My End Is My Beginning: Mary Stuart and the Foundation of Her Religious Pragmatism

Shantelle Clement

Mentor: Dr. Duncan Hardy

Mary Stuart, Queen of Scots and Dowager Queen of France, demonstrated atypical religious tolerance during the turmoil of the sixteenth-century reformations, particularly in comparison to other monarchs of the time. This research especially focuses on her upbringing in France, and how her education and those around her influenced the pragmatism and actions displayed as a monarch in Scotland until July 1565. Her youth in France and religious tolerance is a rare focus in secondary sources compared to the more dramatic events in her later life.

University of Central Florida (UCF)

116. Intraseasonal Distribution and Abundance of Pacific Hake (Merluccius productus) in the California Current Ecosystem

Madelynne Reifsteck

Mentors: Dr. Elizabeth Phillips, Julia Clemons and Steve de Blois

Pacific hake, hereafter hake, the most abundant groundfish in the California Current Ecosystem, are assessed and monitored biennially by the US/Canada PHEAT survey. This survey is conducted after the hake population's seasonal migration concludes to obtain a synoptic overview of hake distribution and biomass. However, because the survey progresses from south to north, June through August, resulting data cannot be used to assess intraseasonal movements of hake. If hake move substantially within a season, estimates of total biomass and distribution may need to be adjusted. To that end, acoustic data from the 2019 PHEAT survey were compared to acoustic data collected by the 2019 CPS survey, which uses similar methods to collect data but was run north to south along the same geographic range later in the summer. By comparing estimated relative abundance of hake, evidence of modest differences in distribution and abundance across the latitudinal range of each survey was found, with total abundance shifting north towards Monterey Bay after 50 days. Average abundance data appear more evenly spread across the latitudinal range. Hake also showed greater abundance closer to shore, though data from August indicate more even distribution across longitudinal range. The results indicate a more thorough comparison over the entire geographic range of both surveys should be conducted. Further study into intraseasonal movements of different year classes of hake, shifts in prey availability, and changing ocean conditions may clarify what drives these short-term shifts in distribution and abundance.

Eckerd College

117. The Role of the GPBAR1 (TGR5) Receptor in Bile Acid-mediated Antiviral Response Against MNV

Neha Iyer

Mentors: Joyce Morales Aparicio and Dr. Stephanie Karst

Norovirus is an enteric virus transmitted by the fecal-oral route and responsible for approximately 20% of gastroenteritis in the world, estimating to about 685 million annual norovirus cases, 200 million of which occur in children and 200,000 to pediatric deaths. Despite its prevalence, there are many underlying questions regarding their pathogenic mechanisms. Gut microbiotas are comprised of trillions of bacteria that have many effects on mammalian hosts. The Karst lab is interested in understanding these interactions on norovirus pathogenesis. Previous studies demonstrated that microbiota depletion through oral antibiotics prior to murine norovirus infection results in higher viral titers in the proximal small intestine compared to titers in control mice, indicating that gut microbiota play a protective role. However, it's unknown what role they have on MNV disease since adult mice do not develop symptoms in response to MNV infection. Our lab developed a neonatal mouse model of MNV diarrhea to test the role of microbiota in disease. Preliminary data show that MNV-infected neonates pretreated with antibiotics develop more severe diarrhea than control mice, indicating that gut microbiota play a protective role against MNV disease. Based on earlier studies, we hypothesize that microbiota-derived metabolites, namely bile acids, are responsible for this protective effect. We predict that bile acids bind their cognate receptor called TGR5 and activate an antiviral immune response. Intestinal microbiota and TGR5 activation both protect from severe MNV diarrhea, so we hypothesize that bile acids bind TGR5 and induce an antiviral response which suppresses MNV infection and disease.

University of Florida (UF)

118. Forceful Meat-Reduction Messages Affect Men and Women Differently

Natalie Clum

Mentor: Dr. Heather Truelove

Forceful, controlling messages can induce reactance leading to unintended effects on behaviors. Research has shown that meat-reduction messages that link meat to its animal origins can increase empathy and meat reduction intentions. The purpose of the present study is to determine whether men and women respond differently to a forceful request to reduce meat consumption compared to the same forceful message along with a meat-animal origins image. 911 participants (50.6% male, Cloud Research MTurk participants) were randomly assigned to receive either a forceful message requesting reducing meat consumption or the forceful message along with an image that linked meat with its animal origins (meat-animal image). Participants indicated their reactance, attitudes toward reducing meat consumption, and intentions to comply with the message. ANOVAs were run for each outcome with message type and gender as the factors. Results showed that among women, viewing the meat-animal image message led to less reactance than viewing the no-image message, but among men, viewing the meat-animal image message led to more reactance than viewing the no-image message. However, there were no differences in intentions or attitudes among men or women depending on which message they saw. Although messages that link meat to its animal origins may differentially affect reactance levels of men and women, these messages did not lead to differences in attitudes and intentions to reduce meat consumption. Overall, the addition of images that link meat to its animal origins do not make forceful meat-reduction messages more persuasive.

University of North Florida (UNF)

119. Healthcare Access: A Journey of Discovery Towards a Healthier Society

Vedaant Mutha

Mentor: Dr. Monica Escaleras and Mr. Eric Levy

Access to healthcare remains a critical issue in the United States, with disparities persisting based on socioeconomic status, demographics, and geographical location. This research scrutinizes the challenges faced by individuals in obtaining healthcare and proposes strategies to

enhance equity in the healthcare system. Utilizing the Amazon Mechanical Turk Platform, a 17-question survey was conducted sampling adults from across the United States (N=198). The survey delves into perceived barriers to accessing care, while examining the influence of socioeconomic factors and gender on healthcare accessibility. The findings elucidate that impediments such as transportation, affordability, and lack of insurance hinder individuals from receiving adequate care, with those with lower incomes disproportionately affected by transportation challenges. Furthermore, the research reveals gender-specific disparities, with women more perceptive to inequalities in healthcare access and identifying affordability as a major obstacle, while men underscore issues with public health insurance programs. These results underscore the imperative for targeted, multifaceted approaches to addressing disparities in healthcare access. Policy initiatives should focus on rendering healthcare more economically viable, improving public transportation systems, and addressing gender-specific challenges encountered by both women and men. By confronting these disparities head on, we can advance the creation of a healthcare system that is more equitable and accessible for all Americans.

Florida Atlantic University (FAU)

120. "We Won't Put a Label on It": A Qualitative Investigation of Situationships

Savanna Rehmel

Mentor: Dr. Mickey Langlais

Many relationships form by asking someone out and going on dates, until solidifying commitment to the relationship. Yet, recent studies have shown that some relationships do not form linearly, as some form casual relationships and friends-with-benefits relationships, and some actively avoid relationships, possibly meeting their intimacy needs through hookups. Researchers have advocated for research on non-traditional relationship experiences. The goal of this study is to define and describe "situationships." Participants for this study were recruited from undergraduate classes from a large southeastern university (N = 28; 71.4% female), who completed one-on-one interviews on Zoom, which lasted an average of 31.78 minutes (SD = 9.75). During the interviews, participants were asked to detail every relationship experience they have had, define situationships, and then reflect on whether any of their past relationships qualified as situationships. This information was analyzed using reflexive thematic analysis. Resultingly, a situationship is defined as a relationship with someone in which there is a romantic connection, but there is no clarity or label. Most often, it will mimic the physical aspects of dating. Common reasons for not defining the relationship include one-sidedness, imbalance in commitment, and geographic distance between individuals. Many situationships started by meeting in school or by a mutual friend, and they would go out in public together but were not public on social media. They also were likely to introduce their partner to friends and family, and they were emotionally invested and became jealous easily. Implications for romantic relationship formation will be discussed.

Florida State University (FSU)

121. Creating Gazebo Simulations to Test Various Strides for Scansorial Terrestrial Aquatic Robotic Quadruped (STARQ)

Arinzechukwu Abanah

Mentor: Dr. Jonathan Clark

The Scansorial Terrestrial Aquatic Quadruped Robot (STARQ) represents a revolutionary advancement in the field of robotics, designed to seamlessly traverse terrestrial and aquatic environments. However, the challenges associated with testing and optimizing STARQ's underwater capabilities have been hindering its full potential. In this research, we present the development and implementation of an innovative underwater simulator tailored to replicate real-world aquatic conditions. The simulator enables thorough testing and validation of STARQ's locomotion, control systems, and navigation strategies in a controlled and repeatable environment.

Tallahassee Community College

122. The Key Stressors Behind the Strain on Working Single Mothers

Siyean Paek

Mentor: Dr. Tingting Zhang

In modern society, single mothers are expected to fulfill the roles of both parents in their household, despite the rising expectation that both parents should enter the workforce and maintain a steady income while equally meeting the major developmental needs of their children. With the help of prior studies and nationwide statistics, an extensive range of physical and mental health issues faced by single mothers has been established. Some examples include facing a higher risk for cardiovascular and neurological disorders [45] and being more vulnerable to mental health disorders (e.g., depression), subsequently conforming to addictive behavior such as smoking [25, 45]. Research indicates that mental issues maintain a positive feedback loop—one exacerbating the other—along with a variety of other factors, such as social support, financial status, and work reputation. This article provides a critical review of the extant research on key stressors on working single mothers. This paper further elucidates actionable recommendations on how to alleviate key stressors to improve their overall quality of life, addresses certain literature gaps in the current body of research concerning single mothers, and suggests possible topics for future studies.

University of Central Florida (UCF)

123. Identity Within Individualist Community

Serena Zamora

Mentor: Dr. Jessica Chandras

As an Individual within an Individualist society, I felt many different external influences that altered perceptions I had about myself. Throughout my life, I've learned that other individuals also have similar internal experiences as a result of external perceptions, and/or growing awareness of a larger social world. Through Hazel Markus' work, "Culture and the Self: Implications for Cognition, Emotion, and Motivation.", I discovered the concept of self-construal's, as well as their common foundations in individualist vs collectivist societies. Self-construal's are the cognitive foundation from which an individual assesses their social position in reference to others around them; and Markus discusses two kinds, independent and interdependent, that commonly emerge in Western (individualist) and Eastern (collectivist) societies respectfully. In essence, they inform an individual about how their individuality interacts with the social world around them. I began wondering what influences specifically affected me, as well as the people around me, and how it affected the social matrix that I currently see. What kind of information were individuals using to inform themselves about the world around them? From where was this information originating? And is it really possible to divorce independent identity from interdependent identity? Through four interviews, patterns emerged about the experience of learning identity within

Individualist community. Although American Individualism incentivizes people to separate themselves from others, individuals have a hard time omitting collective definitions and relationships from their individual identities. This, in turn, often creates an internal conflict about meeting individual needs and expectations vs collective ones.

University of North Florida (UNF)

124. Lane Detection Using ANN for Self-Driving Car

Sia Rajput, Hunor Vajda, Alaguvalliappan Thiagarajan, Abelardo D. Montalvo and Aubrey Townsend

Mentors: Dr. Julio Rodriguez and Dr. Delores James

The opioid epidemic has become a national health challenge with a staggering 80,411 reported overdose deaths in 2021. Despite the excessive number of opioid deaths in Florida, the opioid reversal agent Narcan has been readily available as a lifesaving agent to restore respiratory depression. However, opioid overdose, specifically overdose on fentanyl, continues to be a burden due to illicit fentanyl abuse with many critical factors still unknown. This interdisciplinary research project seeks to uncover the intricate relationships between provoking and palliative factors contributing to reported fentanyl overdoses across Florida using machine learning models, random forests, and gradient boosting models to identify areas at high risk of fentanyl overdoses. We'll use linear and logistic regression coefficients to get a baseline of the importance of the predictors in determining fentanyl overdoses. After determining what specific factors are associated with high rates of fentanyl overdose deaths, we'll create a heatmap indicating what regions are at high risk as well as the features that could be improved to reduce the risk in particular regions. Some key factors that we'll be analyzing are police presence, income levels, traffic and road accessibility, and the quality of healthcare services. We expect to find factors responsible for fentanyl overdose deaths across Florida and identify high risk areas to permit accessibility and alleviate factors associated with fentanyl overdoses to mitigate the opioid crisis. While our work is aimed at Florida, our work can serve as a potential generalizable model at the national level provided that reliable data is available.

University of Florida (UF)

125. Tiamulin vs. E. coli: Who Would Win?

Sophia Vizoso

Mentor: Dr. Terence Crofts

Over the past few decades, there has been an increase in antibiotic resistance. This study specifically investigates Tiamulin, an antibiotic from the pleuromutilin family. E. coli isn't typically susceptible to Tiamulin, but given with an efflux pump inhibitor, E. coli's growth stops. After a functional metagenomic selection and the sequencing of resistant colonies, some mystery genes were found to give resistance. The goal in this study is to PCR amplify the mystery genes, clone them into a plasmid and put them in E. coli, and lastly, to measure E. coli tiamulin resistance.

Florida State University (FSU)

126. A Novel Combination Therapy to Target NSCLC CSCs

Skyeler Klinge

Mentor: Dr. Verline Justilien

Lung cancer is the leading cause of cancer deaths worldwide. Non-small cell lung cancer (NSCLC) is further classified into lung squamous cell carcinoma (LUSC), lung adenocarcinoma (LUAD), and large cell carcinoma. While advancements in treating LUAD have emerged, treatment options for LUSC, constituting about 30% of cases, remain limited. NSCLCs contain a subpopulation of cells with cancer stem cell (CSC) traits, influencing tumor progression, metastasis, and resistance to treatment, deteriorating patient outcomes. Our focus is on developing therapies that effectively target CSCs in LUSC to achieve lasting treatment outcomes. Our research has identified Protein Kinase C iota (PKCI) as an oncogene involved in LUSC with tumor-specific gene amplification. Mechanistically, PKCI regulates the Hedgehog (Hh) pathway, sustaining a CSC phenotype in LUSC cells. We've discovered that the FDA-approved drug Auranofin (ANF), targeting PKCI oncogenic signaling, and the Hh pathway inhibitor LDE225 work synergistically, inhibiting the growth of PRKCI-amplified LUSC CSCs in vitro and in vivo. Our current study aims to explore whether this combination therapy can target LUAD and LUSC CSCs without PRKCI amplification. We hypothesize that ANF and LDE225 will block the growth of LUSC PRKCI-amplified CSCs reliant on PKCI-Hh signaling for their CSC phenotype. We'll conduct cell viability, sphere formation, and colony formation assays to evaluate the impact of ANF and LDE225 on the CSC phenotype of NSCLC cells lacking PRKCI amplification. These studies will guide the development of a novel therapy for eliminating LUSC CSCs and identifying patients most likely to benefit from ANF and LDE225 combination therapy.

University of North Florida (UNF)

127. A Comprehensive Study Examining the Prevalence of Postpartum Depression Among Incarcerated Women

Sujehnna Walker

Mentor: Michael Rovito

Postpartum depression poses profound effects on the health of mothers, significant concerns for infants, and influences maternal well-being and child development. This study aims to examine the prevalence of postpartum depression among women who have given birth within the last twelve months, comparing those who have experienced incarceration to those who have not. The stigma surrounding mental health has led to an exacerbated impact on women who struggle with postpartum depression, hindering access to essential treatment and care. For incarcerated women, with pre-existing health problems and increased vulnerability, their challenges may be more pronounced which can amplify mental health concerns. Given the multitude of hormonal and physiological changes during pregnancy, the mental health of mothers may be overlooked, potentially leading to long-term consequences. The primary objective of this retrospective cohort study is to determine if there is a significant difference in the prevalence of postpartum depression between women who have been incarcerated and women who have not and hypothesizes that circumstances faced by incarcerated women during pregnancy will contribute to an elevated risk of postpartum depression. The study samples from a survey of 200 women, half in the exposed group (incarcerated) and half in the non-exposed group (non-incarcerated). Survey instruments include an initial screening survey and baseline survey with a possible third survey, the PHQ-9, used based on the candidate's answer regarding previous diagnosis of postpartum depression. Statistical analysis of the assessments will be employed to conclude whether associations exist and contribute meaningful insights to the existing body of knowledge.

University of Central Florida (UCF)

128. The Role of a Registered Nurse in Patient Understand of Glioma Prognosis

Payton Harris

Mentor: Dr. Lauren Holloway

Gliomas are the most common primary brain tumors diagnosed and manifest various symptoms (Chen et al., 2019). Gliomas have no cure but are managed with multimodal treatments, including surgical resection, radiation, and chemotherapy. The patient's prognosis severely decreases following the diagnosis of a grade IV glioma as defined by the World Health Organization. The patient's understanding of their prognosis is essential for deciding how to proceed with care. The provider and healthcare professional's role is to support and respect the patient throughout the glioma treatment. Nurses should understand how this diagnosis will significantly impact the patient, their caregiver, and their daily quality of life and be equipped to support and educate patients during difficult periods.

Jacksonville University

129. Trends in Xylazine-Involved Overdose Emergency Medical Services Dispatches in the United States, 2022-2023

Portia Ludwig

Mentor: Dr. Linda B. Cottler

Background: Xylazine, a veterinary sedative, has infiltrated the United States illicit drug market and is increasingly observed in drug overdoses. As an emerging substance, there is a lack of data on the characteristics of populations exposed to xylazine.
Methods: Data on xylazine-involved drug overdoses comes from the National Drug Early Warning System partnership with the emergency medical services (EMS) data-sharing platform biospatial.io. Records of overdose EMS dispatches with xylazine-related terms used in the electronic patient care report were extracted from 43 states between September 1, 2022 and September 30, 2023 (n=249). We examined how counts of xylazine-involved overdose dispatches changed monthly and used available patient demographic and geographic information to describe the population of those exposed to xylazine.

Results: A steady increase in xylazine-involved overdose dispatches was observed since September 2022, with the highest count of xylazine dispatches recorded in August 2023 (n=50). Based on available patient demographic information, the majority of xylazine-involved overdoses occurred among males (57%), those aged 30-39 years (41%), and White individuals (63%). Six states recorded >10 xylazine dispatches, 83% of which were located in the Northeast. Pennsylvania reported the highest total count of dispatches involving xylazine (n=69).
Conclusions: Although EMS provider data is limited in capturing the full involvement of xylazine in overdose incidents, the changing illicit drug market and emergence of adulterants such as xylazine underscore the importance of using real-time data to understand the characteristics of those exposed to xylazine. Results can inform future research and harm reduction efforts.

University of Florida (UF)

130. Validation of the Multi-Channel Dilution Analysis Method Using Different Sample Matrices and Certified Reference Materials

Taylor Dessoffy

Mentor: Dr. Willis Jones

Multi-channel dilution analysis (MCDA) is a novel analytical calibration technique based on the standard dilution analysis (SDA) method. Like SDA, MCDA requires the preparation of only two solutions: the first containing 50% of a sample solution and 50% of a standard solution containing analytes of interest, with the second consisting of 50% of the same sample solution and 50% of a blank solution. MCDA automatically prepares dilutions of the standard portion of the first solution by splitting the solution flow through three tubing channels of various lengths and diameters, creating a stairstep of signal levels as portions of solution reach the instrument at different points in time. The sample matrix (everything present in the sample that is not desired analyte) can significantly alter traditional calibration results. As each solution contains an identical amount of the sample of interest, the sample matrix is kept constant, resulting in a power matrix effect correction. The preparation of samples of known concentration in a clean water matrix provided high accuracy and precision, establishing proof of concept for the MCDA method. Additional proof of concept has been achieved by analyzing solutions of known concentration in complex sample matrices such as ethanol, concentrated acid, and high salt. Further validation of the MCDA method was obtained by testing real-world samples such as vitamin tablets and red wine, as well as analyzing certified reference materials, which contain a suite of analyte metals at precisely known trace level concentrations.

University of North Florida (UNF)

131. Increasing Low-Risk Ergonomic Positioning Using Video Feedback

Rachel Warren

Mentor: Dr. Nicole Gravina

Approximately 1.7 billion people suffer from musculoskeletal disorders as a result of repetitive movements, force, or awkward positioning. Often, these injuries are caused or exacerbated by work conditions, and susceptibility to work-related musculoskeletal disorders (WRMSDs) increases with prolonged exposure to risk factors including poor ergonomic posture. Reducing the prevalence of WRMSDs is of critical importance and can be facilitated by systematically decreasing risk factors such as poor postural behaviors. This study investigates the effects of video feedback on ergonomic positioning of the neck during a seated fine motor task. Ten participants were recruited through the University of Florida's Department of Psychology to participate in a single-subject multiple-baseline video feedback intervention. During the experiment, participants completed approximately forty two-minute trials of the fine motor task. The primary dependent variable was participants' neck positioning, which was evaluated as either high risk, medium risk, or low risk by Soter Task ergonomic software, an artificial intelligence technology. During the video feedback intervention, participants were shown videos of their own previous performance trials, with neck posture lines in red, yellow, and green to represent high risk, medium risk, and low risk postural behaviors, respectively. Video feedback was first provided after every trial, and then thinned to every third trial and finally every fifth trial. Results demonstrate that video feedback increased the percentage of time spent in low-risk neck positions, and that these effects remained throughout feedback fading.

University of Florida (UF)

132. Assessing Below Ground Response of Semi-Native and Improved Grazing Pastures in Central Florida Due to Precipitation Variability

Dunnel Fennell

Mentor: Dr. Jiangxiao Qiu

Grasslands are an important agricultural ecosystem which provides pastures for cattle grazing, food production for an increasing population as well as economic growth. The biodiversity of grasslands is vulnerable to be reduced through practices used by the agricultural industry, climate change, and eutrophication. To reduce the trade-offs of agricultural practices and to provide a multifunctional use of the land holistic approaches of agroecosystems were implemented in this research project. The objective of this study was to assess the below ground responses of the subtropical grazing grasslands agroecosystem to precipitation treatment and land management of improved pastures (non-native C_4forage Bahiagrass, Paspalum notatum), and semi-native pastures (mixture of native Andropogon spp., Panicum spp. and non-native C4 grasses Bahiagrass) at Buck Island Ranch in Central Florida. The improved pastures were N-fertilized and semi-native pastures were not fertilized. Soil samples were collected at a depth of 0-15cm from each pasture to assessed for pH, soil moisture content, along with the decomposition of organic matter. The data obtained was processed and analyzed in Microsoft Excel. The study shows the soil pH of the improved pastures was in range to allow for nutrients and optimal forage. Soil moisture was higher in the semi-native pastures, while the organic material was less in the improved pastures.

Miami Dade College

133. A Reinforcement Learning Method for the Inverse Acoustic Scattering Problem for a Sound-Soft Obstacle

Tina Tran

Mentor: Dr. Carlos Borges

The mathematics of scattering theory has contributed to the creation of imaging technology such as radar, sonar, and MRI. Recent advancements in Artificial Intelligence have catalyzed research into improving image reconstruction using methods such as reinforcement learning. Finding a cost-effective method could improve accuracy and reduce costs of imaging technology. My research focuses on expanding upon a reinforcement learning method that optimizes sensor placement for image reconstruction. Prior research efforts have yielded a reinforcement learning program to optimize sensor placement if waves pass through the target object unchanged. My research will attempt to expand this model for sound-soft objects, which reflect some of the incoming waves. Preparatory steps include first testing star-shaped objects, which have a finite dimensional representation due to the number of coefficients in the Fourier series representing the radius. This aspect makes star-shape more complex than geometric to construct. After testing star-shaped objects, I will move forward with implementing the sound-soft boundary conditions into the model. Expanding the current reinforcement learning model or creating a new model able to efficiently reconstruct sound-soft objects will enable this program to be a cost-efficient solution in settings where a high-definition image of a sound-soft object is necessary. Many situations in the medical field such as the process of tumor analysis require high resolution reconstruction of domains. MRI technology equipped with a reinforcement learning algorithm will enable faster generation of high-definition images with accuracy similar or better than current methods and reducing the cost of MRI scans for patients.

University of Central Florida (UCF)

134. Physician Assisted Suicide: The Morality of Restricting Access from Mentally Ill Patients

Trish Nguyen

Mentor: Prof. Jonathan Matheson

This paper will argue that it is morally permissible to deny mentally ill patients access to physician-assisted suicide (PAS). PAS is a self-administered end-of-life measure for patients suffering painful and terminal illnesses—it is often considered to be a "mercy killing" or euthanasia. While the morality of PAS has been questioned on its own, it is important to make a distinction between patients who can make the decision of self-administering PAS. Some mentally ill patients are affected by cognitive and decision-making issues, restricting their access to PAS ensures responsible administration. Investigating this facet of the subject provides a nuanced focus to PAS and to what extent its availability should be limited. Joshua James Hatherley's "Is the exclusion of psychiatric patients from access to physician-assisted suicide discriminatory?" concludes that restricting access from mentally ill patients is immoral and discriminatory as mentally ill patients have as much right to end their suffering as do patients suffering from somatic illnesses. This paper will argue against Hatherley's article and conclude that restricting access of PAS from mentally ill patients is morally obligatory.

University of North Florida (UNF)

135. Investigating the Impact of FtsQ on FtsZ Filament Curvature in the Mycobacterium tuberculosis Divisome

Ziya Tian

Mentor: Dr. Yan-Yan Hu

Mycobacterium tuberculosis is the causative agent of tuberculosis (TB), a disease that affects a quarter of the world population and caused 1.6 million deaths in 2021 alone. The rise in multi-drug and extensive drug-resistant TB cases underscores the urgent need for novel therapeutic strategies. Understanding the intricate cellular processes of M. tuberculosis division is critical for identifying potential drug targets. The cell division process is initiated by FtsZ, which forms the Z-ring at the division site through GTP-dependent polymerization and interacts with various other proteins, including FtsQ. Recent evidence suggests direct interactions between an amphipathic helix in the otherwise disordered N-terminal (NT) of FtsQ and the GTPase domain of FtsZ monomers, potentially influencing FtsZ polymerization. This study aims to characterize the effects of FtsQ NT on FtsZ polymers and determine the atomic structure of the QZ complex. We hypothesized that FtsQ NT induces curvature in FtsZ filaments due to clashes between FtsQ and FtsZ protomers in straight filaments. The GTPase domain of FtsZ (residues 1-312) and FtsQ NT (residues 1-99) were each separately expressed and purified, then combined at various molar ratios in in-vitro polymerization reactions. Using negative-stain transmission electron microscopy (TEM), we revealed that FtsQ NT altered the shape and curvature of FtsZ filaments at a 3:1 Q:Z molar ratio. Atomic-level structure determination with cryo-EM is currently in progress. These findings highlight the QZ interface as a prospective target for cell-division inhibitors, offering promising avenues for combatting TB.

Florida State University (FSU)

136. Unveiling a Mystery: Investigating the Chlamydia ipaM Gene Using the Model Organism Drosophila

Vedwattie Ramdeo

Mentor: Dr. George Aranjuez

In today's society, Chlamydia is becoming an increasingly serious concern. It is interesting to note that while the ipaM gene has never been studied in Drosophila, it is involved in Chlamydia's life cycle. In this course, we are looking into different Chlamydia effector genes, specifically ipaM, to clone it into a transformation vector to produce transgenic Drosophila. With the collected DNA, a double digest was performed for the plasmid and PCR product. The ligated DNA will then be E. coli transformed and we intend to troubleshoot this. We are awaiting further data from observations of transgenic Drosophila with the cloned ipaM gene. Our expected results will bring light to ipaM's function in relation to Chlamydia.

University of Central Florida (UCF)

137. Impact of Nitrate to Phosphate Ratios on Growth of the Red Tide Dinoflagellate, Karenia brevis

T'Ahja Laing

Mentors: Dr. Christina Batoh and Dr. Jackie Esquiaqui

The Gulf of Mexico generally experiences annual blooms of the toxic dinoflagellate, Karenia brevis. These red tide events have been implicated in mass mortalities of marine life. They also result in closures of economically important shellfisheries and impact human health when toxins become aerosolized by wave action. Thus, it is important to understand the factors controlling the growth of K. brevis. Nitrate and phosphate are limiting nutrients for phytoplankton growth. When concentrations of these nutrients are enhanced in marine systems via natural (i.e. upwelling, storms) and anthropogenic (i.e. stormwater carrying fertilizer) inputs, algal blooms can be stimulated. In addition to nutrient concentration, the overall ratio of nitrate to phosphate can impact algal growth. In the present study, growth of K. brevis was measured under various nitrate to phosphate ratios. Compared to K. brevis grown in nutrient replete control setups, algal growth was only reduced in treatments where one nutrient (either nitrate or phosphate) was entirely absent. Notably, though, K. brevis in treatments containing non-limiting phosphate but no nitrate, had reduced growth rates compared to treatments of non-limiting nitrate but no phosphate. This aligns with the current understanding that nitrogen is more limiting to algal growth than phosphate (which tends to be enriched) in coastal waters. Efforts to manage coastal blooms of K. brevis should focus on reducing nitrogen loads to this ecosystem.

Palm Beach Atlantic University

138. Effects of Polysubstance Use on Cocaine Use and Relapse in Sprague Dawley Rats

Taylor Thomson

Mentor: Dr. Barry Setlow

Polysubstance use (PSU), or the ingestion of multiple drugs of abuse simultaneously, is commonplace, with cannabis and cocaine being among the most prevalent combinations. To better understand this phenomenon, we have developed a rodent model of cannabis-cocaine PSU based on the most common patterns of human PSU determined as part of a collaborative NIDA-funded project with UF epidemiologists. Sprague Dawley rats were implanted with jugular catheters and trained in intravenous cocaine self-administration (SA) sessions in standard operant chambers equipped with two switches. Pressing the active switch resulted in an intravenous infusion of cocaine accompanied by audiovisual cues. Rats were assigned to a smoke condition and, for 5 weeks (5 days/week), placed in a smoking machine that delivered either standardized cannabis smoke, placebo control smoke, or clean air. The rats underwent SA sessions once a week following smoke or clean air exposure. Rats in the cannabis smoke group self-administered less cocaine compared to the controls during these sessions. They then underwent a 30-day abstinence period and no longer received either drug, followed by a relapse test in which they were placed in operant chambers; a response triggered audiovisual cues but no cocaine delivery. During this session, the cannabis group exhibited elevated cocaine-seeking compared to the controls. The results show that although cannabis co-use attenuates cocaine intake, it produces heightened cocaine-seeking in abstinence in the presence of cocaine-paired cues. These findings emphasize the importance of working with animal models that reflect real-world patterns of drug intake.

University of Florida (UF)

139. CDKN2A/B Homozygous Deletion in IDH-Mutant Glioma Promotes Vascular Formation in Vitro

Zaima Aline

Mentor: Dr. Shannon Fortin-Ensign

Isocitrate dehydrogenase (IDH)-mutant gliomas, a group of brain tumors spanning grades 2 to 4, pose a formidable challenge with limited treatment options. While they exhibit a somewhat better prognosis than IDH-wildtype counterparts, grade 4 IDH-mutant gliomas, primarily affecting young adults, have a discouraging survival rate of only 3-5 years. A pivotal event in their molecular evolution is the homozygous deletion (HD) of CDKN2A/B, encoding cell cycle regulators p14ARF, p15INK4B, and p16INK4A. However, the biological consequences of CDKN2A/B HD and potential therapeutic avenues remain poorly elucidated. We therefore sought to investigate the functional impact of CDKN2A/B HD by generating tet-inducible re-expression vectors for p14, p15, and p16 in grade 4 IDH-mutant PDX models. From a cohort of 42 image-guided intratumor biopsy specimens representing 13 IDH-mutant patient tumors we identified several candidate genes/pathways differentially expressed across CDKN2A/B status including regulators of embryonic development, extracellular matrix organization and regulation of vascular processes. Using our IDH-mutant glioma PDX lines we then investigated the functional role of p14, p15, and p16 in models of angiogenesis. While conditioned media (CM) from the cell lines did not impact endothelial cell proliferation, we found CM from lines with re-expression of p14, p15 or p16 effectively hindered the formation of capillary like structures compared to parental lines. Overall, these data support a role for enhanced angiogenesis in the progression of IDH-mutant gliomas to aggressive grade 4 tumors and support further study of these pathways for novel therapeutic target identification.

University of Central Florida (UCF)

140. Exploring the Interplay: Oral Microbiome Dynamics and Cardiovascular Well-being

Jesus Hernandez

Mentor: Dr. Mintoo Patel

The human oral cavity contains microbial habitats including the tongue, hard palate, soft palate, gingiva, and oral

pharynx. It houses the second most diverse microbiome in the body and plays a significant role in health and disease. Healthy oral microbiome wards off the infections and prevents oral diseases, aids in digestion by break down of food particles in mouth, contributes to immune system, and produce essential nutrients such as vitamin K. Disruption (dysbiosis) of the oral microbiome can stem from deficient oral hygiene, diet, behavior, or changes in anatomy and physiology, which consequently expedites the development of a plethora of oral as well as systemic diseases including cardiovascular diseases, a global burden serving as the leading cause of death worldwide. Tongue dorsum is a significant oral cavity site harboring unique microbial community that can influence the oral and systemic health including cardiovascular well-being. In this project, we characterized the microbiome of the tongue dorsum coating from four healthy young individuals and studied the significance of the microbial signature with properties correlating with cardiovascular health and disease. Presence of nitrate reducing bacteria on the tongue has been shown to link with blood pressure regulation, by the way of nitric oxide production, which dilates the blood vessels to improve blood flow. Maintaining good oral hygiene and consuming a diet rich in nitrates is recommended for overall health and potential benefits to cardiovascular health.

South Florida State College (SFSC)

141. The Potential Role of the Molecular Chaperones in Glycosylation Deficient Zebrafish

Zachary Jones

Mentors: Dr. Marie Mooney and Dr. Szymon Ciesielski

Congenital Disorders of Glycosylation (CDGs) are rare diseases caused by mutations of genes responsible for the addition/removal of carbohydrate attachments to proteins. The addition/removal of these carbohydrates is necessary for the correct folding of the protein. When a mutation affects this process, misfolded protein aggregates can form which are speculated to be toxic to the cell for reasons still unknown. Manifestations of CDGs can be seen in a wide variety of organisms including animals. Some common symptoms of CDGs observed in humans are failure to thrive and developmental delay; however, there are more symptoms that can manifest depending on the type of CDG present. Previous studies have tried to understand why these toxic aggregates form and how to prevent them in various eukaryotic cells; however, none effectively ameliorate CDG symptoms. In this project, we take an orthogonal approach by targeting the aggregates themselves with molecular chaperones like Hsp70 along with its co-chaperone Hsp40 within the species Danio rerio (Zebrafish). These chaperones are involved in the quality control mechanism of proteins in cells by refolding misfolded proteins to achieve the native structure or by facilitating the degradation of the protein.

University of North Florida (UNF)

142. Seroprevalence of Babesiosis in Florida Shelter Dogs

Saachi Sharma

Mentors: Dr. Sai Lata De and Dr. Rhoel Dinglasan

Babesiosis is a tick-borne disease caused by the protozoal parasite Babesia. Transmission of Babesia in Florida can be rampant due to canine bites between shelter dogs and their neglected conditions. It is important to study the seroprevalence of Babesiosis because it can impact other species, potentially risking the robust cattle industry and human health. The aims of this study are (1) to assess the seroprevalence of Babesiosis in Florida shelter dogs, (2) to evaluate whether breed type (i.e. pitbulls) is associated with elevated risk of exposure, and (3) to study whether there is a correlation between B. gibsoni seroprevalence and tick endemic regions. Canine blood samples were obtained from various sampling sites in Florida to study associations with I. scapularis (deer tick) distributions. Antibody titers were determined against B. gibsoni TRAP antigen using an indirect enzyme-linked immunosorbent assay (ELISAs). Dogs from all sites have some background for Babesiosis. Levy county is a tick endemic region, thus contributing to its highest median plasma endpoint titer. Northern Florida counties (Levy) are tick endemic and therefore have greater seroprevalence in comparison to southern Florida counties (Hillsborough, Miami-Dade). Tick distributions may be a contributing factor to Babesia exposure. Counties with the highest percentage of pitbulls had no impact on the endpoint titers, suggesting breed type may not be associated with elevated risk of exposure. This study is limited in that a few counties had low sampling power. In the future, we will increase the sample size and run qPCR on high titer samples.

University of Florida (UF)

143. Anticancer Agents and Peptidomimetics: Pharmacological Biosynthesis

Abigail Baker

Mentor: Dr. Ralph Salvatore

Numerous physiological and pathological stimuli induced programmed cell death (apoptosis), and the Bcl-2 family of oncoproteins plays a central role in this regulation. Proteins such as Bcl-2 are known to inhibit apoptosis, and uncontrolled cell survival due to Bcl-2 overexpression has been proven to make a significant contribution to tumor formation. With this in mind, we have directed our attention toward the synthesis of a variety of non-peptide inhibitors of oncoproteins Bcl-2. Recently, we have disclosed efficient protocols leading to the synthesis of carbamate, polyamine, azadepsipeptide, and dithiocarbamate peptidomimetics, respectively. This study is now being extended to the synthesis of other de novo analogs with similar structural features to natural proteins, that may interrupt protein-protein interactions and furthermore, may serve as potential therapeutics in clinical chemotherapy. Utilizing our aforementioned protocols, our research is now being employed for the synthesis of other interesting novel artificial biomolecules containing different scaffolding, such as phosphonopeptides and selenopeptides which also hold interesting biological activities.

Southeastern University

144. Breaking Stigma Through the Use of Artfully Designed Prosthetics

Viviana Arroyo Rodriguez and Nico Chen

Mentors: Dr. Albert Manero, John Sparkman, Peter Smith and Matt Dombrowski

Approximately 5 in 10,000 children have a limb difference (Vuillermin et al., 2021). Societal stigmas surrounding disabilities can leave children feeling hesitant and uncomfortable. In some cases, electing to wear a prosthetic device can act as a source of internal strength and confidence. Frequently, prostheses aim to replicate anatomical appearance but fall victim to Mori's Uncanny Valley, causing more human-looking robotics to be met with distaste (Mori, 1970). To circumvent that and present opportunities for personal expression and reversal of stigmas, this research utilizes art to elicit positive emotions from users of custom cosmetic prostheses. The artwork

used in this proposal takes the form of two distinct cosmetic sleeves, utilizing ethically trained AI to streamline color palette conceptualization. The first uses a vibrant, saturated triadic color scheme to accentuate the angular topology of the design. Using different values and chroma of the primary colors, pink, blue, and yellow come together to create a harmonious, playful, and energetic design. Black-light finish will be applied to enhance the visual dynamics. The second cosmesis follows a softer design, using gradients to evoke a sophisticated and regal impression. Analogous colors are used ranging from orange to green producing a design that contrasts the mechanized essence of the first sleeve. To increase visual interest on a simple topology, light-sensitive color-shifting paint will be applied as a dynamic finish. Showcasing these new artistic effects and the opportunities for personal expression demonstrates how these artful prosthetics can be used to compete against stigmas and improve mindsets.

University of Central Florida (UCF)

145. Investigating the Relationship Between Interferons and Cryptosporidium parvum Infection of Intestinal Epithelial Cells

Victoria Karaluz

Mentors: Dr. Zina Uckeley, Dr. Megan Stanifer and Dr. Steeve Boulant

Cryptosporidium parvum (C. parvum) is a eukaryotic single-celled enteric pathogen that causes intestinal inflammation and diarrhea and can cause potentially life-threatening disease in immunocompromised individuals. C. parvum enters the intestinal tract by ingestion and invades intestinal epithelial cells (IECs). Interferons (IFN) are cytokines produced by IECs as the main defense against viruses and other pathogens. IFNs are produced in response to the detection of a pathogen and upon secretion and binding to their receptor, IFNs facilitate the expression of IFN stimulated genes (ISGs) that are key to the cellular defense. The IFN response to C. parvum and its interactions with IECs is not well understood. This project aims to further understand the complicated interactions between host cell IFN and C. parvum infection susceptibility. C. parvum replication in IECs was measured in IFN KO cell lines, IFN receptor KO cell lines, and IFN treated cells. We found that C. parvum infection of T84 IECs induces production of IFNL2/3, but not IFNL1 or IFNB1. However, IFNL2/3 pretreatment of wild type cells did not reduce infection burden, while IFNB1 pretreatment leads to an increase in C. parvum replication while greatly increasing ISGs. These results point to an anti-infection role of IFNL2/3 and pro-infection role of IFNB1 in C. parvum infection. We aim to further investigate the mechanism by which different types of IFN interact with C. parvum to influence infection. This research provides a broader understanding of the complex interactions between IFNs and eukaryotic pathogens within the diverse gut microbiome.

University of Florida (UF)

146. Fractionation and Antioxidant Analysis of Brazilian Peppertree (Schinus terebinthifolius) Bark Extracts

Javier Amaya

Mentor: Dr. Maria Pina

Medicinal plants have been demonstrated to have health benefits due to their high antioxidant levels, which inhibit destructive free radicals. Overexposure to these free radicals can lead to oxidative stress causing chronic diseases such as cardiovascular and respiratory disorders, and cancer. The present study features an analysis of the antioxidant properties of bark extracts from the Brazilian peppertree tree (Schinus terebinthifolius). Previously, we reported our novel discovery that Schinus terebinthifolius bark extracts inhibit breast cancer cell migration in vitro (Tapanes-Castillo et al., 2023). Crude bark extracts, prepared with 50/50 ethanol-water solvent, were separated into different fractions using silica gel column chromatography. A wet column was employed. Fractions were then tested in cancer cell-based cytotoxicity and migration assays. Fractions which retained antimigratory activity in previous tests were replicated for continuation of the study. The bark material was collected from the urban forest of St. Thomas University, dried at 37Âº C, ground, and macerated in Ethanol 100%, EtOH/Hexane 90/10, and EtOH/Hexane 80/20. The antioxidant activities of phenols were determined using Folin-Ciocalteu reagent, DPPH free radical scavenging activity, and Ferric Reducing Antioxidant Power (FRAP). The three extracts were tested in triplicate. Data suggest the highest concentration of phenolic compounds were in extracts with the highest polarity solutions. The Brazilian peppertree is a natural source for medicinally active compounds.

St. Thomas University (STU)

147. Card-Carrying Memories: Using Trading Card Games to Promote Science Retention

Ariana Harris, Jessica Gaehle, Margaret Clark, Eric Kenton and Kristen Pujol

Mentor: Dr. Patrick Smith

Science literacy entails a comprehension of vocabulary that may be problematic for students with weaker science backgrounds (e.g., Ramos et al., 2016). While textbooks and lectures often deliver this vocabulary, younger generations of students are gravitating towards non-traditional sources of learning for engagement value (Odom et al., 2015; Zukswert et al., 2016). Trading cards have become a popular way to transfer knowledge due to engaged repetition toward visually targeted features (see Blume, 2019) and they have begun to be explored for pedagogical value (e.g., Gutierrez, 2014). The purpose of the current study was to assess how trading cards can be used to effectively retain complex science vocabulary. 82 undergraduates were given a pretest to assess preliminary knowledge of different structures within the brain (via highlighted images). They were then shown a 20-minute video overview on the brain and were given a similar posttest. Participants were assigned to either a control trading card group (whose cards contained highlighted brain regions and their names) or a phonetic card group (whose cards included pronunciations of the names) to play a matching game with the cards for three weeks. After three weeks, participants were given an immediate posttest followed by another two weeks later. Results revealed that both groups recalled significantly more brains structures after using the cards (ps < .05), but the phonetic group showed higher recall in a short-term but long-term test. This would suggest that trading cards, when repeatedly used, aid students in learning complex vocabulary needed for science literacy.

Florida Southern College (FSC)

148. Phenotypic Characterization of Staphylococcus aureus Strains from Carriage and Disease Among Pediatric Populations

Sachitaa Senthilkumar

Mentor: Dr. Taj Azarian

Staphylococcus aureus (SA) is a gram-positive bacterial pathogen that is associated with invasive and non-invasive

infections in humans and is a leading cause of healthcare-associated infections. SA is carried asymptomatically in approximately 20-30% of the populations with the anterior nares the most common sight of colonization. The bacteria often cause skin and soft tissue infections as well as more severe infections such as osteomyelitis, endocarditis, and bacteremia. SA strains are diverse, possessing a variety of virulence and antibiotic resistance determinants that make them more likely to cause disease and difficult to treat. In hospital studies, Î²-hemolysis and biofilm formation are phenotypic properties that present a viable way to characterize the virulence of encapsulated SA strains. Here, we aimed to determine whether phenotypic characterization of SA strains from carriage and disease among pediatric populations differ between pre- and post- COVID-19 pandemic periods. To this end, we obtained historical SA isolates collected from carriage and disease among patients seeking care at a children's hospital in Orlando, FL from November 2019 to April 2023 as part of an ongoing biobanking project. SA was isolated using BBL CHROMagar selective media and confirmed using BBL Staphyloslide Latex Test. One SA isolate from each positive participant was selected for phenotypic testing. Hemolysis and crystal violet assays were performed to detect clear hemolysis, polysaccharide, and biofilm presence.

University of Central Florida (UCF)

Poster Session II — Abstracts

1. Quantifying the Patterns of CGRP Innervation in the Atria and Ventricles of Male and Female Mice

Adhithyaa Nair

Mentor: Dr. Zixi Cheng

Chronic pain is experienced annually by nearly 50 million individuals in the US. Among these individuals, a sizeable group experience chronic chest pain at the level of the heart, but not enough data exists to create comprehensive therapies. Calcitonin gene-related peptide (CGRP) is widely used as a marker for nociceptive afferent axons, yet the distribution of CGRP-IR axons has not been fully determined in the whole mouse heart. Immunohistochemically labeled flat-mounts of the right and left atria and ventricles along with the interventricular septum in mice for CGRP were assessed with a Zeiss imager to generate complete montages of the entire atria, ventricles, and septum, and a confocal microscope was used to acquire detailed images of selected regions. It was found that the CGRP-IR axons formed varicose terminals around individual neurons in some cardiac ganglia, varicose CGRP-IR axons innervated blood vessel walls, and CGRP-IR axons extensively innervated the right/left ventricular walls and interventricular septum. Future studies are required to quantify differences in CGRP-IR axon innervation between sexes, disease models, and species. This information can then be used to create more comprehensive nociceptive atlases for the development of better bioelectronic medicine therapies.

University of Central Florida (UCF)

2. Structural Outlook of Hypothetical Protein TM1070 from Thermotoga Maritima: Comparative Analysis with Anabaena Sensory Rhodopsin Transducer

Ashly Dessources

Mentors: Dr. Brandon T. Vernier and Dr. Vishwa D. Trivedi

Thermotoga maritima is a hyperthermophilic, anaerobic organism. As a member of the order Thermotogales, T. maritima carry an unique ability as only fermentative bacterium to produce hydrogen as clean energy. We noticed a hypothetical protein TM1070 [Protein Data Bank, PDB 1NC7]. This protein is characterized as a member of DUF, domain of unknown function. Interestingly, this sequence length of 138 amino acids matches the only known structure of cognate transducer in Anabaena PCC 7120 [2II7-2II9 etc]. The scaffold of both transducer and TM1070 protein is tetrameric. We analyzed 114 highly conserved sequences of these two proteins. The detailed structural analysis of all three space groups (P4, C2 and P21, 21, 21-large crystal) transducer forms the same tightly packed tetramer with C4 symmetry. In the P4 space group, this tetramer is formed by crystallographic symmetry, while in the other two space groups the tetramer symmetry is non-crystallographic. The same tetramer was observed in the only structural homolog of transducer in the PDB, protein structure of 1NC7. This 114 residue protein possesses significant sequence identity with transducer. In this project we have focused on motif structural insight using PyMol, AxPyMol and NovaFold AI. Interestingly, we found well coordinated divalent magnesium present in the core of tetrameric assembly of 1NC7 with polar pocket [Thr amino acid]. It is likely that magnesium is crucial for phosphoryl transfer, as found in transducers leading to destabilization of tetramer as part of signaling state. Our detailed motif characterization reveals a novel ligand binding to this DUF tetramer.

Bethune-Cookman University (BCU)

3. Researching Consumer Preferences: An In-Depth Analysis of Online and In-Store Shopping Trends

Alexander Grande

Mentors: Dr. Monica Escaleras and Dr. Eric Levy

As consumer trends change, more research is needed to determine what shoppers want. This research delved into the shopping preferences of consumers, comparing the allure of online shopping with the tradional in-store experience. A survey was written and implemented by collecting data on Amazon Mechanical Turk and analyzing my 199 responses on IBM SPSS. A key discovery was that most shoppers prioritize dodging shipping costs when they shop online, which could be a pivotal selling point for companies aiming to attract more customers and boost sales. Furthermore, interesting variations in behavior and preferences among different age groups were detected. Younger shoppers appeared to rely more on product reviews to guide their purchasing decisions, while middle-aged consumers seemed more willing to pay for shipping when shopping online. In contrast, older shoppers favored avoiding shipping costs as well as online shopping whenever possible. These findings offer valuable insights to businesses looking to fine-tune their marketing, pricing, and customer engagement strategies based on the age groups they target. Moreover, the study also uncovered age-related reasons why some people still prefer shopping in physical stores, which can help businesses enhance the in-store experience and entice more visitors, ultimately leading to increased sales. This research provides practical guidance for companies to optimize their sale growths both online and inperson as well as displaying where majority of consumers prefer to shop.

Florida Atlantic University (FAU)

4. SLIC: Sample-Length-Scaling Logarithmic Information Criterion for Automating Hyperparameter Selection in Data-Driven Model Discovery

Alen Zacharia

Mentor: Dr. Juan Guan

Data-driven model discovery (DDMD) algorithms have emerged as powerful tools for extracting interpretable models directly from data, potentially revolutionizing our ability to deeply understand and control systems in science and engineering. However, these algorithms necessitate precise selection of hyperparameters that profoundly influence algorithm accuracy, frequently entailing exhaustive fine-tuning efforts for meaningful results. Here we present a robust, automated approach to DDMD based on sparse model discovery without extensive additional computation. Our method hinges upon a novel information-based model selection criterion that scales sparsity weighting favorably

with data quantity . We first demonstrate the algorithm's ability to successfully extract the underlying models from diverse simulated dynamical systems, ranging from ODEs to PDEs, over a wide range of noise levels. Finally, we show the algorithm successfully extracts meaningful and testable models from several experimental datasets. Overall, this work emphasizes the pivotal role of optimal model selection criteria in successful automation of DDMD.

University of Florida (UF)

5. Optimizing the Point Spacing for Multi-Channel Dilution Analysis

Adam Richardson and Sophie Lewis

Mentor: Dr. Willis B Jones

Multi-channel dilution analysis (MCDA) is a novel matrix matched analytical calibration technique requiring the preparation of only two solutions, as opposed to the five or more that are required in a traditional preparation of a calibration curve. The first solution contains 50% of a sample solution and 50% of a standard solution containing analytes of interest. The second solution consists of 50% of the same sample solution and 50% of a blank solution. By splitting the solution stream traveling to the analytical instrument into three different channels of different lengths, a stairstep of signal levels is created as portions of solution reach the instrument to be measured at different points in time. A calibration curve for each analyte of interest in the sample is prepared using the plateau regions of the signal stairstep generated by the dilution process. The spacing of the points in the calibration curve is determined by the diameters of the tubing used in each of the three channels. The results described here compare the use of several different tubing diameter combinations. All tested tubing combinations resulted in impressive calibration results, indicating that any combination of tubing diameters should be appropriate for MCDA measurements. In addition, a new MCDA calculation method is described, which significantly simplifies the data analysis process without sacrificing the method's high accuracy or precision. The new method of calculation is directly compared to the older methods of MCDA concentration calculations.

University of North Florida (UNF)

6. An Elucidation of Nicotine Patch's Influence on Quality of Life in Prader-Willi Syndrome: A Rigorous Examination and Assessment

Alexis Rosa and Kamalie Thomas

Mentor: Dr. Micheal Rovito

Prader-Willi Syndrome (PWS) presents distinct challenges, marked by hyperphagia and obesity, often resulting in inflammation. Despite the increasing prevalence of this syndrome, there has been a paucity of efforts dedicated to developing effective treatments. Nicotine, with its anti-inflammatory properties and potential to regulate appetite, introduces a promising avenue for intervention. Embarking on a four-group randomized controlled trial, this study will enlist individuals with PWS to investigate the impact of transdermal nicotine patches on their quality of life. Participants will be randomly assigned to either the experimental group, receiving nicotine patches, or the control group, equipped with a placebo patch and a true control. The research aims to delve into the potential of nicotine patches to diminish hyperphagia, enhance eating behaviors, and modulate inflammatory markers. The methodology encompasses comprehensive assessments of inflammatory markers, quality of life, and a systematic evaluation. Statistical analyses will be meticulously applied to discern significant differences between the experimental and control groups. This research aspires to deepen our comprehension of how nicotine patches can address the unique challenges faced by individuals with PWS, particularly those without a history of smoking. Positive outcomes have the potential to contribute significantly to the development of targeted interventions, thereby enhancing the overall health and well-being of individuals grappling with PWS.

University of Central Florida (UCF)

7. Flash Flood Detection Using Satellite Data with a Machine Learning Approach

Buchizya Mwase

Mentors: Dr. Juan Calderon, Dr. Farahnaz Golroo, Dr. Hyun Cho and Dr. Seenith Sivasundaram

Flash flooding in Florida poses a serious threat, causing disruptions in daily activities, infrastructure damage, and risks to residents' safety. These sudden, violent events can engulf urban areas within minutes, resulting in property damage and significant mobility challenges, highlighting the state's vulnerability to such extreme weather conditions. The implementation of a flood early warning system would be extremely beneficial for Florida, providing a vital tool to protect communities from potential risks and minimize the devastating impact of extreme weather events. The approach of this project involves the use of multispectral satellite images provided by NASA to analyze water levels in the state of Florida. Our goal is to mitigate flood risks in areas near the Indian River Lagoon, the proposal includes the implementation of advanced Machine Learning and Deep Learning techniques. These methodologies will be applied to develop a predictive model capable of identifying and forecasting potential flood threats in different areas of Florida, thereby offering an early warning system to safeguard vulnerable communities from extreme weather events.

Bethune-Cookman University (BCU)

8. Post-Disaster Building Damage Classification from Aerial-View Images

Alexis Amoyo

Mentor: Dr. Tanvir Ahmed

In an age of increasing natural disasters, it is imperative to pioneer enhanced automated methods for swift and precise building damage severity assessment in post-disaster management. This is a vital instrument for local governments seeking recovery funding from agencies like FEMA. It also expedites the process for insurance companies to assess damage levels, facilitating insurance claims. This study aims to cultivate an accurate predictive model for building identification and damage level evaluation, surpassing the efficacy of current baseline models. Our study focuses on DoriaNet, a dataset comprising aerial-view images taken post-Hurricane Dorian. We employed the Mask2Former transformer-based model to mask buildings from aerial views which are then subjected to the damage level classifier. We have undertaken comprehensive experimentation, exploring various state-of-the-art models, including MobileNet, ResNet50, Vision Transformer B-32, and Swin Transformer, to ascertain the most proficient classifier for our unique scenario. To further accommodate the ordinal nature of the damage levels, we have also experimented with and trained our models using well-suited loss functions such as Categorical Cross-Entropy, Earth Mover's Distance, and Ordinal Categorical Cross-Entropy. In recognition of the dataset's imbalance, we've introduced SMOTE to harmonize the training set before model training. The Mask2Former

model can classify house pixels with an IOU of 95.80% and an accuracy rate of 96.85%. It often surpasses the accuracy of the ground truth masks provided with the dataset. Furthermore, our findings assert that the Swin Transformer, grounded in the Ordinal Categorical Cross-Entropy loss function, achieves a classification accuracy rate of 87.67%.

Florida State University (FSU)

9. Flow Through Reactor Design for Oxygen Diffusion Assessment of Silk Fibroin Hemoglobin-Based Oxygen Carriers (sfHBOC)

Travis Truong

Mentor: Dr. Whitney L Stoppel

Hemoglobin based oxygen carriers (HBOCs) have shown promise in addressing critical issues in healthcare as oxygen therapeutics (Remy et al., 1999). These molecules are designed to model the oxygen carrying capabilities of hemoglobin in red blood cells. HBOCs have shown the promise of circumventing the challenges presented by traditional blood transfusions. They provide potential for treating diseases and injuries related to hypoxia, acute blood loss and other hematologic conditions. Our group demonstrated that silk fibroin nano- and microparticles isolated from Bombyx mori silkworm cocoons are able to act as a carrier for hemoglobin (Pacheco et al., 2023). These silk fibroin hemoglobin-based oxygen carriers (sfHBOC) can better stabilize hemoglobin proteins by improving shelf life, dose efficiency, and toxicity of the proteins. Precise and accurate release of oxygen by these oxygen carriers is an important property in its application in medicine. Our work aims to assess the time dependent oxygen diffusion of our sfHBOCs based on particle size and level of hemoglobin incorporation. Through the use of computer aided design (CAD) and 3D printing, a flow through reactor has been designed, intended for use in assessing the diffusive properties of our sfHBOC system. Charged particles will be packed into this flow through reactor with PreSens O2 oxygen sensors placed at the inlet and outlet in order to measure oxygen release of the system. Microplate readers will also be used to analyze oxygen dissociation. With this data we will be able to assess the relationship between particle structure and O2 transport.

University of Florida (UF)

10. Differences in the Immune Cells of Canines With Heart Failure and Canines Without Heart Failure

Sahithi Kadari, Anthony Nong, Jada Prignano and Logan Bell

Mentor: Professor Amy Bohan

Background: Around 10% of all Canines have experienced Heart Failure. Objective: Our objective is to see if there is any difference in the Immune Cells of Canines with Heart Failure and those without Heart Failure. Based on similar research done in this area, there appears to be a significant increase in Neutrophils, while Lymphocytes have a significant decrease (1, 2). Based on these papers, we hypothesize that our results should be similar in nature. Methods: We used 10 samples of blood from Canines with Heart Failure and 10 samples of blood from Canines without Heart Failure. We used a Microscope to observe any differences.

New College of Florida (NCF)

11. Examining the Impact of Historical Legacies on Contemporary Anti-Americanism in Latin America

Ana Bello Marin

Mentor: Dr. Nikola Mirilovic

The Latin American region is often cited as a prime example of historically rooted and deeply embedded opposition to the United States. In theory, the extensive record of American foreign policy interference and the suppression of state sovereignty provided grounds for historical legacies tied to these events to ingrain themselves in national culture. There is a rational assumption that is frequently made that individuals who witnessed American intervention first-hand could be marked by these experiences. This thesis aims to explore whether historical legacies are indeed a significant predictor of negative evaluations of the U.S. By exploiting cross-country variation in the years and types of cases of American meddling, this study tests the empirical significance of the relationship between legacy effects and anti-Americanism at the individual level of analysis. Based on the existing literature, we would expect those who received more exposure to intervention to express stronger anti-American attitudes. To quantify the potential effects, ordered logistical regression analyses are conducted at both the regional and country level using data from Berger et al. (2015) on cases of CIA intervention and public opinion data from the 2020 Latinobarometer survey. Interestingly, the results show that exposure to intervention is a significant predictor of anti-Americanism, but not in the predicted direction. The analyses in this study indicate that individuals with less exposure tend to rate the U.S. more unfavorably than individuals with more exposure. Subset analyses and findings are further discussed.

University of Central Florida (UCF)

12. Visual Perception and Bimanual Coordination

Carter Sale and Ryan Gross

Mentor: Dr. Scott Kelso and Dr. Aliza Sloan

How is your coordination affected when there is a mismatch between what you see and what you feel? Early experiments on human coordination have observed that when people try to coordinate their fingers in a parallel pattern, they suddenly and involuntarily switch to symmetric oscillations at a critical movement frequency (Kelso, 2021). While some evidence suggests that coordinative stability is influenced by visual perception, previous paradigms have confounded incongruent patterns of visual and biomechanical synchrony (Mechsner et. al., 2001). Here In this experiment, we isolated the role of visual perception in coordinated movements by incorporating a mirror between the participants' hands. Now, when moving one's pointer fingers in parallel, participants will see one hand and its reflection moving in a symmetrical pattern. In this study, we aim to quantify the effect of visual perception on coordinative stability. By including trials in which participants receive touch feedback during each movement cycle, we explored the interaction between bimanual coordination, visual perception, kinesthesia, and the role of limb symmetry in bimanual coordinated activity. Perceptions of limb symmetry and willful control over one's body are crucial for the treatment of phantom limb pain (Ramachandran, 1996) and may be significant for future development of neuroprosthetics.

Florida Atlantic University (FAU)

13. Investigating the Dual Role of Taxol and GAP-43 Overexpression in Promoting Neuronal Growth and Regeneration in N2A Neuroblastoma Cells

Danay Romero, Lorena Velazquez Diaz, Brooke McCann, Ashley Khouly, Fabianna Marin Gallucci and Mariana Espinal

Mentors: Ekaterina Oparina and Dr. Jason Kostrna

Obesity and cardiovascular disease are known health concerns in the United States, particularly amongst African American and Hispanic populations. Cardiovascular monitoring applications and weight management programs rely on accurate measurements of heart rate (HR). Today the most common form of continuous HR monitoring is photoplethysmography (PPG) administered via smart watches. Photoplethysmography measurements use a green LED light to illuminate the blood flow through the skin where the watch is worn. Recent studies have identified potential inaccuracies in PPG HR measurements in individuals with higher body mass indexes (BMI) and darker complexions. In particular, the combination of obesity and dark skin tone leads to the largest error in wearable devices. Faulty HR measurements may place certain demographics at a disadvantage when following recommended exercise protocols and can eventually risk their overall health. The existing research limits our understanding of the effects of BMI and skin color on HR and caloric expenditure readings via smart watches. We aim to address this gap by recruiting a diverse participant pool (n = 50; 23 completed thus far) with ranging BMIs and complexions to a well-controlled exercise protocol. Participants will wear five of the most popular wrist-based HR monitoring devices (Apple, Fitbit, Samsung, Garmin, Empatica) and a Polar HR10 electrocardiogram (ECG). The HR readings gathered from the wrist-based wearables will be compared to the ECG to measure accuracy across skin tones and BMIs. If successful, this data will allow us to learn more about the accuracy of these wearable devices among diverse populations.

Florida International University (FIU)

14. Driver Behavior Detection Using a Deep Learning Approach

Anna Zhao, Ava Scemama and Daniel Roque

Mentors: Nicole Verity, Dr. Stephen J. King and Dr. Alicia L. Hawthorne

Spinal cord injuries (SCI) significantly impact the lives of approximately 288,000 individuals in the United States, necessitating innovative therapeutic approaches to improve outcomes. This research explores the potential of nano-concentration Taxol, a known chemotherapeutic agent, in acting as a microtubule stabilizer to foster cell growth, a property distinct from its conventional use in treating cancers like ovarian, breast, and lung. The research focuses on identifying the threshold at which Taxol transitions from being therapeutic to cytotoxic or apoptotic. We employed a range of Taxol concentrations on N2A neuroblastoma cell lines to ascertain optimal levels that encourage maximal cell proliferation. Cell viability post-Taxol treatment across these concentrations was assessed using an MTT colorimetric cytotoxicity assay. Parallel to Taxol's exploration, we investigated the role of GAP-43 (Growth Associated Protein 43), also known as neuromodulin. Known for its critical involvement in neuronal development and axonal growth, GAP-43's overexpression in N2A cells provides a model to study axonal regrowth and neural plasticity. Post-transfection, we examined various aspects of neuronal growth and regeneration, utilizing immunofluorescence and microscopy for visualization and analysis. Our findings lay a foundational understanding for subsequent research into the synergistic effects of Taxol treatment combined with GAP-43 overexpression, aiming to enhance cell growth. This comprehensive approach is pivotal in decoding the intricate dynamics of neuronal repair mechanisms. Ultimately, insights gleaned from this study could pave the way for developing advanced therapeutic strategies for spinal cord injuries, strokes, and peripheral neuropathies, marking a significant stride in regenerative medicine and neurobiology.

University of Central Florida (UCF)

15. Ketamine Treatment for Depression and Anxiety: Preliminary Comparisons of Patients Who Are, Versus Not, Prescribed Complementary At-Home Ketamine

Alexia Obrochta

Mentor: Dr. Meredith Berry

A similar compound to the commonly used anesthetic ketamine has emerged as a rapid antidepressant medication, becoming FDA-approved as an intranasal treatment (Spravato) for depression in 2019; however, off-label use via infusions or injections have risen where hundreds of 'ketamine clinics' across the United States offer ketamine periodically. In order to lengthen the intervals between the ketamine treatments, some patients are prescribed at-home ketamine (e.g., lozenges). The aim of this study is to examine whether at-home ketamine use has an additional benefit, by comparing the self-reported change in depression and anxiety among real-world long-term patients. The preliminary secondary data analysis from a larger ketamine survey uses two scales; one to measure depression (PHQ-9) and one to measure anxiety (GAD-7) before and after ketamine treatment of patients who are prescribed complementary at-home ketamine in addition to treatment sessions versus patients who are not prescribed at-home ketamine. Patients in our survey were treated for mental health (with or without pain, n=77). An independent sample t-test showed a significant difference in change scores (p=0.034) where patients using complementary at-home ketamine reported greater improvement. Exploratory analyses suggest that while current scores were not different, the group who were prescribed at-home ketamine reported poorer mental health pre-ketamine. These results might indicate that complementary ketamine may be beneficial for some patients, or might have resulted in part from differences in pre-score measures and/or a bias in the retrospective nature of the assessment.

University of Florida (UF)

16. Investigation of Immune Related Gene Transcription Differences Associated with Obesity in Danio rerio (Zebrafish)

Alyssa DiPietro

Mentor: Dr. Kimberly Dobrinksi

In many eukaryotic organisms, obesity is known to debilitate the immune defense system, resulting in more susceptibility to illness and disease. The Center for disease control and prevention has provided statistics displaying that obesity has a strong correlation with covid-19 hospitalization, intensive care admission, and death. Additionally, obesity can increase the risk of getting cancer. The Danio rerio, also known as zebrafish, is a model organism for humans. For this study, one fish group was fed a regular diet (0.006 g of artemia/day), and the other fish group was fed a heavier diet (0.06 g artmenia/ day), resulting in normal and obese fish respectively. Fish livers were dissected and transcriptome

sequencing was carried out. The most overexpressed and underexpressed genes in obese fish compared to normal fish were observed. Many of the underexpressed genes activated GTP-binding activity and contained an ortholog to the human gene, IFI44L. This gene is related to the immune system and is a novel tumor suppressor. In humans, when there is an underexpression of the IFI44L gene, there is an increase of phosphorylation of Met. Met was found to be an upstream regulator to the Ras/ MAPK pathway which is associated with tumor growth if dysregulated. Ras, formally known as an oncogene, due to a single point mutation, is active when bound to GTP. Hence, the underexpressed genes have an increase of active Ras, bound to GTP, as well as the Ras/ MAPK pathway, which results in tumor growth.

University of Tampa (UT)

17. High-quality Dietary Protein Increases the Number of Eggs but Does Not Increase Egg Mass or Lipid Content in Lubber Grasshoppers

Alicia Horton

Mentor: Dr. John Hatle

Dietary protein quantity influences the evolutionary fitness trade-offs of an organism. For example, when given diets that are low in protein animals tend to produce higher-quality but fewer numbers of eggs. In contrast, when given diets that are high in protein animals tend to produce lower-quality but greater numbers of eggs. We tested whether dietary protein quality can induce this trade-off by feeding lubber grasshoppers four different diets. The amino acid composition of the precursor of egg yolk served as the high-quality diet. The amino acid composition of the low-quality protein was 50% matched to egg yolk. These two diets were isocaloric and isonitrogenous. Ad libitum-lettuce (positive control) and a low-protein diet (negative control) were also tested. Upon oviposition, eggs were counted and 5 were chosen for extraction with petroleum ether to determine the lipid content. The high-quality protein diet marginally increased lifetime egg production over the low-quality diet (ANOVA, $P=0.057$) but did not result in either larger eggs or altered lipid content (ANOVA, $P>0.05$). We plan to further investigate the protein storage in these eggs.

University of North Florida (UNF)

18. Mapping Accessibility to Health Care Using Public Transportation

Bach Tran

Mentor: Dr. Christopher Emrich

Can people get to healthcare facilities promptly using public transportation? Public transit offers various advantages for both communities and individuals in terms of mobility and has the potential to serve as a practical alternative to private, motorized transportation. Public transportation improves the population's health and provides reliable general accessibility to care. Meanwhile, timely and convenient public transit becomes a lifeline for people who cannot access other types of transportation, especially when it comes to emergency care. We will analyze the spatial accessibility to care via public transit by building a private network analysis within ArcGIS Pro. Data layers include: (1) coordinate data of hospital and stand-alone emergency rooms as designated by the North American Industrial Classification System (NAICS), (2) public transit route and stop data for Orlando, Florida, and (3) demographic data by ZIP code. We will compute and visualize the public-transit accessible areas within the benchmark accessible time of 30 minutes, determining inaccessible regions (i.e., healthcare deserts via public transit) as a separate layer. We will overlay the map generated with demographic data to determine the relation between the population characteristics and access to healthcare facilities via public transit. Based on the literature review, we expect to find an overlap between areas with high poverty levels, vulnerable populations, and healthcare deserts via public transit. Future implications of this research include establishing GIS analytical methods to address disparities in access to healthcare facilities (i.e., primary care, specialists, or labs) via public transit.

University of Central Florida (UCF)

19. Myth or Reality: The Effects of Canceled Culture and How Media Can Make or Break a Public Figure's Career

Ivy'yon Simmons

Mentor: Professor Akeemia Clements

This study examines the iterations of public scrutiny, and how canceled culture has a big impact on a public figure's career. The word 'canceled' is intrinsic to the act of canceling, however, the public's definition of cancellation is more dynamic and crucial than the way people use and comprehend cancellation. Social Media has become a popular way to start a person's career and an even more popular way to end a person's career, due to recurring tactics that surface throughout a cancellation in the media. This study explores how Cancel Culture can affect or permanently damage a Public Figure's career. Canceled culture has become Social Media's blacklist and once you are there it is even harder to get off. The initial hypothesis determines that Cancel Culture refers to the modern phenomenon where individuals or entities face public condemnation online due to perceived offensive actions or beliefs. Qualitative Research methodology showcased a suitable understanding of the Cultivation Theory, and it revealed several tactics that demonstrate how most Social Media partake in Cancel Culture. The Preliminary Findings of this study illustrate the origins, implications, and debates surrounding Cancel Culture, and it examines the impact on free speech, accountability, and societal dynamics. The discourse surrounding Cancel Culture is very complex and Social Media plays a key role in the potential for both positive and negative consequences within contemporary society.

Bethune-Cookman University (BCU)

20. The Benefits of Participating in Exercise on Mental Health

Emily Woodhouse

Mentor: Dr. Andrea Marsden

The purpose of this study is to explore the relationship between engaging in physical exercise and improved mental health. The current study interviewed nine male and female participants ages 19 and up. The participants came from a wide range of occupations and levels of activity. Data analyses suggest there is some correlation between exercise and improved mental health. Final research results, limitations and additional ideas for future research will be discussed.

Beacon College

21. The Effect of Childhood Income and Education on the Executive Function of Individuals Who Grew Up in a Rural Area

Andrea Bautista and Helen Smith

Mentor: Dr. Julia Sheffler

A decline in executive functioning can lead to an increased risk of cognitive impairment and can be an early sign of Alzheimer's disease. The current study examined whether growing up in a rural area is associated with poorer performance on measures of executive function through an impact on educational attainment. Next, we assessed whether these pathways may depend on childhood income. Data was drawn from Waves 1 (N=7108), 2 (N=5555), and 3 (N=3683) of the Midlife in the United States (MIDUS) longitudinal study. Participants completed a phone interview and a self-administered questionnaire focused on psychosocial, sociodemographic, and health variables. Additionally, cognitive data was collected at waves 2 and 3 using the Brief Test of Adult Cognition by Telephone (BTACT). The PROCESS macro in SPSS was used to conduct mediation and moderated mediation regression models to determine the influence of education and childhood income on executive function for those who grew up in a rural area. The analyses demonstrated that obtaining fewer years of education accounts for the relationship between growing up in a rural area and poorer performance on executive functioning measures in adulthood. Additionally, childhood family income moderated multiple pathways in this mediation model. Our findings suggest that the relationship between growing up in a rural area and experiencing lower levels of executive function in adulthood is a consequence of limited educational resources or attainment. Further, these relationships depend on an individual's financial resources growing up.

Florida State University (FSU)

22. Evidence for Neurotoxicity and Oxidative Stress in Zebrafish Embryos/Larvae Treated with HFPO-DA Ammonium Salt (GenX)

Victoria Lopez-Scarim

Mentor: Dr. Christopher Martyniuk

"GenX" [ammonium perfluoro (2-methyl-3-oxahexanoate] was developed as a replacement chemical for toxic perfluorinated compounds to be used in product manufacturing. Here, we assessed developmental, mitochondrial, and behavioral toxicity endpoints in zebrafish embryos/larvae exposed to GenX. GenX exerted low toxicity to zebrafish embryos/larvae up to 20 mg/L. GenX did not affect mitochondrial oxidative phosphorylation nor ATP levels. ROS levels were reduced in larvae fish exposed to 10 and 100 µg/L, indicative of an antioxidant defense; however, ROS levels were elevated in fish exposed to 1000 µg/L. Increased expression of cox1 and sod2 in GenX exposed 7-day larvae was noted. GenX (0.1 or 1 µg/L) altered transcripts associated with neurotoxicity (elavl3, gfap, gap43, manf, and tubb). Locomotor activity of larvae was reduced by 100 µg/L GenX, but only in light periods. Perturbations of anxiety-related behaviors in larvae were not observed with GenX exposure. These data inform risk assessments for long-lived perfluorinated chemicals of concern.

University of Florida (UF)

23. Probing Bio-assemblies on the Micron and Nano Scale

Christian Rodriguez Figueredo, Chelsea Bermudez, Clara Lehki and Romi Hardin

Mentors: Dr. Alfons Schulte and Dr. Debopam Chakrabarti

Spectroscopy, in combination with microscopy, enables non-destructive characterization of biomaterials on the micron and nano scale. Vibrational bands probed by Raman scattering are sensitive to chemical bonding and provide a 'fingerprint' of the sample under study. Erythrocytes (RBCs), essential in vertebrate biology, are responsible for the vital task of oxygen transport from lungs to the body. We employ micro-Raman spectroscopy to probe molecular vibrational signatures of single red blood cells (6-8 micrometer diameter), providing non-invasive insights into their composition and interactions. The measured Raman spectra over the frequency range from 800 to 1700 cm-1 are indicative of hemoglobin, the major protein in the cell. Capitalizing on recent developments in tip-enhanced apertureless vibrational spectroscopy, we are exploring sub-micron features. Here, the probe light illuminates the tip of an atomic force microscope - acting as an antenna - resulting in extremely localized excitation of the sample below the diffraction limit. This research contributes to an understanding of individual red blood cells, informing advancements in clinical diagnostics, drug development, and fostering potential biomedical innovations.

University of Central Florida (UCF)

24. Plasmonic Metamaterials for Non-Linear Optical Applications

Austin Anderson

Mentor: Dr. Gregory Wurtz

Advancements in the field of optical meta-materials within the past few decades has led to the development of enhanced non-linear optical functionalities with an increasing level of control over electromagnetic fields in nanostructured systems. The core of meta-material design is in the manipulation of the field's dispersion through careful geometrical nanostructuring. These meta-materials are thought to have potential applications in the health industry, information technologies, energy production and management, and the national defense industry. In this project, we are developing plasmonic meta-materials with enhanced ultrafast optical properties using finite element method (FEM) simulations to identify pathways of optimized energy transfers.

University of North Florida (UNF)

25. I'll Play It in the Background: The Impact of Media Multitasking on Academic Self-Efficacy and Self-Concept in Generation Z Undergraduate Students

Cassandra Disharoon

Mentors: Dr. Meredith Clements and Dr. Colter Ray

Academic media multitasking (completing homework while watching television) is a highly prevalent tendency among Generation Z college students despite the negative effects multitasking can have on focus and comprehension. This study examines college students' academic media multitasking habits and whether those habits harm their academic self-concept, self-efficacy, and grade point average (GPA). 141 undergraduate students aged 18-24 completed a survey that presented three sets of questions: one that gauged their media multitasking habits, including frequency

of multitasking with reading, writing, mathematics, and memorization tasks, respectively; one that measured their academic self-efficacy; and one that measured their academic self-concept. Students responded to each question on a five-point Likert-type scale, and their responses in each set were averaged to calculate a score of 1 to 5 points. 75% of participants (n=106) scored 3 out of 5 points or higher in self-concept, and 84% (n=119) scored 3 out of 5 points or higher in self-efficacy. These scores did not have a positive or negative correlation with the participants' frequency of academic media multitasking; students with high multitasking scores had similar self-concept and self-efficacy scores to those who had low multitasking scores. Survey participants also reported their GPAs, with 86% of participants (n=121) stating a 3.0 GPA or above. There was no relationship between participants' frequency of academic media multitasking and their GPAs. Thus, despite existing literature that illustrates the dangers of media multitasking, this study suggests that media multitasking habits do not impact Generation Z's academic performance.

University of Tampa (UT)

26. Screen Time and Stress

Jaylen Draper

Mentors: Dr. Jeffrey Zahnen, Dr. Jessica Kester and Dr. Amy Osmon

Researchers have previously explored intersections between screen time and stress (Boers et al., 2020; Bermingham et al., 2021). The goal of the present study is to continue this line of research by examining and investigating the relationship between recreational screen time and perceived stress levels in Daytona State College students. Researchers surveyed 106 students at Daytona State College using questions from the Perceived Stress Scale (Cohen et al., 1983) that assessed stress and the Zung Self-Rated Anxiety Scale (Zung, 1971) that assessed anxiety, with both being used together to assess the umbrella term of "stress." Results of the study indicate that higher levels of screen time have a positive relationship with higher levels of stress for most survey questions with the given sample, but the data did not hold significance for the population. The researcher's findings confirm previous research that suggests high screen time has a positive relationship with higher levels of stress in students (Rosenthal et al., 2021). While the results were limited by a large amount of neutral responses, the findings loosely confirm the results of previous studies that found a positive relationship between screen time and stress. Future researchers should consider removing the neutral category from the Likert scale as well as use a larger sample size to create more accurate and visible results.

Daytona State College

27. Relationship Identification Between Triggers and Changes in the Brain and the Overall Human Electrophysiology During Migraines

Dominic C Sandell

Mentor: Dr. Alesha Fleming

This research aims to reinforce that migraines have environmental triggers, establish that migraines cause changes in the brain's electronics and the body's overall electrophysiology, and define the relationship between the changes and the triggers. The hypothesis is that there is a relationship between environmental triggers and specific electrophysiological changes in the brain and the overall human electrophysiology. The population will be the young adults of Embry-Riddle Aeronautical University, and the sample size will be determined using the aforementioned gender split between female and male as well as the Sample Size for Known Population equation. Several general health, neurological, and psychological factors will be taken into consideration when making the selection of the samples, including but not limited to, the level of fitness, daily habits, sex assigned at birth, current identity of sex, age, past treatments, other diagnosis, and more. Throughout the study, the participants will fill out several surveys about their daily habits, any migraine episodes, and any possible triggers. Additionally, the participants will undergo several tests with an Electroencephalogram (EEG), Electrocardiogram (ECG), Galvanic Skin Response GSR, and pulsometer to accurately record their electrophysiology, then they may undergo the same test during a migraine so that differences in their electrophysiology can be noted. These changes will then be correlated to their triggers, and the research team will determine if there are patterns between the corresponding changes and triggers across several different participants.

Embry-Riddle Aeronautical University (ERAU)

28. Infection Resistant, Snail Mucin-Based Hydrogels for Wound Healing Applications

Disha Iyengar

Mentor: Dr. Kausik Mukhopadhyay

Severe lacerations requiring medical intervention remain a prevalent issue worldwide. Patients affected by them are more susceptible to developing infections containing antibiotic resistant bacteria, which hinders wound healing. Current practices for treating lacerations include stem cell treatment and hydrogels containing antibiotics or silver, but risk cytotoxicity to mammalian cells and are expensive necessitating a cost-effective solution. While some reports have demonstrated using hydrogels in wound healing, there are only a few that have explored the efficacy of snail mucin-based hydrogels. In our effort, snail mucin-based hydrogels were synthesized using a mixture of polyvinyl alcohol (PVA) and Borax with snail secretion filtrate, hydrogen peroxide, and silver oxide. Rheological studies of the hydrogels confirmed crosslinking between the PVA polymer and Borax that are crucial for the hydrogel formation. A lap shear test using porcine skin confirmed optimal adhesion of the hydrogel without causing any damage to the skin during separation. FTIR analysis confirmed the typical amide peaks of the proteins present in the snail mucin-based hydrogel. The finding corroborates the presence of proteins, which are primarily responsible for wound healing. Antimicrobial studies are currently in progress to determine the efficacy of the snail mucin-based hydrogels against bacterial and fungal pathogens, and whether they can expedite the rate of wound healing compared to commercial antibiotics currently available on the market. Should snail mucin-based hydrogels exhibit antibacterial and antifungal properties, additional clinical trials would be conducted in the future to assess their viability in the market as a substitute for existing options.

University of Central Florida (UCF)

29. An Exploration of The Viability of a Lactose Intolerance Gene Therapy Treatment in Mammalian Cell Culture

Cassalynn Staats and Joseph Adely

Mentor: Dr. Jim Yount

Lactose intolerance, the inability to digest lactose due to lactase enzyme deficiency, affects a significant portion of the global population. While short-term treatments are available, the long-term impact of lactose intolerance and its treatment strategies on murine small intestine epithelial cells remains underexplored. This study aims to provide insights into the

treatment method presented by Justin Atkin and obtain quantitative data regarding the efficacy of the treatment and the rate at which it wears off. This study will be using the media collected from the murine cell culture to perform a quantitative analysis of the lactase enzyme activity before and after treatment. This study treats 3 cultures with a novel gene therapy using Adeno-associated viruses (AAVs) as the vector. This gene therapy has been reported to increase lactase production to lactose-tolerant levels for at least 1 month (Atkin, 2018). After treatment, the culture media will be observed daily for one week to quantify the lactase enzyme activity through an enzymatic assay.

Eastern Florida State College

30. Investigating the Prevalence and Phenotypic Plasticity in an Invasive Dung Beetle: Digitonthophagus gazella

Julius Allen

Mentor: Dr. Rosie Stanbrook-Buyer

Globally, invasive non-native species are one of the most important threats to the structure and function of biodiversity after habitat loss. Digitonthophagus gazella is an African dung beetle species that is now widely distributed in North America, Central and South America, Australia and is now one of the most widely reported invasive dung beetle species globally. Its range expansion has been aided by introduction programs for the biological control of pest flies and rapid burial of cattle dung on pastures in several regions around the world. D. gazella has now become a dominant member of the dung beetle community in many locations in the U.S. In Brazil, its invasion has reduced native dung beetle diversity by some 40% over 26-year period. Following its introduction into Texas, D. gazella has again been implicated in the decline of multiple native dung beetle species and likewise the extirpation of other native and economically important dung beetle species in the West Indies. Many studies have suggested that invasive species have higher levels of phenotypic plasticity, but direct empirical tests of this theory are less common. We address this knowledge gap by seeking to answer the following questions; (1) how do morphological traits in invasive insects differ traits in found in native species, (2) do certain morphological traits confer invasibility and (3) can we detect intraspecific morphological trait variability within the Florida population of D. gazella?

Bethune-Cookman University (BCU)

31. Treating Brain Diseases: Curcumin Loading of Exosomes

Danielle Bitter

Mentors: Dr. Yan Li and Laurie Muok

Maladies of the brain, such as Alzheimer's disease, Parkinson's disease, and brain tumors, are among the most difficult to treat as most medications cannot diffuse into the blood brain barrier (BBB). Curcumin, a natural polyphenol sourced from turmeric, is effective at reducing the inflammation resulting from plaque buildup in the Alzheimer brain. However, curcumin has low bioavailability and is not stable, resulting in a low concentration in blood. Curcumin can be administered via exosomes, a subpopulation of extracellular vesicles (EV), as they have an intrinsic ability to penetrate most biological barriers, do not elicit acute immune rejection, can be produced in large quantities, and are highly engineerable. One major obstacle that currently stands in the way of utilizing exosomes as drug delivery systems is how to effectively load them. The goal of this study is to determine the loading efficiency of curcumin into choroid plexus derived EVs using sonication, incubation, freeze-thaw cycling, and electroporation. The most efficient manner of loading EVs is invaluable information as it will allow for more efficient processes of treating the brain through EV drug delivery systems. Future studies could investigate the efficiency of EV delivery on other known water soluble anti-inflammatory substances which are known to not penetrate the BBB.

Florida State University (FSU)

32. Optimizing the Solubility of Plodia Interpunctella Silk Fibroin for Biomedical Applications by Assessing Influential Parameters

Andrea Orozco

Mentor: Dr. Whitney Stoppel

Silk fibroin (SF) has been accredited as a valuable biopolymer for biomedical applications due to its advantageous assets, specifically its robust mechanical properties, biocompatibility, and biodegradability. SF significantly contributed to evolving drug delivery, wound healing, and tissue engineering applications of biomaterials. The field of silk-based biomaterials is heavily influenced by studies of the Bombyx mori (Bm) silkworm as it predominates due to its extensive cultivation in the textile industry. However, rearing of Bm silkworms is largely without environmental control leading to batch-to-batch variability in the raw silk materials used for biomaterial formation. To address this limitation, we study an alternative silk source, Plodia Interpunctella (Pi), which can be reared in a laboratory setting. This work focuses on the development of methods to solubilize Pi silk as a preliminary step in fabricating Pi biomaterials. The proposed Pi solubilization protocol involves processes of purification of SF from raw materials, dissolution of SF, and filtration and dialysis of generated solutions, simultaneously paralleling and contrasting protocols previously established for Bm silk. We continue to address ongoing challenges in dissolving Pi silk to improve the stability of SF in solution. Parameters investigated in this study are dissolution temperatures, salt concentration ranges, salt type, and silk: solvent ratios. Successful SF solutions are subsequently used for a myriad of applications such as films, sponges, and nanoparticles, demonstrating the potential of developing Pi silk-based biomaterials in the medical industry.

University of Florida (UF)

33. DNAJB1 and the Propagation of Alzheimer's Disease

Cameron Young

Mentor: Dr. Szymon Ciesielski

Alzheimer's Disease (AD) is the 6th leading cause of death in American adults and is forecast to cost the public over 1 trillion dollars by 2060. AD is characterized by aggregation of specific misfolded proteins into fibrils which are toxic to neurons. The subset of cellular proteins, called molecular chaperones work together to mitigate the toxicity of aggregates by either re-folding individual proteins or targeting them for degradation. In the case of AD two distinct misfolded proteins form fibril-like aggregates: the amyloid-β (Aβ) forms extracellular 'plaques' and Tau forms neuron-specific 'tangles' - of which Tau has been shown to be the more neurotoxic species. Specialized chaperone machinery, composed of DNAJB1 and HSP70 human proteins, is known to disassemble Tau fibrils, leading to the formation of 'seeds' capable of spreading and converting healthy Tau to its fibrillar form. However, the unique structural features allowing DNAJB1 the recruit HSP70 for fibril disaggregation

remain elusive. Herein we investigate the relevance of the J-domain and Gly-rich region of DNAJB1 in AD propagation, regions found to be crucial for B-class essential housekeeping function in studies using yeast S. cerevisiae as the model organism.

University of North Florida (UNF)

34. Answering Age Old Questions About Infectious Diseases

Elisabeth Ngo and Peace Akinkunmi

Mentor: Dr. George Aranjuez

Chlamydia trachomatis is an infectious sexually transmitted disease known to infect various hosts. Despite its prevalence, the molecular mechanisms behind Chlamydia infection in the host remain unknown. In this experiment, we utilized genetic techniques to determine the phenotypic effects different Chlamydia genes have on Drosophila melanogaster. The experiment uses genetic modification techniques and a pUAST cloning vector to transform Drosophila with Chlamydia gene constructs. First, Polymerase Chain Reaction (PCR) is used to amplify specific Chlamydia genes. DNA electrophoresis is then performed to assess the PCR products. PCR product cleanup and pUAST DNA quantitation purify and determine the quantity of the sample. Overnight double digest of PCR product and pUAST with subsequent quantitation and cleanup prepares DNA fragments for ligation. DNA ligation inserts the specific genes into a cloning vector, and performing an E. coli transformation step ensures the genes are inserted into the vectors. This allows us to determine a link between specific Chlamydia genetic alterations and phenotypic changes in Drosophila when expressed. After thorough research, results were collected, but they were not definitive enough for us to make clear connections between specific genes and phenotypic effects. The experiment is further being explored with refined research methods to establish direct causal relationships. This experiment provides insights into the molecular interactions between Chlamydia and the host. This has broader implications because it helps us understand host-pathogen interactions, providing a foundation for future studies aimed at identifying therapeutic approaches for Chlamydia infections.

University of Central Florida (UCF)

35. Commit Today, Transform Tomorrow

Hannah Garner, Cassidy Espinoza and Amanda Destefano

Mentor: Eileen Acello

In an era shadowed by the looming threats of climate change and environmental degradation, time is our crucial ally and a formidable adversary. The urgency to prevent irreversible ecological harm demands swift, collective action, prompting the emergence of a social marketing campaign—encapsulated by "Commit Today, Transform Tomorrow." This initiative seeks a global shift toward sustainability, inspiring diverse lifestyles to embrace eco-conscious practices. The campaign is grounded in meticulous research, including focus groups, educator surveys, and business leader interviews. It strategically tailors its approach for varied audiences, utilizing Instagram for students, LinkedIn for business leaders, and targeted digital content for consumers and marketing professionals. With a three-year timeline and a $1 million budget, the campaign recognizes that actual change lies in the hands of individuals, organizations, and communities. Our Integrated Marketing Communication (IMC) plan aims to equip stakeholders with inspiration, knowledge, and actionable strategies. From fostering sustainability education to guiding business leaders in eco-conscious decisions, each component is adaptable and impactful. Emphasizing universal responsibility, the campaign transcends borders and ideologies, calling for a united global effort. The core message is clear: "Commit Today, Transform Tomorrow" is more than a plea for awareness; it's a roadmap for tangible transformation. Stressing the interconnectedness of our actions with the planet's fate, the campaign asserts that failure to adopt sustainable practices jeopardizes opportunities for future generations. By seizing this moment and acting decisively today, the campaign believes united efforts can make a substantial difference—for the planet, ourselves, and future generations.

Florida Atlantic University (FAU)

36. Daytona State College Students Perception of Body-Image and Exposure to Online Fitness Content

Sophia Pisano, Sofia Avalo, Caleb Brower, Melisa Martinez, Alaycia Clinton and Madox Bovee

Mentor: Dr. Benjamin Graydon

The rise of social media has changed the way people interact with the world. A key example of this is the rise of fitness influencers on social media, who have changed how many people perceive health and fitness (Raggatt et al., 2018). Past research has gone into finding a connection between body image and online fitness engagement (Barron et al., 2021). The goal of the present study is to understand the relation between body image and online fitness content. Researchers surveyed 98 Daytona State College students using the Adolescent Body Image Satisfaction Scale (Leone et al., 2014) that assessed users' level of agreement/disagreement with questions regarding body image. The results of the study indicate statistically significant data that students who only watch and do not participate in online fitness content displayed a lower satisfaction perception towards their body image ($p=0.013$). While the researchers' results were limited by a small sample size and short time frame for data collection, the results point to how online fitness content influences individuals' perception of their body image (Durau et al., 2022; Barron et al, 2021).

Daytona State College

37. From Regolith to Soil: Forging a Trajectory Towards Sustainable Martian Agriculture

Cindia Marra

Mentor: Dr. Dora Pilar Maul

The establishment of sustainable agriculture in Mars is of paramount significance in the prospect of successful colonization of the Red Planet. Mars soil, called regolith, though rich in some essential nutrients for plant growth, is devoid of organic matter, the key element for plant cultivation. The objectives of our study were to assess the potential of Martian regolith simulants for cultivating diverse plant species, explore the efficacy of green manure in enriching these simulants, and investigate the impact of vermicompost and mycorrhiza on enhancing soil fertility. First, we conducted trials involving four different Martian regolith simulants sourced from The Martian Garden and Exolith Lab with three legume plant species—Vigna radiata, Trifolium repens, and Medicago sativa. Measurements included percentage of germination, growth per week, and chlorophyll content. Subsequently, the efficacy of these species as green manure supplements was investigated on their potential to enhance nutrient availability for the growth of Eruca vesicaria (Rocket Arugula). Building upon these initial experiments, we investigated the potential enrichment of Martian regolith for the growth of Florida Petite Tomatoes

through the addition of vermicompost and mycorrhiza at different ratios. We found Mars simulants MMS1 and MMS2 as good starting materials for plant growth, with Vigna radiata acting as the best green manure supplement compared to the other two. While the comparison between mycorrhizae-treated and non-treated soil simulant did not produce significant differences, the significant enhancement in plant growth became evident with the progressive increase of vermicompost added to the simulant. As we embark on this exploration, our research endeavors aim at advancing the understanding and feasibility of sustainable agriculture on Mars.

St. Thomas University (STU)

38. Evaluation of Potential Damages Caused by Sodium Benzoate on Neuro-2a Cells via Morphology Changes, Cell Death, and Genotoxicity

Emily Larson

Mentor: Dr. Alicia Hawthorne

Sodium benzoate is a food preservative currently present in sodas, fruit juices, and other acidic foods and beverages. Its acceptable daily intake is 0-20 mg/kg body weight (bw), and it is generally recognized as safe. However, sodium benzoate has been linked to increased hyperactivity in both children and adults, indicating that it may have negative impacts on the functioning of the nervous system. Sodium benzoate, or its conjugate acid, has also induced genotoxic effects in various cell types in vitro and in rat liver tissue in vivo. The effects of sodium benzoate on neuronal cell DNA, morphology, and survival have not yet been studied in vitro. We hypothesize that sodium benzoate will cause morphological changes, apoptosis, and induce genotoxic effects on Neuro-2a cells. To observe morphology, beta-tubulin III, actin, and cell bodies will be stained. NeuronJ (ImageJ) will be used to score the neurons on a variety of parameters, such as number of processes, length of processes, and degree of branching. To conduct the cell death assay, annexin V will be used to detect apoptotic cells and propidium iodide will be used to detect necrotic cells. For the genotoxicity studies, a comet assay will be run under alkaline conditions. We expect that with increasing concentrations of sodium benzoate, there will be more morphological changes and more genotoxic effects observed. The results of this study will provide further insight into the safety of sodium benzoate and its potential impacts on the nervous system.

University of Central Florida (UCF)

39. Engineering Genomics Database to Facilitate Artificial Intelligence in Cancer Research

Arlen Larry Gyden

Mentors: Dr. Mohammed Gbadamosi, Dr. Zehra Ordulu, Dr. Petr Starostik and Dr. Kimberly Newsom

Next-generation sequencing (NGS) is an effective way to identify driver mutations and guide precision medicine strategies for oncology treatments. The Molecular Diagnostic Laboratory at the University of Florida is a reference laboratory for the Southeast United States and receives approximately one thousand oncology samples each year. NGS is performed on each sample, and the variant data is stored as a variant call file (VCF). Unfortunately, this data is not easily searchable or linked to any relevant clinical information. Thus, the range of diagnostic insights obtained from this data is limited. The goal of this project is to develop the infrastructure to house our clinical NGS data as well as pertinent de-identified clinical data, such as gender, age, tumor type, tumor grade, overall and disease-free survival. Establishing the infrastructure for this data will contribute to improved health outcomes by strengthening laboratory quality metrics and providing visualization and analysis of our cancer genomics data. Curation of this data will help bridge the gap between research and practice in the healthcare system by merging the relevant clinical data with genomics data. Once this data is unified and searchable, this database will have far-reaching utility, including the ability to correlate outcomes as well as leading to the use of artificial intelligence deep learning algorithms for variant classification, phenotype-to-genotype correspondence, and disease risk prediction.

University of Florida (UF)

40. "If Safety is Compromised, Education is Baseless" Students' Perceptions of Safety and Comfort on Campus at the University of North Florida (UNF)

Charissa Moore

Mentor: Dr. Jessica Chandras

On residential college campuses across the U.S., students spend a majority of their time on campus: attending classes, studying, working, and socializing. Within this context, safety is necessary for student learning and well-being. While "classroom comfort" can be identified with elements like seating arrangements, lighting, and temperature, research on campus safety has further focused on problematic student behaviors (like partying, substance abuse, and SA), infrastructure issues, external lighting, and the lack of security. Building on this research, this project asks: "How does cultural and social diversity impact students' perceptions of safety and comfort on campus?" This research was motivated by ongoing social-political issues, including campus preachers, protests over conflict in the Middle East, and state-led efforts to restrict DEI initiatives. Drawing on ethnographic data collected at a regional university in Northeast Florida, I discovered a decreasing perception of safety and comfort due to differences in identity, agency, and an increasing presence of structural violence. Students' discomfort is rooted in the spatial usage of campus, DEI initiatives, limited freedom of speech, and fear of physical violence. Although safety and comfort cannot be guaranteed for everyone simultaneously, it does call into question the value of the education pupils are receiving amidst this political uncertainty and sociospatial discomfort. These findings call for a discussion of students' "right to the campus" and their ability to be co-creators of the environment with which they interact on a daily basis.

University of North Florida (UNF)

41. Measuring Morphological Complexity in Teachers Instructional Dialogues

Faith Collins

Mentors: Audrey Hendrix, Dr. Sana Tibi and Dr. Carla Wood

Purpose: Morphological complexity (MC) describes the intricacy with which words are formed using meaningful parts, or morphemes, such as prefixes and suffixes. Conversational language usually has low MC with a high frequency of grammatical markers or inflectional morphemes (i.e. -s, -ed). Academic language, which is often encountered in educational settings and therefore is important for students' success, has higher MC due to a greater frequency of derivational morphemes (i.e., -ly, -ism) which contributes to the complexity of academic words

(Zhang et al., 2020). Extensive research describes the role of robust adult language input in children's conversational language development. However, few research studies have examined the MC of teachers' instructional language and its implications in academic language development. This study will investigate two research questions: (a) What types and frequencies of derivational morphemes occur in teachers' instructional dialogues? and (b) Do morpheme types and frequencies differ by instructional subject? Method: This study analyzes 15-minute transcripts (n ~1500) of second-grade teachers' (n =40) instructional dialogues using Morpholex (Cobb, 2023; Laufer & Cobb, 2020), an online affix profiler that interprets MC in written samples. MC will be described throughout the sample and compared across four instructional subjects (English, math, science, and social science). Results: Preliminary results suggest that inflectional morphemes have a high-frequency sample wide while certain types of derivational morphemes may occur more frequently in certain subjects. Conclusion: The findings may motivate further research on the effects of informing teachers about enriching their speech to promote academic language development in children.

Florida State University (FSU)

42. The Price of Quality Care: Socioeconomic Disparities in U.S. Healthcare

Joaquin Palacios

Mentors: Mr. Eric Levy and Dr. Monica Escaleras

Quality healthcare is critical to increasing a country's average life expectancy. A key element of quality healthcare is making sure patients feel comfortable with their primary care physician. This study was conducted using a 14-question survey designed to collect data on how U.S. citizens feel about their primary care provider. The survey was distributed through Amazon Mechanical Turk and the resulting data was analyzed using SPSS, based on the demographics of the 198 participants, including race/ethnicity, gender, age, education, income, and political affiliation. Trends in the answer choices based on income found that lower-earning Americans (<$25,000) feel that their needs are not being understood by their primary care providers, while higher-earning Americans believe the opposite—their primary care provider displays a clear understanding of their needs. Lower-earning Americans also felt that their primary care provider's environment was not clean, while higher-earning Americans once again felt the opposite. Privacy is also a much more concerning issue to lower-earning Americans than higher-earning Americans. These results all tell the same story: lower-income Americans lack access to quality healthcare, especially compared to the healthcare received by higher-earners. Quality healthcare should aim to comfort its patients at their most vulnerable times, however, the lower-earning participants in this survey exhibit discomfort towards their primary providers, which may make them less likely to be truthful in healthcare settings out of fear. This data can be used by healthcare providers and policymakers to emphasize lower-earning communities in the near future.

Florida Atlantic University (FAU)

43. Practical Applications for Living in a Tree: Growing Not Building

Julie McClellan

Mentor: Dr. Ashley Spring

Living structures harness and direct the growth of plants to create a structural framework which mimics natural shapes and forms, but it is often seen as impractical due to the varied growth rates of plants naturally ideal for the intended structural applications. This study explores if topically inoculating Carolina willow (Salix caroliniana) with rooting hormone (Indole-3-butyric acid), or rhizofungus (Rhizophagus irregularis), or rhizobacteria (Rhizobium leguminosarum) has significant effects on its early growth. Twenty inoculated Carolina willow cuttings were grown for a 4-week period and final length and weight measured showed that cuttings inoculated with the rhizofungus and the control group had significantly greater roots and stems than the cuttings inoculated with the rooting hormone. The results of this experiment support the potential of living structures as a practical alternative to current construction methods.

Eastern Florida State College

44. Using Phosphorus to Shape Food Systems of the High Country

Elianna Tenace

Mentors: Dr. Anne Fanatico and Dr. Matthew Ogwu

Phosphorus is an essential nutrient to plant life, and therefore, human life. 80% of the phosphorus in industrial fertilizer is sourced from phosphate rock, a non-renewable resource. Industrial fertilizer runoff pollutes water. In aquatic environments, excessive phosphorus leads to eutrophication and harmful algal blooms. In order to preserve a functioning food system, the global community needs to tackle phosphorus sustainability. The goal of this research project was to investigate phosphorus (P) flow and improve sustainability of local agriculture and food systems. Our site was Boone, North Carolina. The expected impact was a modest contribution to the town's long-term sustainability goals. We recovered P from food waste and vegetation by composting (Appalachian State University Sustainable Development Civic Garden) and touring a local composting facility (Born Again Dirt Compost). We used LibreCad to create a digitized map of ASU's garden. We reduced phosphorus loss by staffing a zero-waste direct-to-consumer grocer (High Country Food Hub) and a pay-what-you-can food cafe (Feed All Regardless of Means Cafe). We provided resources to beginning farmers, including information on sustainability, by assisting with a beginner farmer training (Frontline-to-Farm). We contributed to phosphorus research by sampling water, collecting food waste, analyzing genomics data, and identifying dynamic accumulators; these projects will be featured in upcoming publications. Ultimately, our work contributed to sustainable food systems in Boone, we maintained and improved ASU's garden, and we gained a deep understanding of one town's phosphorus flows. All of our work was informed by extensive, ongoing collaboration with the community of Boone.

Eckerd College

45. Educator Evaluation of Information Literacy and its Associated Initial Threshold Concepts in Postsecondary Chemistry Curricula

Han Le

Mentor: Dr. Christopher Randles

Information literacy is the ability to search for, evaluate, and apply information effectively and ethically, which is a crucial skill for individuals in the field of science. In the constant presence of information of questionable validity due to technology, the discussion on the importance of information literacy has become more pertinent. While most intuitions acknowledge the importance of information literacy, institutional and disciplinary standards have been absent regarding such skills. To assess the current inclusion of information literacy in science courses, we designed a survey that was distributed to stakeholders of information

literacy instruction in the Central Florida area, specifically postsecondary educators. A key aspect of the study was identifying initial threshold concepts relevant to information literacy: transformative concepts in a discipline that, without proper understanding, learners cannot progress. The objectives of the survey were to evaluate the current inclusion of information literacy in classrooms, identify initial threshold concepts to aid the creation and instruction of information literacy programs, and sample the educator-side discussion on information literacy. The consensus on the survey indicated acknowledgment of the importance of information literacy but uncertainty in stronger implementation practices due to various institutional limitations. Discussion in this study will help progress survey development to advance our study to a larger population of educators and other stakeholders. The larger aim of this project is to spread awareness about information literacy and the potential development of effectual educator practices that ensure proper instruction of information literacy that is scaffolded throughout the academic career.

University of Central Florida (UCF)

46. Operation Diversion: How Social Media Controversy Interferes with the United States Current Events

Monisha Charles

Mentor: Akeemia Clements

This study examines that in the throes of the pandemic, social media emerged as a powerful disseminator of skepticism and conspiracy theories regarding COVID-19. This dissemination fostered public disbelief, contributed to non-compliance with guidelines, and exacerbated the virus spread. Additionally, it amplified through social media, panic-buying behaviors triggered shortages of essential goods and disruptions in the supply chain. This study explores the vigorous use of social media controversy and how it's related to public trust in authoritative sources, thereby contributing to the dissemination of misinformation. The initial hypothesis determines a widely mixed-methods approach and is adopted to unravel the multifaceted impact of social media controversy. Qualitative Research methodology accompanies an adequate understanding of the complex interplay of the Authoritarian and Cultivation Theory. The Content analysis of social media posts related to the COVID-19 pandemic and the tragic killing of George Floyd provided qualitative insights into the dissemination of conspiracy theories, skepticism, and panic-buying narratives. The Preliminary Findings highlighted a correlation between the intensity of social media controversy and the dissemination of disinformation.

Bethune-Cookman University (BCU)

47. Techniques in Primary Microglia Cell Culture and Analysis

Grace Hickey

Mentor: Dr. Elizabeth Hammock

As the immune cells of the central nervous system, microglia are heavily involved in pro-inflammatory responses in the brain. Oxytocin, a neuropeptide which plays many roles in social behavior, has also been found to have anti-inflammatory effects. This experiment was conducted to investigate the ability of oxytocin pretreatment to reduce the pro-inflammatory response of microglia to a pathogen. To test this, primary microglia of OXTR-EGFP transgenic mice were cultured for one week, then pre-treated with Dulbecco's Phosphate Buffered Saline (dPBS), as a control, or oxytocin for 2 hours. They were then treated with dPBS or lipopolysaccharide (LPS), an endotoxin for 20 hours. The expression of oxytocin, oxytocin receptor, and interleukin-6 was measured using quantitative PCR. Immunocytochemistry was used to qualitatively analyze the expression of OXTR and Iba-1, a microglia-specific marker. Preliminary results suggest that oxytocin pretreatment does not have any effect on the anti-inflammatory response of cultured microglial cells. There does not appear to be a change in oxytocin receptor or IL-6 expression between oxytocin pretreatment and non-pretreatment groups. However, we are in the process of increasing the sample size of this experiment as well as troubleshooting the methods involved. Because of results obtained in previous studies, we expect that our findings may change with more replication.

Florida State University (FSU)

48. Evaluating the Synthesis of Granular Silk Fibroin Scaffolds for Applications in Tissue Engineering

Cathrine Beshay

Mentor: Dr. Whitney Stoppel

Naturally derived silk fibroin materials from the cocoons of Bombyx mori have proven highly valuable in the study of biomaterials. This cytocompatible material has been formulated into particles, scaffolds, and hydrogels for a variety of applications in the fields of regenerative medicine and tissue engineering. In particular, silk fibroin micro-and nanoparticles have shown promising results in the successful encapsulation and controlled release of bioactive compounds. Recent work has been done to synthesize granular scaffolds that maintain this controlled release behavior while also allowing for cell infiltration and eventual degradation. The tunability and flexible mechanical properties of silk fibroin allow for adjustments in particle size, number of particles, and scaffold porosity. In this work, we determine how changes in key steps of particle synthesis such as extraction time and probe sonication-based phase separation for clumping prevention impact particle size and further the properties of formed granular scaffolds. The molecular weight and the consequent particle size range resulting from the varying boiling times of 30, 60, and 90 minutes were analyzed with dynamic light scattering (DLS) and scanning electron microscopy (SEM), Granular scaffolds were then prepared by packing and lyophilizing particle suspensions. Particle quantity and porosity were evaluated through histology and scanning electron microscopy. Future work will evaluate the encapsulation and controlled release of compounds as well as cell infiltration and remodeling.

University of Florida (UF)

49. Qualitative Analysis of Students' Sense of Belonging in General Chemistry

Zamira Torres

Mentor: Dr. Tamra Legron-Rodriguez

Feelings of connection, engagement, and interconnectedness collectively define a sense of belonging. Frequently, the significance of students' sense of belonging is undervalued when discussing their academic accomplishments. This continuous exploratory investigation focuses on the sense of belonging experienced by students in the context of General Chemistry courses. This research aims to investigate the sense of belonging in chemistry courses using a qualitative approach. Participants from seven general chemistry courses completed a sense of belonging survey at the semester's start and end. This study will present survey responses, highlighting codes, themes, and frequencies, and explore potential variations in belonging among demographic groups. An open-ended question and demographic inquiries

on gender and racial/ethnic identity were included. This study concentrated on discerning prevalent themes associated with students' sense of belonging through the creation of a codebook derived from their feedback. Thematic analysis of the open-ended questions was carried out by three coders, organizing participant responses into recurring themes. The identification of these themes was grounded in the participant survey responses. Examination of these responses unveiled various emerging themes, including a general enthusiasm for the course, declared majors, and comprehension of course concepts. Furthermore, this study aims to investigate differences in the sense of belonging explanations among distinct demographic groups. Acquiring a deeper understanding of students' sense of belonging has the capacity to improve the classroom atmosphere, reinforce student learning outcomes, and foster overall student success.

University of Central Florida (UCF)

50. Mercury Concentrations in Sandbar Sharks (Carcharhinus plumbeus) from the U.S. Atlantic Coast Over Four Decades

Dakota Jacks

Mentor: Dr. Jim Gelsleichter

It is well known that among many marine organisms the accumulation of toxic pollutants increases in top predators because of biomagnification. Many studies have demonstrated that sharks are among the marine predators that often exhibit the highest concentrations of marine pollutants. One of the most notable pollutants is the toxic, non-essential metal mercury (Hg), which has been shown to be elevated in many different shark species; however, few studies have investigated how these levels have changed over time. This study examined the levels of Hg accumulation in sandbar sharks, Carcharhinus plumbeus, between 1986 and 2021. This is important in determining how past legislation that was implemented to reduce Hg pollution has impacted levels of Hg within marine wildlife. This study presents preliminary results on muscle concentrations of Hg within these samples to explore trends in Hg pollution on the U.S. Atlantic coast. Overall, the results showed a significant relationship between time and Hg concentration that trends toward lower concentrations over time. This trend is present even with factors like sex and size of organisms included. However, despite the declining trend in Hg accumulation, muscle Hg concentrations in recent years remain higher than federal thresholds for human consumption.

University of North Florida (UNF)

51. Regeneration and Recovery of High- and Low-Microbial Abundance Sponges Under Heat Stress

Kayla Filjon

Mentors: Dr. Andia Chavez-Fonnegra and Dr. Catherine Trivigno

Though Florida marine heatwaves are increasing in both frequency and intensity, little is known about how episodes of heat stress can affect marine sponges and their symbionts. Furthermore, as coral communities are collapsing in the wake of anthropogenic climate change, many reef ecosystems now rely heavily upon sponges as primary nutrient cyclers. The objective of this project is to measure the effects of a simulated marine heat wave (MHW) on the regenerative capabilities and microbiomes of four species of high microbial abundance (HMA) and low microbial abundance (LMA) sponges: Aplysina cauliformis (HMA), Aplysina insularis (HMA), Niphates erecta (LMA), and Niphates digitalis (LMA). To achieve this, fragments of each species were collected via SCUBA from Broward County reefs, artificially wounded, and subjected to a simulated MHW of 32 °C. Following this was a recovery trial of one month, during which the heated tanks were brought back to a normal temperature of 28 °C. Sponge regeneration and growth were tracked by observing changes in color, texture, form, and growth rate of the created wounds for the duration of the trials. In-depth changes in the cellular structure of regenerated biomass were analyzed using confocal and transmission electron microscopy. Changes in microbial community structure were monitored at regular intervals using 16s rRNA analysis. By understanding the holistic effects of thermal stress on hardy sponges, we can predict their resilience and how they may structure reefs where scleractinian corals have declined.

Florida Atlantic University (FAU)

52. Clinical Outcomes and Patient Satisfaction of Platelet-Rich Plasma Injections in Regenerative Aesthetic Medicine

Inah Cassandra Bascos

Mentor: Dr. Tingting Zhang

The skin, being the largest organ, plays an important role in defense and survival due to its inherent ability to repair and renew itself. With the notable progress in medical care and nutrition, there is an increasing imperative to devise innovative approaches aimed at enhancing the process of cutaneous healing. The field of medicine is currently experiencing rapid progress in the direction of developing procedures that are minimally invasive or non-invasive, as well as treatments that can expedite the healing process. These advancements aim to minimize the negative impact on patients' health and enhance their ability to regain normal bodily functions, leading to an improved quality of life (QoL). Regenerative medicine is a growing interdisciplinary domain within biomedical research that seeks to restore, regenerate, and substitute impaired tissues and cells. Platelet-rich plasma (PRP) is an emerging therapeutic modality in the field of regenerative medicine, which has garnered considerable attention for its capacity to facilitate and expedite tissue healing processes. Regardless of the existence of various conventional therapeutic approaches focused on wound healing and growth factors, the utilization of innovative treatments continues to pose a clinical challenge. There is an ongoing pursuit of regenerative therapies to reduce the burden on healthcare systems. For these reasons, the current study seeks to examine the field of regenerative skin wound healing, with a specific focus on the use of platelet-rich plasma as a cost-effective and safe therapeutic intervention that enhances the overall quality of life for patients. The present study utilizes a semi-structured interview format to evaluate the following: (i) whether platelet-rich plasma (PRP) therapy improves clinical outcomes in the field of regenerative aesthetic medicine; and (ii) whether platelet-rich plasma (PRP) therapy and patients' quality of life (QoL) are positively correlated.

University of Central Florida (UCF)

53. The Interplay of Mechanosensitivity and YAP Expression in Non-Small Cell Lung Cancer

Cole Mackey, Melissa Erdem and Quang Vo

Mentor: Dr. Xin Tang

Yes-Associated Protein (YAP) is a mechanosensitive transcriptional coactivator that is critical in cell proliferation. PC9 Non-Small Cell Lung Cancer (NSCLC) cells are not usually mechanosensitive, but recent studies show that

nuclear YAP expression increases in drug-treated PC9 cells, indicating potential mechanosensitivity. Our objective was to investigate the mechanosensitivity of drug-resistant PC9 cells by observing how YAP expression and location are influenced by substrate stiffness. We tagged YAP in PC9 cells with mNeonGreen2 fluorescent protein, then cultured "Selected" (drug-resistant) cells by exposure to increasing AZD9291. We then seeded Selected and Non-Selected cells onto soft polyacrylamide hydrogel and stiff glass and observed YAP nuclearization and expression via fluorescence microscopy. Results revealed that Non-Selected cells showed no significant difference in YAP Nuclear/Cytoplasmic (N/C) ratio on gel versus glass substrate, indicating that regular PC9 cells are not mechanosensitive. Contrarily, Selected cells showed increased YAP nuclearization when cultured on glass, indicating that drug-resistant PC9 cells are mechanosensitive. We conclude that PC9 NSCLC cells that successfully resist drug treatment become mechanosensitive, and the mechanosensitivity of drug-resistant PC9 cells allows mechanical stimuli to affect YAP expression. Future directions include exploring methods of YAP denuclearization via mechanical stimuli as a pathway to reverse drug resistance.

University of Florida (UF)

54. Hegel and Nature

Emily Gnida

Mentor: Dr. LaChance Adams

Alison Stone's work on ecofeminism shows how the influences of German Idealism on the philosophy of nature has consequences for our sympathies towards nature. To the German philosopher Hegel, the humanization of nature through our labor brings humankind closer to self-consciousness. However, this view has perpetuated the justification for excessively exploiting nature's resources to a devastating extent. The contrasting view is to abandon the desire for self-actualization for the acknowledgment that human beings are dependent and are of nature. The distinction is primarily in what humans value from nature, be it the resources nature supplies, or the satisfaction of dominion over nature. Stone highlights that severing the connection between man and nature is the source of the ecological crisis. A reevaluation of our consumeristic desires can begin to satisfy our union with nature and towards maintaining a sustainable commerce with nature amidst our alienation from nature. My methodology includes using Alexandre Kojève's lectures as a guide for my interpretation of Hegel's philosophy of nature, providing an extensive description of what is meant by "nature", and the problems with Hegelian notions in our reconciliation with nature. I primarily focus on Hegel's description of how our anthropogenetic desires conflict with nature. I mean to find practical solutions in how to mitigate these concerns for the modern consumer to alleviate the anxiety of an alarming ecological crisis. Such includes diverting our attention away from the trivial desires of consumeristic society and towards beginning to place value on the care of nature.

University of North Florida (UNF)

55. Schrödinger's Mimic: Doubles, Shapeshifters, and Inauthentic Reality Infiltrating Sci-fi and Fantasy

Sean Kohut

Mentor: Dr. Warren Jones

The perennial trope of abnormal imitations posing as objects, creatures, and people in roleplaying games, films, and literature, poses surreal and often unnerving questions of personal identity and the legitimacy of existence. Since antiquity, the concept of the double has been ubiquitous in the folklore of various cultures, often tapping into what is conventionally understood to be a primal fear of the unknown. Jacques Lacan, Sigmund Freud, Masahiro Mori and others provide tenable analyses suggesting that the uncanny sensation evoked by the amorphous lies within familiarity. According to Dimitris Vardoulaki, the doppelgänger is a literary response to the philosophical focus on subjectivity. Through self-conceptualization individuals are able to understand how they fit into place within the world; however, if counterfeit entities are introduced, the concern of psychological instability manifests. Stephen King's The Outsider illustrates a competent detective lead, who begins to question what's real about himself and his world when investigating a heinous crime. John Carpenter's film The Thing examines the dread among researchers and their rapid descent into madness, as a shapeshifting alien hunts them. Fromsoft's video game Dark Souls manages to instill paranoia with its clever use of deadly illusions and object forgeries. While threats such as identity theft have been limited in their remoteness within the modern world, the possibility of new dangers arise with the advent of current A.I. technology, and its capability to replicate not only the likeness but also the voice and mannerisms of real people, not unlike that of a doppelgänger or mimic.

Eastern Florida State College

56. Dasyatis Sabina

Shakira Brown

Mentors: Nicholas Davis and Sarah Krecji

Dasyatis Sabina, The Atlantic Stingray, is one of three types of stingrays found in the Indian River Lagoon on the East Coast of Florida. They are also common in estuaries and coastal waters. Dasyatis Sabina feeds on marine worms, small crustaceans, crabs etc. My study is focused on the habitat distribution of Dasyatis Sabina in the Indian River Lagoon based on the population density. The Florida Fish and Wildlife Commission (FWC) will be used to study the habitat distribution in ArcGIS pro. I also aim to find out exactly why the habitat distribution is that number, and what can be improved to up the number.

Bethune-Cookman University (BCU)

57. Understanding the Health Impacts of Vehicular Emissions in South Florida: A Comprehensive Analysis

Janelle Ducheine

Mentors: Dr. Jason Quinn and Noah Horesh

South Florida is famous for its diverse cultural scene and year-round sunshine. This success, however, has not been without its consequences. While the region enjoys economic prosperity, the hidden cost of deteriorating air quality and adverse health effects from vehicle emissions necessitates urgent attention. Electric vehicles (EVs) have emerged as a potential solution, promising reduced emissions, and increased energy efficiency. However, the intricate life cycle emissions associated with EV energy production raise questions about their net benefits. Utilizing data from the Florida Department of Transportation, vehicle life cycle assessment from the Argonne National Laboratory, and historical county records, this study offers a comprehensive approach to emission predictions for various vehicle types and roadways within 4 counties. Projections consider the dynamic interplay of commuting habits and gradual EV adoption. The health impact these emissions have on each county were analyzed using the Estimating Air Pollution Social Impact Using Regression (EASIUR) model which focuses

on elemental carbon, nitrogen oxides, and sulfur dioxides. Projected emissions and its associated social costs for each pollutant were visualized per county until 2050. Marginal social costs of emissions between 2022 and 2050 were compared, reflecting the transition from no electric vehicle adoption to projected ratios calculated by the National Renewable Energy Laboratory (NREL). The adoption of electric vehicles demonstrated a substantial reduction in nitrous oxides emissions and elemental carbon, resulting in health-related cost savings across all counties.

Florida International University (FIU)

58. Swipe for Heartfelt Connections: Examining the Relationship Between Online Dating and Physiological Health

Hannah Grace Lee and Louden Masters

Mentors: Dr. Mickey Langlais and Celia Lee

As humans, we are driven by a need to connect with others (Maslow, 1943). With the rise of communication technology since the late 20th century, it is easy to connect with people. Technology has rapidly become a main way of forming romantic relationships due to its ability to connect people at any time and place. The growing integration of technology in communication is also evidenced by the regular use of mobile dating applications (MDAs) among adults. While studies have shown why people use online dating applications, few have examined the physiological effects of using a dating application. According to the National Institute of Health (NIH, 2021), increased heart rate and blood pressure can hinder health. Therefore, the goal of this study is to understand how online dating may contribute to changes in physiological health. Data was collected from undergraduate students who were single and had a dating application (N = 30). Participants came to a lab, put on a heart monitor, and their blood pressure was measured. Next participants used a dating application for 15 minutes and then stopped, at which point their blood pressure was measured. Participants blood pressure was also measured at 30 minutes. Heart rate was measured continually throughout the 30-minute experiment. Correlation and regression analyses revealed that swiping right was positively associated with systolic blood pressure at 15 and 30 minutes. Attachment anxiety and avoidance were tested as moderators but were insignificant. Results show that using dating applications has some minor implications for physiological health.

Florida State University (FSU)

59. Emotional Eating, Self-Esteem, and Resilience in Young Adults

Gabriela Barber, Sean Blumenfeld and Sophia Fiz

Mentor: Dr. Patrick Cooper

Research suggests that unhealthy eating behaviors occur for various reasons, most notably by perceiving external cues of food, but also from excessive stress. Research also suggests that people cope by either overeating or undereating in response to stress. There are two possible contributing factors to the presence of emotional undereating and emotional overeating: resilience to stress and self-esteem. The purpose of this study was to examine whether self-esteem and resilience limit emotional undereating (EUE) or emotional over-eating (EOE). Here we show that resilience has more of an impact on both EOE and EUE than self-esteem. In a sample of 183 adults, correlational analyses found that self-esteem and resilience are inversely associated with undereating but not overeating. In exploring these associations further, a multiple regression analysis was conducted by entering both resilience and self-esteem as predictors of undereating. It was found that resilience is the primary buffer in limiting undereating. In other words, those with resilience tend to exhibit healthier eating habits beyond that of one's self-esteem. This is in opposition to the commonly held belief that self-esteem is the main contributing factor to unhealthy eating patterns. It is reasonable to suggest that resilience, defined as an ability to adapt to stress, serves as a mechanism to limit unhealthy eating behaviors when stressed. Self-esteem, on the other hand, does not seem to serve this unique purpose. These results are important in understanding and preventing unhealthy emotional eating behaviors. In particular, building resilience instead of self-esteem, might help curb unhealthy eating.

Lynn University (LU)

60. An Examination of the Mediating Role of Need for Closure

Alyson N. Almeida, Sophia Sonkin and Mario Poerio

Mentor: Dr. Ted V. Cascio

Previous research has demonstrated that individuals who are high in intellectual humility (IH) have a propensity to hold less extreme attitudes, but thus far these studies have mainly tested this relationship within the narrow context of political judgment. In this study we sought to extend this research to the moral domain, and also test the dispositional trait of need for closure (NFC) as a novel mechanism that has not been explored in previous research. Specifically, we hypothesized that IH would predict less moral attitude extremity (MAE) when rendering moral judgments, and that NFC would mediate these relationships. To test these hypotheses, we first invited participants to complete the Comprehensive Intellectual Humility Scale and a shortened version of the Need for Closure Scale. Next, participants were asked to read a vignette that described a morally ambiguous situation (specifically intended to impart a sense of moral uncertainty) and then rate their perceptions of the morality of the actions and actor depicted therein. Contrary to our hypothesis, we found that there was no significant relationship between total IH scores and MAE; however, a specific facet of IH – lack of intellectual overconfidence – did predict MAE and, further, NFC fully mediated that relationship. Discussion centers on the multidimensionality of IH and the need for future research to focus more deliberately on its individual facets.

Palm Beach State College

61. High-Throughput Drug Screening for Disease-Modifying Arthritis Therapy

Janapriya Vijayakumar

Mentor: Dr. Thomas Kean

Current therapy for arthritis predominantly focuses on the symptoms rather than the underlying causes of disease progression. Thus, it is necessary to identify novel drugs which target the underlying molecular basis of such diseases. Using high-throughput cell-based drug screening, we will screen 570 different compounds which were narrowed down from 811 starting compounds from the NIH Mechanistic Set. All selected drugs follow Lipinsky's Rule of 5 to ensure optimal pharmacokinetic properties. The study will use IIAM-PRG4Luc modified primary human chondrocytes, which secrete a lubricin promoter-driven luciferase reporter to measure lubricin, a compound that reduces friction between articular cartilage. These cells will be grown and tested in a physioxic (5% oxygen) condition which has been shown to better model joint conditions within the body as opposed to typical tissue culture in atmospheric oxygen (20%). Cells will

form cartilage aggregates (5000 cells) in 384 well plates with positive and negative controls. The drugs will be diluted in cell media to 2μM and fed to cells 10 times over the course of 21 days (about 3 weeks). The cells will be imaged two times a week to track chondrogenesis. The aggregates will then be tested for various biochemical features such as lubricin, Type 2 collagen, glycosaminoglycan, and hydroxyproline through various assays. Aggregates will also be fixed and sectioned for histology and staining. We hope to identify a compound which may improve the structural and tensile features of cartilage and therefore be a potential disease modifying therapeutic for cartilage-related diseases.

University of Central Florida (UCF)

62. "This Is Exactly the Type of Activity the Museum Should Be Doing All the Time.": Exploring an Interactive Museum Exhibit Through Activity Theory

Elizabeth Riotto

Mentor: Dr. Megan Ennes

Recent research suggests that the use of natural history collections in museum education can be beneficial for science engagement and public education. This study expands on this extant research through an exploration of a natural history Live Lab exhibit, in which museum faculty, staff, and volunteers prepared paleontological specimens for collection while engaging the public in science education in an interactive exhibit space. Using a framework of activity theory, a mixed-methods survey was distributed to individuals that participated in the Live Lab to explore the interactions of the subjects, objects, tools, outcomes, rules, and labor division in the Live Lab. Twenty-two (N=22) individuals responded, and their quantitative and qualitative responses to this survey were openly coded and analyzed. This analysis revealed that participants valued engaging the public with paleontology, believed both themselves and the public benefited from the exhibit, and expressed enthusiasm for future interactive and collections-based exhibits. Conversely, some participants also experienced challenges with the physical Live Lab space, feelings of unpreparedness, and hesitations about personal skills when engaging in public outreach. As such, future Live Lab or similar collections-based exhibits are recommended alongside greater preparation and training for participants. These findings can be applied in other museum spaces to promote innovative science engagement and museum education for the public while simultaneously supporting exhibit participants.

University of Florida (UF)

63. Transcriptional Differences between Normal and Obese Zebrafish Associated with Intrinsically Disordered Proteins as a Model for Human Disease

Jusmary Mercado

Mentor: Dr. John Hatle

Nutrient (esp. amino acid) catabolism not only produces cellular energy but can also regulate metabolic health. The branched-chain amino acids (BCAAs; leucine, isoleucine, and valine) are essential for protein synthesis and stimulate cellular growth, however in excess they can be detrimental. Dietary modifications such as isoleucine restriction can delay age-related disease and are predicted to stimulate leucine and valine catabolism. Thereby, we quantified catabolism of each individual BCAA and measured organ sizes upon dietary isoleucine restriction. Lubber grasshoppers were fed high-quality artificial diets matched to the amino acid composition of vitellogenin (Vg; the precursor of egg yolk) with isoleucine included at 100%, 33%, or 0% of that in Vg. Carbon-13 labeled leucine, isoleucine, or valine was force-fed and tracked to breath carbon dioxide to quantify organismal catabolism. For only the 0% isoleucine group, leucine and valine cumulative catabolism each were significantly greater than the 100% isoleucine group, with respective 150% and 77% increases (ANOVA, $P<0.05$). In contrast, for isoleucine cumulative catabolism, all artificial diets were similar. Isoleucine restriction at 0% severely decreased ovarian mass by 84% and fat body mass by 46%, relative to the 100% isoleucine group. Therefore, severe isoleucine restriction mimics a low-energy state catabolically, in which short-term application may alleviate metabolic defect via increased leucine and valine catabolism. We plan to further investigate the mechanism by which increased catabolism affects age-related disease.

University of North Florida (UNF)

64. Dietary Isoleucine Restriction Increases Catabolic Flux of Valine and Leucine in Lubber Grasshoppers

Haley Peters

Mentor: Dr. Lisa Chambers

Nutrient (esp. amino acid) catabolism not only produces cellular energy but can also regulate metabolic health. The branched-chain amino acids (BCAAs; leucine, isoleucine, and valine) are essential for protein synthesis and stimulate cellular growth, however in excess they can be detrimental. Dietary modifications such as isoleucine restriction can delay age-related disease and are predicted to stimulate leucine and valine catabolism. Thereby, we quantified catabolism of each individual BCAA and measured organ sizes upon dietary isoleucine restriction. Lubber grasshoppers were fed high-quality artificial diets matched to the amino acid composition of vitellogenin (Vg; the precursor of egg yolk) with isoleucine included at 100%, 33%, or 0% of that in Vg. Carbon-13 labeled leucine, isoleucine, or valine was force-fed and tracked to breath carbon dioxide to quantify organismal catabolism. For only the 0% isoleucine group, leucine and valine cumulative catabolism each were significantly greater than the 100% isoleucine group, with respective 150% and 77% increases (ANOVA, $P<0.05$). In contrast, for isoleucine cumulative catabolism, all artificial diets were similar. Isoleucine restriction at 0% severely decreased ovarian mass by 84% and fat body mass by 46%, relative to the 100% isoleucine group. Therefore, severe isoleucine restriction mimics a low-energy state catabolically, in which short-term application may alleviate metabolic defect via increased leucine and valine catabolism. We plan to further investigate the mechanism by which increased catabolism affects age-related disease.

University of Central Florida (UCF)

65. Constructed Treatment Wetland Systems as Effective Microplastic Mitigation Tools

Katherine Johnsen

Mentor: Dr. Lisa Chambers

Microplastics, defined as synthetic polymers under 5mm in size, are increasingly recognized as a major environmental pollutant in aquatic ecosystems. Constructed treatment wetland systems (CTWS) are known to be effective in removing anthropogenic nutrients and diverse organic pollutants. This research seeks to evaluate the effects that treatment wetlands have on microplastics, and the potential for a CTWS to remove microplastics from tertiary-treated municipal wastewater before discharging it into local water

bodies. These research questions were investigated by calculating percent removal of microplastics by a CTWS, and through a bottle incubation study. Percent removal of microplastics by a CTWS was determined by quantifying microplastic concentrations in surface water samples at both an influent and effluent site. Water samples were vacuum filtered and particles within the sample were caught on a 0.45 micrometer gridded filter paper. Filter papers were then visually inspected under a dissecting microscope in order to manually quantify the microplastic pieces in the sample. It has been demonstrated in this research, throughout eleven months of data collection, that CTWS are effective in removing microplastic particles from reclaimed water, with percent removal rates up to 97.9%. Additionally, a bottle incubation study is being planned to determine how various materials, natural and synthetic, are differentially decomposed in simulated CTWS conditions. This research demonstrates an additional ecosystem service provided by treatment wetlands and provides evidence that CTWS should be considered as a potential microplastic remediation tool.

University of Central Florida (UCF)

66. "I Always Come Back" A Look into the World of Five Night's at Freddy's in Correlation to Generation Z.

Emma Sigarto

Mentor: Dr. Warren Jones

The indie horror game Five Night's at Freddy's connects to Generation Z and why people enjoy horror franchises, this involves the feeling of completion that relieves stress, the euphoric high felt along with the feeling of nostalgia, the intensity given when watching others in fear, as well as putting themselves in the situations of thrill. Five Night's at Freddy's was a game created by Scott Cawthon, where the player works as a night guard, fending for their life against killer animatronics. The game uses outdated technology and graphics to place the player into the 1980s, when the game takes place. Many sources in articles and journals discuss the nostalgia and horror that draws people back to the game. The Excitation Transfer Theory proposes that people enjoy the feeling of resolution when the story of a horror movie or game is over, allowing the player to feel safe, as the high intensity situations end. When applied, this theory explains why people love the feeling of completion, compelling them to advance further into the story. Gamers enjoy the feelings of conclusion and nostalgia, which draws them back multiple times to feel the same euphoric high as before. Viewers also enjoy watching others in fear, softening initial horror of the situation, explaining why people watch youtubers play horror games, rather than playing the games themselves. Finally, Gamers like putting themselves in horror situations to give themselves a release of intensity, thinking about how they would react when placed in these horror situations.

Eastern Florida State College (EFSC)

67. Gray Box Modeling for Improved Accuracy of Glucose-level Prediction for the Artificial Pancreas

Jackson Steele

Mentor: Dr. Taylor Higgins

Gray box modeling is a combination of an analytical model (white box) with some form of machine learning (black box). In this project, we aim to leverage this modeling technique to better predict glucose levels in individuals with diabetes. Analytical (white box) models are differential equations that describe how a system evolves over time, but setting the parameters for these equations requires extensive knowledge or assumptions about an individual's physiology. Machine learning (black box) strategies can produce patient-specific models, but often require onerous amounts of training data and lack safety guarantees when used for control purposes. Gray box modeling may allow us to mitigate the pitfalls yet leverage the benefits of both forms of modeling. We have built a neural network model (black box) that predicts the user's glucose levels based on the biological signals available from an apple watch and a continuous glucose monitor. Next, we will obtain glucose predictions from a Diabetes Mellitus Metabolic Simulator (DMMS.R) [1] which relies on the Dalla Man model [2] of the human metabolic system (the white box prediction). We are hoping that the fusion of these two glucose-level predictions will result in more accurate predictions of glucose levels. This improved model will allow us to develop advanced control strategies for the artificial pancreas.

Florida State University (FSU)

68. The Relationship Between Pornography and Marijuana Use

Tatiyana James

Mentor: Dr. Mu-tor Flood

The proposed study will investigate the relationship between pornography and marijuana. There is a significant lack of research between pornography and marijuana use. The study proposed two research questions. The first one was if pornography significantly predicts marijuana use in college students at an HBCU? The second was if male and female college students at an HBCU have significantly different levels of marijuana usage? The study will use a correlational research methodology. The sample will include 100 students at a southeastern HBCU. A correlation, simple linear regression and independent samples T-test will be conducted. It is expected that in research question one pornography will be found to be significant in predicting marijuana use. In research question two. The expected findings are that male and female college students at an HBCU will have significantly different levels of marijuana use.

Bethune-Cookman University (BCU)

69. Plasmonic Silver-Palladium Hollow Nanoparticles

Keven Luciano

Mentor: Dr. Xiaohu Xia

Metallic nanoparticles have been studied and used as plasmonic nanomaterials for various applications, including biosensing, catalysis, and electronics. Recent studies have demonstrated that metallic, hollow nanoparticles possess better plasmonic properties than their solid counterparts. Most already reported hollow nanoparticles are those made of silver and/or gold. In this research, we report silver-palladium nanocages with hollow interiors. The silver-palladium nanocages were synthesized based on a galvanic replacement reaction, where pre-formed silver nanoparticles were utilized as templates to react with palladium ions. Silver-palladium nanocages of varying sizes were synthesized to demonstrate the feasibility of size control. The nanocages were characterized with various analytical tools such as transmission electron microscopy, X-ray photoelectron spectroscopy, and UV-vis spectroscopy. With this work, we hope to develop a new type of plasmonic nanomaterial that can be applied in various fields.

University of Central Florida (UCF)

70. Sublethal TCDD Exposure During Zebrafish Development Produces Multigenerational Abnormalities in Ovarian Histology and Gene Expression

Emma Cavaneau and Amelia Paquette

Mentor: Dr. Tracie Baker

2,3,7,8 -Tetrachlorodibenzo-p-dioxin (TCDD) is a widespread pollutant that has endocrine disrupting effects and has been linked to reproductive disease. Zebrafish (Danio rerio) are an excellent model organism for studying the transgenerational effects of TCDD. The goal of this work is to investigate the histological and transcriptomic effects of developmental TCDD exposure on the ovarian tissue of exposed fish (F0 generation) and subsequent generations (F1 and F2). For histological analysis, the whole ovary area and the area of atretic cells were quantified using ImageJ v.1.53t in μm^2. The percent of atretic area in each ovary section was calculated, and the data from both experimental groups were compared using a Welch's t-test (significance indicated at $p < 0.05$). Transcriptomic analysis was performed using Lexogen Bluebee software and Ingenuity Pathway Analysis to examine the functional pathways altered by differential gene expression. Increased oocyte atresia was found to be multigenerational, persisting into the F1 generation of indirectly exposed fish. The percent atresia in the F2 generation did not differ significantly between the TCDD-lineage and control groups. The transcriptomic dysregulation of ovarian reproductive pathways spanned all three generations with the F2 generation being the most dysregulated, indicating a transgenerational effect on ovarian function. These outcomes both correlate with our transgenerational findings of reduced fertility and implicate epigenetic mechanisms in mediating these persistent effects. Overall, this research helps further the understanding of sex-specific mechanisms of TCDD-induced heritable reproductive disease across generations.

University of Florida (UF)

71. Pawprints on Purchases

Madison Vignola

Mentors: Dr. Monica Escaleras and Dr. Eric Levy

Recently, animal testing for products has become a divisive issue regarding its morality. The practice of animal testing includes experimenting on animals to assess the reaction and safety of products, usually causing distress and harm. The controversy centers on the banning of animal testing altogether or keeping it, as the method is more cost efficient and is deemed to ensure the safety of products. Understanding how testing on animals can affect American purchase decisions provides a unique view which enables us to comprehend consumers behavior regarding how their products are made in the corporate world. To gain an effective insight on this topic, I designed and published a questionnaire including 191 participants. This methodology allowed a diverse range of consumers across our country, securing the data needed to further delve into this subject. My hypothesis was proven in my survey as the majority of those earning less than $25,000 a year admitted to purchasing from brands that use animal testing. This high percentage proves how those with lower income have limited purchase decisions, and shows how companies may choose animal testing over other alternatives as it is more readily available. This study provided fresh insights into how consumers feel towards animal testing within production. Similar attitude based on certain demographics provided insight to the ethical question within the topic. The findings of this study allowed for further discussion on both our country's consumer behavior and the corporate responsibility of Americans regarding animal testing.

Florida Atlantic University (FAU)

72. Unraveling the Impact of Pre-existing Conditions on Maternal Mortality

Adrienne Perez and Ivan Chavez

Mentor: Dr. Mintoo Patel

Maternal mortality has skyrocketed in the past decade, mainly in minority women. Black maternal mortality rates are almost 2.6 times higher than white women. Creating an urgency in the medical field on what the cause may be. Studies have shown that 90% of maternal mortality deaths could have been prevented with the knowledge of pre-existing conditions. With studies showing minority women have a higher percent chance of having pre-existing conditions, it makes it even harder to provide better healthcare and save these women during maternity. Pre-existing conditions such as preeclampsia, PCOS, diabetes, high blood pressure, and cardiovascular diseases are some of the many different conditions that have not only increased this past decade but have also been the cause of death. We plan to research how and why pre-existing conditions are affecting pregnant women. The goal is to figure out which symptoms and signs are being ignored by medical professionals by focusing on causes of deaths that could have possibly been prevented. We hope to find that several cases are from a lack of understanding among medical professionals on how to deal with preexisting conditions and attacking them before they become a problem rather than medical malpractice. Results from this research will help bring to light the increasing rise of maternal mortality due to preexisting conditions and force a different approach to save those suffering silently.

South Florida State College (SFSC)

73. Transcription and Editing Workshops for Digital Project Outreach

Janaya Ferrer, Maya Blackin and Britney Griffith

Mentor: Dr. Clayton McCarl

The Digital Humanities can create opportunities to engage students and off-campus communities with academic work in new ways. Digital methods can allow non-specialists to go beyond being consumers of information to become actual collaborators. Many types of DH activities, however, can be hard to scale or require specialized skills that can be difficult to impart without a significant time commitment on the part of participants. These obstacles can reduce the potential of projects to connect with communities in meaningful ways. This presentation examines the approach taken to solving this problem by two projects based at UNF: coloniaLab and Editing the Eartha M.M. White Collection. Both publish digital versions of archival documents related to the history of North Florida, and both conduct public workshops on campus and in the community. Through transcription and basic editing activities that are low-tech, or no-tech, in nature, these workshops allow participants to contribute in meaningful ways with minimal barriers. Over the past year, we have been working as interns and student leaders, helping to coordinate and lead the workshops offered by coloniaLab and Editing the Eartha M.M. White Collection. In Spring 2024, we will co-author an article on this topic with Dr. Clayton McCarl and Dr. Constanza López Baquero, for possible submission to magazén | International Journal for Digital and Public Humanities. In this presentation, we will discuss our work

and reflect on the opportunities this outreach has created for us and for the workshop participants.

University of North Florida (UNF)

74. Use of Baited Remote Underwater Video Systems to Assess Fish Biomass and Food Web Differences Across Habitats

Latyr McQuarters, Cory Rider and Emma Robbins

Mentor: Dr. Heather Mason

Standard marine organism sampling methods involve observation through dive surveys or direct capture, requiring expensive human hours or environmentally damaging practices like trawling. Baited Remote Underwater Video (BRUV) involves stationary submerged cameras that are deployed in the water and record for a predetermined period of time. BRUVs are a minimally invasive practice that have a low entry level cost and wide range of applications, allowing the technique to be used in almost any area with acceptable visibility levels. Our previous research in Tampa Bay determined that BRUV video data collected with turbidity and other water chemistry was an effective method to understand marine predator movement across seasons and environment types. In this study, we added to the previous BRUV design and methodology to determine if the technique can provide more ecological data relevant to fisheries. This was done by recording fish size using a size standard in the video frame, collecting chlorophyll samples from the water to calculate phytoplankton concentrations (see related poster on this topic), and utilizing fishing lures to attract visually-stimulated predators. This new method will be used to determine environmental health based on the amount of primary production and the size/age distribution of key fishery species. Additionally, the use of fishing lures will track the importance of vision for predatory species as visibility levels change throughout the seasons. Fisheries-independent monitoring techniques have long been invasive and destructive, and thus low-impact methods like the present work are key to preserving the health of marine ecosystems.

University of Tampa (UT)

75. Effects of Glyphosate on Mosquito Development, Survival, and Immune Regulation

Laurent Sanchez Rodriguez and Otis Woolfolk

Mentor: Dr. Kenneth Fedorka

Herbicides are integral to agriculture. Glyphosate is the most widely used herbicide by volume, with 650,000 tons used in 2011 alone. The effects on off-target organisms are widely unknown. Mosquitoes are of interest due to their ability to vector diseases and because they develop in agricultural plots where Glyphosate is deposited. Previous work suggests that Glyphosate interferes with melanin-based immunity, making mosquitoes better vectors. However, the previous work mentioned suffered from unrealistic Glyphosate dosages and delivery. This study aims to readdress this issue using biologically relevant dosages and applications. Experiments were conducted to examine the effects of Glyphosate on mosquito larvae throughout the rearing process and how it would alter fitness and immune activity including PO, an insect melanin production enzyme. Survival and development time were recorded with 3 Glyphosate treatments and a control with no herbicide. The treatments added Glyphosate to larval rearing dishes, adult mosquito's nectar feed, and adult mosquitoes directly via spray emulating a field spray. The recommended field application dose of 68µm of Glyphosate reduced the survival rate to 0.80 and significantly increased development time. As Glyphosate dose increased, adult PO activity decreased for the feeding and spray treatments. Glyphosate induced upregulation in dicer (feed and spray), and downregulation in defensin, MyD88 (feed only), and PPO (feed only). These results suggest that Glyphosate causes stress for the mosquitoes and can negatively affect their immunity in agricultural settings. Decreased immunity may lead to increased vector competence which can lead to a higher probability of spreading disease.

University of Central Florida (UCF)

76. An Investigation of the Impact of Animal Shelter Volunteering and Dog Training Programs on College Students

Nancy Strever

Mentors: Dr. Lauren Highfill and Dr. Sara Hofmann

Dog-training programs (DTPs) have been linked to positive well-being and cognitive enrichment for dog participants but can also have significant positive impacts on the handlers. Recently, DTPs have become a common offering in many settings, however, there have not been any published studies examining the effect of DTPs on undergraduate students who are particularly vulnerable to psychiatric disorders. We believe DTPs could be an innovative and inclusive approach to helping students. In an effort to make DTPs more inclusive to all college students and to foster a relationship with local animal shelters, we had student participants volunteer at the Humane Society where they were involved in animal care and training tasks. Several psychological measures were collected from the students via surveys, including measures of perceived stress, empathy, and feelings of self-efficacy. We hypothesized that the psychological well-being of the students would increase after their volunteering experience. This study contributes to psychological literature and the study of human-animal relationships by examining the benefits of being involved in training and caring for animals. We could not support our hypothesis as we did not find trends that supported an increase in positive well-being. However, there was qualitative data to support our hypothesis via the comments that students made in their survey answers. Given our mixed findings, we propose there be further research on the impact of dog training programs on college students in order to learn more about the potential positive effects these programs can have on particularly vulnerable members of society.

Eckerd College

77. Invalidation as Trauma?: Posttraumatic Cognitions Relate to Invalidation and Suicidality

John Askew

Mentor: Dr. Thomas Joiner

Theoretical and empirical work suggests that emotional invalidation is correlated with suicidal ideation (SI) through post-traumatic cognitions (PTC). To discern this potential relationship, an indirect effects model was estimated to test whether PTCs accounted for the relationship between emotional invalidation and SI. A combined sample of adults (n = 460) with at least one minoritized identity (75.9% cis-gendered women, 75.7% people of color, 43.9% non-heterosexual, 3.9% transgender, and 17.6% disability-identifying) was collected across several waves of recruitment from a large university in the southeastern U.S. A structural equation indirect effects model was estimated using robust maximum likelihood with the following three parallel

mediators to examine differential effects across PTC types: Negative Cognitions About Self (NCAS), Negative Cognitions About the World (NCAW), and Self-Blame (SB). The estimated model fit well (CFI = .946, TLI = .937, RMSEA = .053). Results indicated that NCAS partially accounted for the relationship between perceived invalidation and SI (p = .001) while NCAW and SB did not (p's > .05). Findings indicate PTCs, and in particular NCAS, may serve an important role in the relationship between invalidation and SI. Further research and clinical work that focuses on mitigating the impact of negative self-cognitions may benefit suicide prevention efforts targeting diverse populations, including trauma-focused evidence-based therapies that address NCAS.

Florida State University (FSU)

78. Mathematically Modeling Multiple Myeloma—Immune Cell Dynamics to Predict Novel Therapy Options

Giuseppe Scibilia

Mentor: Dr. Helen Moore

Multiple myeloma (MM) is a malignancy of the plasma cells in the bone marrow, which leads to said cells accumulating in the bone marrow causing the breakdown of bone. In many cases, the malignancy begins from a newly divided plasma cell which experienced an irregular chromosomal translocation or aneuploidy, MM is difficult to spot in its early stages. Although currently incurable, there are often periods of disease remission following treatment and recurrence. In the MM microenvironment, some immune cells factors actually give MM cells advantages such as enhanced immunosuppression, heightened spread and proliferation. Our goal is to find a potential combination therapy that can minimize the MM cells population. We first created a map of influential factors in the MM microenvironment based on the literature. Next, we created a model of the effects these factors had on MM cells. We are currently creating the equations to model the microenvironment. We can easily modify the model and equations to add or remove factors to test. In the future, we will use these equations to predict the outcome of the application of new combination treatments.

University of Florida (UF)

79. Undergraduate Students' STEM Identity: Self Perception of Future Professionals Using a Deep Learning Approach

Macayla Barnett

Mentor: Dr. Nicole Lapeyrouse

The attrition rate for STEM (science, technology, engineering and math) degrees is well recognized. The Presidential Council on Advisors and Technology brought attention to the importance of increasing the amount of STEM degrees awarded more than ten years ago, however, this issue still remains today. Leading research has indicated that students are more likely to persevere in their STEM major if they can envision a favorable and positive relationship with their future professional career. The purpose of this study is to gain a deeper understanding of undergraduate STEM major's self perceptions and emotions regarding their professional futures. Students in chemistry courses completed a mixed methods survey at the start and end of the semester and were invited to an online interview to elaborate on their answers. The students who chose to take part in the interview are the subjects of this presentation. Preliminary results have shown excitement and confidence as the majority response to questions on emotions toward their academic and future professional lives. However, a large number of students commented on struggling with demanding classes or personal issues to the point of researching different majors that are less rigorous. The findings of this research will shed more light on ways to better assist STEM undergraduates in their major to preserve their confidence and passions in their future professional fields.

University of Central Florida (UCF)

80. Financial Modeling by Ordinary Differential Equations with Chaotic Analysis

Warren Chapman

Mentor: Dr. Seenith Sivasundaram

We study, applications of ordinary differential equations (ODEs) in the finance. First, the bond valuation and its sensitivity to interest rate change is defined as an ordinary differential equation. Then, a noise term is added to ordinary differential equations in order to use them as a powerful mathematical tool for risky assets. Financial modeling is the construction of an abstract representation (a model) of a real financial situation. In other words, financial modeling is about translating a set of hypotheses about the behavior of markets or intermediaries into numerical predictions. We consider the model formulation of the financial system by a model using differential equations to investigate the behavior of a financial system containing interest rates, investment demand, and a price index. The model captures the interaction between a variety of financial factors. The system aims to represent chaotic financial activities. Such a system was taken into consideration for various analyses in our studies.

Bethune - Cookman University

81. The Correlation Between the Imposter Phenomenon and Grit in College-Aged Students

Daniela Rodriguez Suarez and Gabriel Terwilliiger

Mentor: Dr. Starlette Sinclair

The Imposter Phenomenon (IP), usually referred to in media as "Imposter Syndrome", is simply defined as the phenomenon of feeling as if you do not deserve the success you have achieved and furthermore feeling as though you must have misrepresented yourself in order to achieve it (Slank, 2019). This can apply to any field, but is most often referenced in the academic world with its prevalence in both faculty and student populations alike. Another frequently referenced feature in academics is grit, a noncognitive trait representing courage, resilience, and perseverence when it comes to long-term goals (Duckworth, et al., 2007). In this analysis we will be focusing on a university student population, specifically the way that grit and IP interlink. We will be working with the hypothesis that higher scores in grit have a negative correlation with IP scores. It is likely that high grit would combat IP through an inherent greater sense of self-efficacy and confidence, as a result leading to a negative correlation between the two. Grit and IP scores were measured in both students and faculty, grit with the Grit-S scale by Duckworth and IP with CIPS by Clance. This analysis will have implications for the treatment of IP in students potentially through the assisted cultivation of grit, and further studies could additionally investigate the relationship between the two in other age groups.

Florida Gulf Coast University (FGCU)

82. Examination of the Protective Effects of Religious Affiliation on VR Suicide Behaviors

Joseph Ciancio

Mentors: Dr. Thomas Joiner and Dr. Jessica Ribeiro

Previous Studies have suggested religion may protect against suicidality, possibly due to its influence on cognitive aspects, such as preserving a sense of hope and belonging, and social aspects, such as community based coping. However, methodological constraints, including the use of repetitive protocols and non-diverse samples, have left a significant gap in our understanding. The current study utilizes the Virtual Reality paradigm to explore the relationship between religious status and both prior suicidality and VR suicide decisions. Contrary to our hypotheses, analysis of 188 participants across two VR studies found no significant correlation between religious status and history of suicidal ideation ($\beta = .482$, $p = .356$), planning a suicide attempt ($\beta = .959$, $p = .369$), or making an attempt ($\beta = .959$, $p = .369$). Similarly, religious status did not predict the number of VR suicide attempts ($\beta = .515$, $x2 = 1.264$, $p = .261$), potentially suggesting no protective influence of religious status on suicidality. Our findings conflict with the larger body of previous studies suggesting a need for deeper analysis of mechanistic links between religiously driven cognitions and the spectrum of suicidality.

Florida State University (FSU)

83. Soft Skills in STEM

Mariana Sorroza

Mentor: Dr. Timothy Kotnour

Those working in science, technology, engineering, and math (STEM) fields are delivering world-changing solutions to the problems we face and are saving lives every day. In order to do this, engineers, scientists, doctors, and other professionals need to possess hard skills. However, without strong soft skills, the ability of those in STEM to help others becomes limited. Therefore, the purpose of this study is to learn how those in STEM disciplines at an educational and industry level rate themselves in their effective use of soft skills and to provide suggestions on how we can improve our soft skills. This was accomplished through self-assessment surveys where individuals rated their level to use 33 soft skills effectively, selected the three soft skills they think are most important to have and display across levels in a company, reported where they learned the majority of their soft skills, and provided suggestions on how soft skills can be improved. Students in STEM disciplines from the focus group rated fearless with failure, time management, and bravery as the three soft skills they use least effectively. Employees who perform STEM-related tasks reported fearless with failure, time management, and curiosity as the three soft skills they use least effectively. Common recommendations to improve include increasing group work in classes, going to therapy, reading, and team bonding. Through those in STEM disciplines being able to learn from these recommendations, we can take action to improve our soft skills and better serve those we put our skills into use for.

University of Central Florida (UCF)

84. Molecular Evolution to Improve the Binding of Arrestin1 to Enolase1 as a Tool to Enhance Glycolysis in the Retina

Hunter Hutchinson and Derek Breiner

Mentor: Dr. Wesley Clay Smith

Genetic dysfunctions of the retina are a category of orphan diseases that affect over 150,000 Americans. Regulating the metabolism of retinal photoreceptors is a possible method for the treatment of retinal degeneration without targeting the specific underlying defect. Photoreceptors have one of the highest energy demands of any cell in the body and fulfill this demand primarily through aerobic glycolysis. Enolase1 is a key step in the glycolytic pathway. In photoreceptors, arrestin1 has been shown to complex with enolase1, inhibiting the activity of enolase1 by up to 25 percent. We have previously demonstrated that a modified arrestin1 with two residue changes (ArrGG) competitively disinhibits glycolysis in photoreceptors and can have a therapeutic effect. The purpose of this research is to find modifications to ArrGG which can increase its binding affinity and make it a stronger competitive dishinhibitor. Eighteen arrestin1 residues were identified in a high throughput screen that increased binding with enolase1 when mutated to alanine. Molecular modeling was used to select 8 mutations with the greatest potential to increase arrestin1 to enolase1 binding. Two of the mutations (H10E and R102E) showed 23.6% (H10E) and 29.1% (R102E) increase in binding affinity. A modified ArrGG with human analogs for these two mutations increased the rate of lactate secretion at a four-fold lower AAV titer in a mouse model. These findings offer evidence that the affinity of ArrGG for enolase1 can be improved, thus providing a more effective therapeutic that will be able to outcompete endogenous arrestin1 in patient photoreceptors.

University of Florida (UF)

85. Does “Race” Influence Missing and Unidentified Person Cases?

Kaitlin Segerstam-Ivey

Mentor: Dr. Gordon Rakita

In both missing persons and homicide cases, the "race" of the victim is an important element of the biological profile used by law enforcement to aid their efforts to locate either the missing individual or the perpetrator of the crime. In a perfect society, law enforcement would use "race," ancestry, or ethnic affiliation of the victim to appropriately focus its efforts and resources on solving the case. Additionally, we would hope that in a fair medico-legal system, the "race" of the victim would have a limited impact on the level of effort and the amount of resources law enforcement officials utilize when solving crimes. There is an ongoing debate within the forensic field about determining bioaffinity/ancestry, often referred to as "race" or "ethnicity". My research seeks to analyze survey responses from forensic professionals and the usage of bioaffinity in forensic cases. I am examining survey responses on how forensic professionals view ancestry within their case, how law enforcement handles these cases from the survey participants' point of view, and whether the respondents notice systematic racism within their field. My research will also include supplementary data from the NamUS database, the Census, the American Board of Forensic Anthropology, and the CDC utilizing different statistical analysis methods.

University of North Florida (UNF)

86. What’s in Your Cup: Organism Diversity in Probiotic Beverages

Maryn Shilale and Gavin Cooper

Mentor: Dr. Lauren Logsdon

Probiotics are defined as foods and/or supplements that contain non-pathogenic microbes such as bacteria and yeast, which can grow and replicate in the gut, yielding a variety of health benefits. The benefits of probiotics stem from their ability to produce antioxidant and antimicrobial substances, boost the immune system, and improve gastrointestinal

function by supporting the growth of normal flora (the "good bugs" that live in your body), and discouraging the growth of potential disease-causing organisms by competing with "bad bugs". Probiotic organisms exist in many fermented foods including yogurt, kimchi, kombucha, sauerkraut, and a variety of probiotic supplements. The goal of this study is to collect and characterize probiotic organisms available in commercial foods and supplements to investigate the interactions between probiotic organisms and human pathogens. Three different brands of probiotics beverages were sampled to quantify and characterize the microbes present. Bacteria and yeast colonies were isolated and classified by colony morphology. Then further tested in gram stains and on selective/differential medias to categorize unique isolates. These unique isolates were genetically identified through the sequencing of the rRNA genes, 16s rRNA for bacteria and 18s rRNA for yeast. As expected, gram-positive spore forming Bacillus species were the most commonly identified bacterium, however a mixture of yeast and gram-positive and gram-negative bacteria were identified. Future experiments will test the effect these probiotics have on Streptococcus pyogenes, a common cause of mild diseases such as tonsillitis and strep throat but which can lead to severe infections like necrotizing fasciitis, and rheumatic fever.

University of Tampa (UT)

87. Archaeological Analysis of the Burns Spoke Burial Mound (8BR58) at Cape Canaveral Space Force Station and the State of Florida

Melanie Langgle

Mentors: Dr. Sandra Wheeler,Dr. Emily Zavodny, Dr. Stacy Barber and Dr. Amanda Groff

At Cape Canaveral, Florida, the Burns Site (8BR85) is a burial mound consisting of various active phases starting in the Late Archaic through the Malabar II period. The mound displays a Native American mortuary practice called 'radial burials.' Radial mounds are a type of burial pattern that contain indigenous human remains oriented in a spoke wheel pattern, the heads of the individuals pointed toward the center of the mound and the feet pointing outward. Some researchers credit it as a response to deaths of the indigenous peoples following European contact. Other evidence suggests it is a custom that predates colonialism. Using quantitative and qualitative data collection, an 'Attributes Table' was formulated to help determine if there are any anomalies associated with the radial burial pattern and other Native American burial mounds.

University of Central Florida (UCF)

88. Cosmic Muon Station for Outer Tracker Module Testing

Elena Vlaskovic

Mentor: Dr. Isobel Ojalvo

The Outer Tracker (OT) is an essential component of the CMS High-Luminosity Large Hadron Collider (HL-LHC) upgrade project at CERN, Switzerland. OT module performance measurements typically rely on internal charge injection in lieu of an external source, limiting the extent to which the entire end-to-end system can be tested. By using cosmic muons as a real source of ionizing particles, we fill this gap and assess the synchronous performance of the modules. A cosmic muon station interfaced with simple scintillators / photomultiplier tubes (PMTs) allows us to understand the behavior of the silicon module in the presence of an external trigger and characterize key metrics such as position-dependent efficiency and resolution. The project primarily focuses on the hardware setup (e.g., detector setup, frontend-backend connection, DAQ) and the analysis software (e.g., DAQ, data analysis, script automation) that help utilize cosmic ray muons as external triggers to test the efficiency of OT modules.

Embry-Riddle Aeronautical University (ERAU)

89. The Evolution of Citizen's Trust in the U.S. Supreme Court

Julianna Manes

Mentor: Dr. Joseph V. Ross

The Supreme Court of the United States of America is a distinctive institution, with a unique relationship with the American people. Members of the Court are not elected by citizens, but appointed by the President. Nevertheless, their actions impact American citizens and citizens place their trust in the Court. In recent years, data has shown that there have been drop-offs in the overall trust in the Court by the public. Can we attribute this dip in trust to the aftermath of the controversial opinion in *Dobbs v. Jackson*, or has the weakening been building over time, especially amongst those who perceive themselves as ideologically distant from the Supreme Court? Through a survey conducted after the publishing of the *Dobbs* opinion, data found that the opinion created a "sizable dent in institutional support," for the Court by citizens, (Gibson, 2023). Through data collected from the General Social Survey from 1972 to 2022, how the public's trust in the Court has evolved throughout the years will be examined. A logistic regression analysis will be used to determine whether these changes are accordant amongst gender and political ideology. Based on the literature, it is expected that decreases in support for the Supreme Court will be strongest amongst women and those who believe themselves to be ideologically different from the Court. This research will present us with new understandings of how trust in the Court has dropped overtime, and the role that gender and ideology play in evolving perceptions of the Court.

Florida Gulf Coast University (FGCU)

90. A Behavioral Analysis of Injectable Therapeutic for Spinal Cord Injury In Vivo

Izabela Zmirska

Mentor: Dr. Christine Schmidt

There are approximately 300,000 Americans living with spinal cord injury (SCI), a life-altering and debilitating central nervous system injury [1]. Currently, the standard of care for patients is acute steroid administration and analgesics for temporary pain relief. Unfortunately, there is no cure for SCI. Indoleamine 2,3- dioxygenase (IDO) is a promising regulator of the immune response in SCI due to its ability to reduce pro-inflammatory potentiation and induce pro-regenerative immune cell phenotypes. When functionalized with Galectin-3 (Gal3), local tissue retention is increased through glycosaminoglycan binding. Another potential therapeutic utilizes injectable decellularized rodent sciatic nerve hydrogels (iPN) that can be mechanically tuned to match native spinal properties, providing the right physical environment for nerve regeneration. By examining how IDO-Gal3, iPN, and IDO-Gal3+iPN hydrogels function in rodent models with SCI, we can determine their effectiveness as a SCI therapeutic. From a behavioral perspective, this is done by analyzing the performance of rodents over the course of 5 weeks post injury. Specifically, the horizontal ladder (HL) test and Basso, Beattie and Bresnahan (BBB) locomotor scale were used to quantify behavior. In a small sample of preliminary data (n=3), overall behavior trends were positive with treatment. Unfortunately, no statistical significance was observed between treatment groups. The use of a larger

cohort may reduce animal response variability, and hopefully provide statistically significant results.

University of Florida (UF)

91. Coping with Creativity: The Relationship Between Depression/Anxiety and Creative Coping in College-Age Students

Nelly Dragu

Mentor: Dr. William Saunders

The relationship between creativity and mental illness has been established in the literature. There are multiple possible explanations for how mental illness and creativity are connected, and creativity has shown to be an effective treatment for different mental illnesses (for example, through art therapy). Despite this, there is limited research on how those with mental illnesses use creativity to cope outside of a treatment setting. Information on type of creative coping that the mentally ill naturally gravitate to and find most effective can further inform possible treatment plans and suggestions. This study aims to address gaps in the literature concerning how college-aged students with the most common mental illnesses, which are depression and anxiety, use creativity to cope. This study will look at how type of mental illness affects the type of creative coping chosen, how severity of mental illness impacts use of creativity, how severity of mental illness impacts frequency of creative coping, and if there is an interaction between multiple mental illnesses present and how that may affect frequency and level of creative coping.

University of Central Florida (UCF)

92. A Shared Experience: Systemic Discrimination Influencing Minority Stress and Suicidal Ideation

Makayla Evans, Robert Rice, Jay Collar, John Askew, Max Ordenes, Patrick Tootle and Min Eun Jeon

Mentor: Dr. Thomas Joiner

Empirical findings show various forms of discrimination, including systemic discrimination, negatively impacts mental health of minoritized populations who lead the nation's suicide rate demographic. Research is needed on discerning the impact of systemic discrimination, especially as it pertains to minority stress and suicidal ideation. The current study aimed to develop a measure of systemic discrimination, test its psychometric properties, and utilize it to investigate the relationship among systemic discrimination, minority stress, and suicidal ideation. Data was collected from diverse adults (n = 104; 77.8% people of color; 38.5% Hispanic/Latine, 42.3% non-heterosexual, 2.9% transgender) at a southern university who endorsed at least one minoritized identity regarding race, ethnicity, gender, sexual orientation, disability status, social class, or religion. The Systemic Discrimination Scale (SDS), which comprises items that quantify systemic discrimination in policies, laws, and the rate of representation in the local, state, and federal government, was used to measure systemic discrimination. Confirmatory factor analysis and structural equation models were estimated to test the unidimensionality of the SDS and its relationship with minority stress and suicidal ideation. Results supported a unidimensional structure of the SDS, which shared significant correlations with both minority stress and suicidal ideation. Estimated models showed the relationship between the SDS and suicidal ideation was fully accounted for by symptoms of internalizing distress. Overall, findings demonstrate systemic discrimination meaningfully relates to minority stress and suicidal ideation, but its relationship with the latter may be better accounted for by its impact on causing internalized, minority stress.

Florida State University (FSU)

93. Econ vs Eco - The Public's Opinions on Economic Development's Influence on Environmental Protection.

Pablo Fabregas Navas

Mentors: Dr. Monica Escaleras and Dr. Eric Levy

Over the past decade, there has been a noteworthy shift in the landscape of discussions surrounding climate change and pollution. A growing number of Americans are expressing heightened concern about the potential repercussions of human activities on the Earth's ecosystems, particularly in the context of economic pursuits. Curious about public opinions on the delicate balance between economic development and environmental protection, a sixteen-question survey was created on Survey Monkey and published on Amazon Mechanical Turk, targeting a broad spectrum of the American populace. By analyzing the data from 200 survey participants using SPSS Statistics, cross-tabulations unveiled statistically significant correlations between demographics and their responses. Notably, female respondents demonstrated a heightened awareness of their individual impact in the larger-scale economy compared to their male counterparts. Overall, men leaned more towards favoring economic development, seemingly downplaying their individual role in the economy and worrying a lot less about its environmental effects. Turning to age, intriguing generational "gaps" surfaced in favor of environmentally conscious initiatives. Individuals aged 65 and over emerged as the most pro-environment group, standing in sharp contrast to the 18 to 29 and especially the 30 to 64 age groups, who leaned heavily towards favoring economic development. These findings reflect how personal values, national interests, and societal priorities interact within the American landscape. Such insights prove invaluable for understanding perspectives on macroscale projects and guiding government entities on what the general population considers essential for modern societal progress.

Florida Atlantic University (FAU)

94. The Olustee Confederate Monument: A Broader Perspective

Lindsay Bowyer

Mentor: Dr. Peter Scott Brown

Rather than engage directly in the debate about removal versus conservation, this paper aims to situate the problematic Olustee Battlefield Monument, established in 1912 near Lake City, Florida, in time and place-specific context. The Olustee site is the oldest state monument in Florida, yet it remains poorly understood. Basic facts about its design and history are commonly ignored or misrepresented in contemporary discussions. An art historical account of its design and the circumstances of its construction is overdue and may be useful as evidence in the deliberative debate about its future. This account provides insight into the Florida chapters of the United Daughters of the Confederacy (UDC), Reconstruction and Jim Crow, as well as the monuments movement in late nineteenth and early twentieth century America. The Olustee monument must also be compared to other parks and monuments established in the same time period. As a historical monument, one that commemorates and represents a key Civil War battle in Florida, we must also consider the factual accuracy of the monuments historical representations and the relation of physical design to a commemorative ideology. Finally, reconstructing the original reception of the monument and the uses of its space offers the opportunity for comparison between original views of the monument and present-day opinions regarding its status. This historical and art historical evidence, without directly addressing removal as a policy

question, offers a broader, more complete perspective on this important Florida monument, evidence that is often ignored but essential, I believe, to current debate.

University of North Florida (UNF)

95. Oral Delivery of Intracellular Proteins via Carbamoylated Guanidine Modified Polymers

Natalie Martin

Mentor: Dr. Joong Ho Moon

The protein therapeutic industry is a rapidly growing market, expected to reach a global value of approximately $250 billion by 2028. Proteins are effective medications; however, they face limitations in cellular penetration and serum stability. As such, research and development of polymeric protein delivery systems are increasing due to their cellular permeation abilities without causing cytotoxicity. This project focuses on effective oral administration and cellular entry of carbamoylated guanidine (CG) modified polymers. Previously, our group demonstrated the success of intracellular protein delivery via polynorbornene (PN) modified with the coplanar, hydrophobic, charge-neutral, hydrogen-bonding enhanced phenyl-CG (Ph-CG). Further modifications to Ph-CG should improve biodegradability, complex stability, and intracellular delivery. Oral delivery routes for protein-polymer complexations are favored over injection techniques, as these methods may lead to pain, increased risk of infection, bleeding, phlebitis, subcutaneous port placements, high financial costs, and decreased patient compliance. When therapeutics are orally ingested, they must be resistant to the digestive tract's acidic environment and traverse the intestinal cellular layer to reach the bloodstream. The human intestine comprises a single-celled epithelial layer and mucous membrane that pose a barrier to the absorption of compounds from consumed products. Adjustments to CG-polymers will be analyzed for optimization of intestinal diffusion and resistance to gastrointestinal degradation. To replicate the intestinal environment, human colon carcinoma cell line (Caco-2) monolayers will be experimentally produced. CG-modified polymer-protein complexes will be administered to CaCo-2 monolayers, with aims of improving permeability, delivery, and absorption of orally administered therapeutics.

Florida International University (FIU)

96. Discussing the Synthesis and Utility of Amino Alcohols as Chiral Templates for Building Blocks in Peptidomimetic Cancer Research

Emma Cartwright

Mentor: Dr. Ralph N. Salvatore

Reducing amino acids to form promising amino alcohols for further alteration as applicable to more complex peptidomimetic reactions is the foundation of further pharmacological and biochemical synthesis. The formation and manipulation of these chiral alcohols are essential for further efforts. The focus of this study thus far has been to mass produce the amino acids of interest, reduce the present carbonyl to an alcohol, and use a dibenzylation process to benzylate the chiral product of which is isolated for, the subsequent bromination of these amino alcohols. This includes further testing with dipeptides made of manipulated leucine and isoleucine; furthermore, alanine and glycine compounds are to be synthesized. This research is being conducted to develop novel artificial biomolecules to be utilized in further applications of such important chiral derivatives. Our further alterations of these formed molecules include the use of these similarly structured non-peptide molecules as inhibitors of oncoproteins.

Southeastern University

97. The Acute Effect of Running With and Without Blood Flow Restriction and Muscle Tissue Oxygenation

Nihar Patel, Sean Lubiak, Anuj Prajapati, Niriham Shah, Christopher E. Proppe, Paola M. Rivera and Ethan C. Hill

Mentor: Dr. Ethan Hill

Purpose: To examine the acute effects of running with and without blood flow restriction (BFR) on muscle tissue oxygen saturation (StO2). Methods: Ten (21.9 ± 1 years, 162 ± 6.8 cm, 56.4 ± 6.9 kg) females underwent four, three-minute treadmill running bouts interspaced with five minutes of rest. Prior to the running bouts, a maximal aerobic capacity test was performed to determine peak running velocity for the submaximal and maximal velocity running bouts at 70%, 80%, 90%, and 100% of peak running velocity. BFR was preformed bilaterally and applied only during the submaximal (i.e., 70%, 80%, 90%) running bouts. A near infrared spectroscopy (NIRS) sensor was used to measure StO2 and was analyzed every minute using a 4 x [Condition (70%, 80%, 90%, 100%)] x 3 [Time (every 60 seconds)] repeated measures ANOVA. Results: For StO2, there were no significant (p=0.968) interactions or main effects for Condition (p=0.905) or Time (p=0.051). Conclusion: The similar StO2 response across all conditions suggests that the application of BFR compensated for reductions in running velocity as a result of the oxygen demands in the exercising muscle. Thus, clinically and practically, applying BFR may exhibit high utility among populations that cannot tolerate maximal intensity exercises to achieve health benefits.

University of Central Florida (UCF)

98. Investigation of Gene Transcription Modifications Associated with Obesity in Danio rerio (Zebrafish)

Ruel Stephenson Jr

Mentor: Dr. Kimberly Dobrinski

This study investigates transcriptional differences in the model organism, Danio rerio (zebrafish), associated with obesity. Zebrafish share 70% genetic identity with humans with 84% of genes associated with diseases in humans also found in zebrafish. The zebrafish model was used to investigate early gene transcription changes associated with obesity. The control fish were fed a normal diet of 0.006 grams of frozen artemia while obese fish were fed 0.06 grams of frozen artemia per day. Body Mass Indexes between obese and controls were analyzed using ANOVA (p-value = 1.04e-11). After 8 weeks the fish livers were dissected for DNA and RNA extraction. RNA Seq was used to generate short read sequences and transcription differences were evaluated using the following bioinformatic tools: Trimgalore, STAR, Docker, and Stringtie. Preliminary analyses showed that genes overexpressed in obese fish included: preproinsulin, fatty acid binding proteins, amnionless, and cubilin. These overexpressed genes in obese fish are involved in increased production of insulin, increased receptors for insulin, increased fatty acid transport, and increased inflammation. Some genes found to be under-expressed in obese fish include pathogen binding proteins, MHC class I genes, and G-protein coupled receptors. Inactivating mutations in G-protein coupled receptors have been described to be associated with endocrinological-related diseases. Overall, genes under-expressed in obese fish are involved with a reduced immune system and reduced signaling pathways. This work has demonstrated that an obese zebrafish model can be used to investigate obesity-related gene expression to uncover genes associated with disease.

Univeristy of Tampa (UT)

99. Examining the Relationship Between Obsessive-Compulsive Symptoms and Substance Use Disorder (SUD) Outcomes in a Treatment Population

Joshua Valan

Mentors: Dr. Ben Lewis and Hugh Farrior

Background: Obsessive-Compulsive Disorder (OCD) is characterized by uncontrollable and recurring thoughts and/or repetitive behaviors. OCD-related subclinical symptomatologies are recognized as frequently co-occurring with substance use disorders (SUDs). The analyses were constructed to identify the prevalence of OCD symptoms among patients in treatment for SUDs, describe change in OCD symptomatology across treatment, and characterize associations between OCD symptoms and substance craving. Methods: The sample included 1,078 patients at the Florida Recovery Center. Data were collected at key points during SUD treatment. Using recommended cutoff scores for the Obsessive-Compulsive Inventory-Revised (OCI-R), we divided the sample into 3 symptomatology groups: 1) Low; 2) Subclinical; and 3) Clinical. Longitudinal mixed models were utilized to examine between-group differences in symptom improvement across treatment. Group-contingent correlations in symptom severity and craving were examined. Results: Improvement in OCD symptoms was observed in both the Subclinical and Clinical groups (ps < .001). The magnitude of these effects was large, with symptom severity scores falling by 6.4 and 19.9, respectively (total OCI-R range: 0-72). Importantly, at treatment discharge, only 24% of individuals in the Clinical symptomatology group had scores remaining at or above the cutoff. Symptom severity was significantly associated with craving in all groups, however the magnitude of these associations varied. Conclusion: Although OCD symptom remission was anticipated, the relatively large magnitude of reductions seen in the current data was somewhat surprising. The group-contingent differences in associations between symptomatology and craving indicate that reductions in OCD symptoms throughout treatment may be important factors in supporting and maintaining abstinence.

University of Florida (UF)

100. Increased Antimicrobial Activity of Silver Nanoparticles through Ultraviolet Light Irradiation

Erina Okamoto and Jerson Zacarias

Mentor: Dr. Tom D'Elia

The antimicrobial properties silver nanoparticles (AgNPs) have been well documented against a range of bacterial, fungal and viral pathogens. Due to their size and surface area, AgNPs provide a sustained release of silver ions, resulting in efficacy at low concentrations. This precise control over the antimicrobial agent's dosage minimizes environmental impact. Consequently, AgNPs have emerged as an attractive alternative to antibiotics in the treatment of agricultural pathogens. Numerous studies have demonstrated the susceptibility of bacterial plant pathogens to AgNPs, prompting further evaluations for potential field applications. In order to determine the stability of AgNPs in environmental conditions, we evaluated the effect of UV irradiation on the antimicrobial properties of AgNPs against Sinorhizobium meliloti and Agrobacterium tumefaciens, analogs of the citrus greening pathogen Candidatus Liberibacter asciaticus. Previous research has shown that UV irradiation of AgNPs produced hydroxyl radicals which increased the antimicrobial activity of AgNPs when tested against Escherichia coli. For our analysis, AgNPs solutions were exposed to UV light from a distance of 5 cm for times of 0, 30, 60 seconds, and 3 and 30 minutes. A significant increase in antimicrobial activity was observed for the 30 minute treatments. S. meliloti growth decreased from 1.97 x 106 CFU/ml to 1.87 x 105 CFU/ml, a change of approximated 90%. Exposure to UV light is a major concern for any type of treatment applied in the field, and AgNPs show significant increase in efficacy under UV exposure, further supporting these as good candidates to control agricultural pathogens.

Indian River State College

101. Student Mental Health- Investigating the experiences of test-anxiety in students enrolled in lower division chemistry courses

Noor Alaraj, Draven Ruiz, Gavin Winslow and Majan Roshandel

Mentor: Dr. Christopher Randles

The mental health of students in lower division chemistry courses has been a point of discussion by the Chemistry Education Research Community, especially following the return to face-to-face instruction after COVID. One component of student mental health is the presence of anxiety and test-anxiety-related conditions. This project investigated anxiety and test anxiety in students enrolled in lower division chemistry courses at a large southern R1 university through a pragmatic grounded theory framework. The participants self-identified they experienced anxiety and/or test anxiety during chemistry assessments. The study was divided into 2 phases; 1) an exploratory survey that included a) demographic data, b) the motivational components of the MSLQ, and c) the TAI-5 questions, and 2) a semi-structured interview. The interviews used seed questions but still allowed the participant to describe their experiences with anxiety and test anxiety in chemistry in their own words. We report on student experiences with anxiety and test anxiety, their reactions (emotional and physical) to test anxiety, and the challenges they face addressing their test anxiety events. The data has identified strong relationships between both prolonged and acute anxiety events, and extrinsic motivation, course/assessment design, and self-expectation. Students recognized links between their anxiety, course satisfaction, self-satisfaction, and assessment performance. With a strong presence of test anxiety in lower-division chemistry courses, further work is required to reduce anxiety experiences either through curriculum/assessment design, self-regulation, or self-management strategies.

University of Central Florida (UCF)

102. An Anthropological Study of Gender Within Christian Communities in St. Augustine

Madelyn Spalding

Mentor: Dr. Jessica Jenkins

This research was contextualized utilizing information on the culture of various Christian faith communities and their beliefs regarding gender as well as wider theological themes that often correlated with specific views of gender. Past research on gender identity in wider cultural spheres were also utilized. The purpose of the current research was to better understand the relationship between gender and Christianity within the selected faith communities. Gathering data for this purpose included attending four sermons or other events put on by the selected faith communities. Four recordings posted online of sermons were also utilized as data. Gender as it was discussed directly by the congregants comprised some of the data, however the majority of information was pulled from instances where gender was not directly mentioned such as differences in interactions

between those of the same/differing gender, as well as theological frameworks that often correlated with specific views of gender identity in past academic research. Results of this research are that Christian communities allow for some variation in how those in one gender category may act, however, the rules that do exist are more heavily enforced than in wider culture. These results are important because they can display the ways in which Christian faith communities already accept diverse expressions of gender and can highlight ways in which this is not done. By making these communities aware of this, it may provide a steppingstone for the creation of inclusive spaces for those of all gender identities.

Flagler College

103. Teacher Ratings in Early Learning Disabilities Prediction and Identification: Impact on Reading (K-3)

Rory Durante

Mentor: Dr. Christopher Schatschneider (Dr. Schotz)

This research delves into early learning disability identification and its impact on undergraduates' reading abilities, using the ECLS-K:2011 dataset from kindergarten to third grade. The study assesses teacher ratings' efficacy in predicting learning/reading disabilities in third-grade students, comparing these predictions with kindergarten assessments. Within early learning disability identification, our research scrutinizes teacher ratings' predictive power in relation to subsequent reading abilities. Focused on the ECLS-K:2011 dataset covering kindergarten to third grade, we aim to discern teacher assessments' accuracy in anticipating learning and reading challenges by third grade. This nuanced exploration seeks potential correlations between early teacher evaluations and the emergence of learning disabilities. The study gains significance against current dyslexia legislation, where screening protocols often sideline teacher ratings. Despite mandatory screenings, our research underscores teacher ratings' efficiency and nonintrusive nature, advocating for their integration. Through logistic regression modeling in SPSS, we analyze the dataset, incorporating demographic weights for broader applicability. In essence, this research extends beyond statistical analysis; it aims to influence educational policy discussions. By highlighting teacher ratings' often-overlooked potential, we contribute to refining screening processes, fostering a more comprehensive approach to early learning disability identification. This interdisciplinary study aligns with academic inquiry's multifaceted nature, providing valuable insights accessible to a diverse audience, transcending disciplinary boundaries for broader societal implications.

Florida State University (FSU)

104. The Art of Community: A Study of Artistic Leadership to Promote Accessibility in Theatre

Molly Asmussen, Rachel Taylor, Christine Vu, Dawn King and Blythe Gouker

Mentor: Dr. Maureen McCluskey

In this study, we will be, "bending the rules" of what people believe theatre to be. We will be researching the use of artistic leadership to create a variety of accessible theatre events, and the impact that these events have on our community. Over the past year we have been able to create several events including a touring show, "Much Ado About Nothing" and an installation with The Mayo Clinic Heritage Days. With the show "Much Ado About Nothing" we explored American Sign Language (ASL) interpreted shows as well as shows, free of charge. Traveling to venues around the Jacksonville area allowed people who are unable to travel to see the show as well. We also hosted a show at the Mayo Clinic and the Fleet Landing Campus, both venues made our show accessible to a variety of audiences that may not otherwise get to view theatre. Our partnership with the Mayo Clinic began in 2019 when advisor, Dr. Maureen McCluskey worked alongside Dr. Robert Walters, the great-grandson of Mayo Clinic founder, Dr. William Mayo to create an interdisciplinary installation, unlike any Mayo campus in the country, for Mayo Clinic Heritage Days. Students embodied historical figures of the Mayo Clinic's history and brought the arts to the patients, staff, and friends of the Mayo Clinic. Exploring the perspectives of directors, actors, and audience members will allow us to see the impact of our work firsthand.

University of North Florida (UNF)

105. Roles of Vacuolar Invertase Genes (Ivr1 & Ivr2) in the Pollination Biology of Maize

Katherine Gray

Mentors: Dr. Karen Koch and Dr. Jiahn-Chou Guan

Invertases are essential to developing kernels and other tissues that depend on import of sucrose transported from leaves. These enzymes are pivotal to sucrose and catalyze the first step in its metabolism. In addition, vacuolar invertases can link sucrose import to cellular expansion in growing tissues. The Ivr1 invertase is expressed primarily in male plant parts (anthers and pollen), whereas Ivr2 localizes to female parts (silks) and root tips. Together they can markedly impact pollination success. The Ivr1 gene also shows a "domestication signature" suggesting a selective advantage during ancient breeding and emphasizing its biological significance. Our goal will be to determine the contributions by each of these invertases to pollination biology of maize. Four distinct lines with mutant alleles disrupting the Ivr genes at different sites have been confirmed, two disrupting the Ivr1 gene and two disrupting the Ivr2 gene. These provide a foundation for in-depth exploration. Specific objectives encompass quantifying the expression of both genes at crucial sites during pollination, analyzing phenotypic variations, testing segregation distortion, and comparing the germination and growth of Ivr1, Ivr2, and wildtype pollen. Molecular analyses by PCR and qPCR will parallel field studies to investigate the anthesis-silking interval, a pivotal factor in pollination success. In an era of growing demand for sustainable food production, understanding the intricate genetic underpinnings of yields from vital crop species like maize is essential.

University of Florida (UF)

106. Mechanical Evaluation of Novel Biomimetic Prosthesis Models Designed After Bird Claw Configurations

Pavan Senthil and Om Vishanagra

Mentor: Dr. Albert Manero

Biomimicry for mechanical design refers to incorporating either the form or function of existing processes from nature into design elements. Adapting biomechanical principles from natural structures specialized for grasping into current research with 3D-printed prostheses may improve robotic dexterity in picking up a wider variety of objects. Claw variations across various bird species are ideal sources of inspiration as they lend biomechanical advantages for grasping motions related to perching, climbing, and hunting, and may provide improvements beyond a human-inspired

structure for specific grasping applications. This research designed, manufactured, and mechanically evaluated two robotic devices with different digit arrangements: anisodactyl (3 in front x 1 in back), commonly found in birds of prey such as falcons and hawks, and zygodactyl (2 in front x 2 in back), commonly found in climbing birds such as woodpeckers and parrots. The evaluation methods for these models included a qualitative variable-object grasp assessment, which highlighted design features that suggest an improved grasp - a small and central palm, curved distal digit components, and a symmetrical digit arrangement. To support the incorporation of these design features into upper-limb prostheses, a quantitative grip force test was conducted to demonstrate the design approach met the minimum mechanical load capabilities outlined in ISO and ASTM standards for prosthetic devices. These designs and comparisons offer insights into how the biomechanical advantages of these models can be harnessed to optimize the grasping functionality of upper-limb prostheses.

University of Central Florida (UCF)

107. Let's Play Dinosaurs! Impact of Play on Children's Memory

Sofia Condorelli, Spencer Henning and Adriana Lutzio

Mentor: Dr. Sara Festini

Play-based pedagogy is beneficial in certain circumstances (Weisberg et al., 2013; Lyons, 2022).For instance, children exhibited more reading growth in a play-based classroom than a standard classroom (Allee-Herndon et al., 2022). Yet, more research is needed to examine which skills benefit from play-based pedagogy and to evaluate if the amount of time spent playing influences the size of the performance gains. Here, we assessed the amount of children's play time with a dinosaur toy and memory of dinosaur facts. We hypothesized that if children were more interactive with their dinosaur toy, then they would have superior memory. After interacting with a triceratops dinosaur exhibit at a children's museum, children were re-exposed to ten dinosaur facts and chose a dinosaur toy as compensation. In a follow-up survey taken one week after their visit, children were tested on the information they learned, and parents were asked to report their child's level of play with the dinosaur toy. Results indicated that, for recognition only, there was a significant interaction between playtime and age group: 4-5-year-olds showed a significant effect of playtime on recognition, $p = .005$, but 6-7-year-olds and 8-9-year-olds did not, $ps > .290$. Specifically, 4-5-year-olds who exhibited a moderate amount of play had better recognition memory than those with little or no play. Overall, results indicate that 4-5-year-olds benefited the most from additional dinosaur-related play. Interestingly, performance was not impacted by more than a moderate amount of play, suggesting that a modest amount of education-related play can boost memory in younger children.

University of Tampa (UT)

108. Mapping Urban Greenspaces Throughout Broward County, Florida

Nyla Crawford

Mentor: Dr. Corey T. Callaghan

Urban greenspace is the term used to define green areas that are either created or undeveloped and reserved for outdoor use(i.e.. Parks and recreation fields). With the expansion of urban developments, green spaces have been significantly reduced to included space for housing, plazas, and entertainment facilities. This is especially prominent in places like South Florida where construction for new malls, restaurants, and apartments take priority over spaces for recreation and conservation. The purpose of this study was to map these green-spaces in efforts gain a visual representation of the sizes and distances between each space. Broward County, Florida was chosen as the county to map due to the partnerships the research facilities has with Broward County; as well as a larger investigation regarding urban green-spaces that this research is being used for. Five municipalities were assigned with a total of seventy-five parks to map. Over half of the green-spaces mapped had less than five amenities and only fourteen green-spaces had more than ten amenities. Some municipalities had miles where there was not one greenspace. With the information found during this project, it was able to be determined that though the number of parks may seem large, the size, the accessibility, the amenities, and the distance between the parks shows a different narrative. The results of this study supports the case that the current amount of green-spaces does not and will not serve the current and future residents of urban communities, nor will they promote biodiversity within the parks.

University of Tampa (UT)

109. Does Activin Receptor-Like Kinase 1 Serve As the Connection Between Vasculature and Degenerative Nerve Diseases?

Isabela Potter, Alma Sanchez, Nicole McGrath and Agueda Mijares-Martinez

Mentor: Dr. James Hawker

The Activin Receptor-Like Kinase 1 (ALK-1) gene and endoglin are receptors of the transforming growth factor (TGF) family and are expressed in endothelial cells and blood vessels. ALK-1 protein has also been detected in pyramidal neurons of the hippocampus (CA3). ALK-1 protein immunoreactivity within these neurons was reduced significantly in subjects with Alzheimer's Disease (AD). This reduction of ALK-1 in patients suffering from AD may be connected to a decrease in the blood vessel density in the brain. The HUVEC and PC12 cells will be co-cultured, alone, and with various growth factors on matrigel and collagen, to assess endothelial cell tube formation and neurite outgrowth. Bone morphogenetic protein (9) and Activin A will be tested as both have been reported to play a role in blood vessel formation and neurogenesis. Nerve growth factor and fibroblast growth factor (2) will also be tested. We hypothesize that endothelial tube formation will follow behind neurite outgrowth when both cells are co-cultured together. ALK-1 may be involved in the development of both healthy neurons and vasculature. Endothelial cells and/or neurons may have an inductive effect on each other's expression of the ALK-1 gene. ALK-1 and endoglin receptor gene expression will be determined by quantitative PCR. The goal is to determine if the expression of ALK-1 in neurite outgrowth is dependent upon the regular development of endothelial tubes or vice versa. Currently, we are conducting the beginning steps to our experiment and aim to have results by the spring.

South Florida State College (SFSC)

110. Biofilm Characterization of the Walter Reed Klebsiella pneumoniae Multidrug-Resistant Organism Repository and Surveillance Network (MRSN)

Robert Beckman IV

Mentor: Dr. Renee Fleeman

Klebsiella pneumoniae has become a major threat to human health because of its extreme antibiotic resistance making it a key priority for the World Health Organization (WHO).

In addition, hypervirulent K. pneumoniae is an emerging threat with a hypermucoviscous phenotype that allows it to spread within the community of healthy individuals. K. pneumoniae biofilm formation further increases its drug resistance, yet the role of capsule and the hypermucoviscous phenotype in biofilm formation is unclear. Here, we highlight the research we have conducted into the biofilm formation properties of the Multidrug-Resistant Organism Repository and Surveillance Network (MRSN) from Walter Reed Army Institute of Research (WRAIR). This panel includes one hundred K. pneumoniae multidrug-resistant clinical isolates, including both classical and hypervirulent isolates collected from wounded soldiers worldwide for over thirty years. We characterized the biofilm formation of these isolates and compared this to their percent mucoviscosity. Our initial characterization using crystal violet staining of the biofilm matrices revealed that 46 isolates formed very limited biofilm, 38 isolates formed moderate biofilms, and a select group of 16 isolates formed extremely dense biofilms. Interestingly, the hypervirulent K1 capsule serotype isolate MRSN 515247 was in our set of dense biofilm formers yet did not display a hypermucoviscous phenotype to match its capsule serotype. Furthermore, classical K. pneumoniae isolates MRSN 5741, 1912, and 13761 were in the set of high biofilm formers and unexpectedly had high percent mucoviscosity. Our future studies aim to investigate the biofilm formation variation between hypermucoviscous and non-hypermucoviscous isolates.

University of Central Florida (UCF)

111. Analysis of Endogenous and Transplanted Stem Cell Populations Following Traumatic Brain Injury in Adult Zebrafish

Lauren Alcindor

Mentor: Dr. Jeffery Plunkett

Although post-embryonic neurogenesis is limited in the mammalian brain, zebrafish (Danio rerio) retain multiple proliferative neurogenic and stem cell niches throughout adult life. The focus of our research is to study how traumatic brain injury (TBI) affects the induction of neurogenic progenitor cell fates in the adult zebrafish brain. We found that TBI induces an endogenous, quiescent population of progenitor cells that migrate from the subventricular zone (SVZ) and integrate in or near the injury zone. We hypothesize that stem progenitor populations that integrate and differentiate at or near the injury may enable the regenerative response normally seen following CNS injury in the zebrafish. Currently, we have developed a stem cell culture methodology using a rotating culture technique that develops aggregates of undifferentiated stem cells after 2-3 days. Using a proof-of-concept strategy, we have transplanted labeled aggregates into a TBI stab wound injury site and are currently analyzing the efficacy of integration into injury zone tissues.

St. Thomas University (STU)

112. A Better Understanding of Role Conflict Resolution

Paige Kehoe

Mentor: Dr. Jon Matheson

Epictetus did not leave us with a complete account of his theory of role ethics. Out of his eight discourses, we only have four. Due to this lack of full comprehension of Epictetus's account of role ethics, we have had to dig deeper into Epictetus's words to derive a more complete knowledge of his theory. Johnson does this in his account of Epictetus's theory of role ethics in his book "The Role Ethics of Epictetus." I believe one of the most important things Johnson does in the book is building a more detailed account of role conflict on Epictetus's behalf. In this paper, I will provide additional support to Johnson's analysis of Epictetus's account of role conflict and identify the implications of Epictetus's theory of role conflict.

University of North Florida (UNF)

113. The Last Five Years in Quantum Computing: A Literature Review

Vincent Stafford

Mentor: Dr. Bharat Verma

Quantum Computing, a field that has captivated science and media, is rapidly advancing with the realization of larger Quantum Computers. As we create larger and more complex Quantum Computers, it has become increasingly important to map the literature that has gotten the field to its current state. We used Litmaps and Semantic Scholar to compile and analyze some of the most cited papers in the past five years who have keywords "Quantum Computing", "QC", "NISQ", or "Quantum Algorithm(s)". Our analysis of these influential works offers insights into the current state of Quantum Computing and provides a roadmap for further research in this rapidly evolving field. A significant area of potential future research lies in the adoption of standards as a transition between Noisy Intermediate-Scale Quantum Computers and larger scale machines. While some papers such as Kannan B's 2022 paper demonstrate the use directional microwave photon emission to communicate between interconnects of qubits, this field of research could be substantiated with realizations on other types of Quantum computers, or in a commercial setting. Furthermore, another observed result among these heavily cited papers is that much of the theoretical work in Quantum Computing has now yielded to experimental realization of Quantum Algorithms and communication protocols. This demonstrates the shifting attitude of the field of Quantum Algorithms towards adapting existing algorithms to fit into NISQ Machines rather than the theoretical capabilities of large-scale machines.

Florida Atlantic University (FAU)

114. Creatine Monohydrate Supplementation Impact on Skeletal Muscle Reactive Oxygen Species and Microvascular Blood Flow

Sequoia Ernst

Mentor: Paul Baker

Chronically elevated levels of reactive oxygen species (ROS), free radicals that can hinder skeletal muscle blood flow (SMBF), are a known symptom of cardiovascular disease (CVD). Therefore, interventions aimed at decreasing ROS concentrations and increasing SMBF are crucial to lower CVD risk. Recent evidence has shown that creatine monohydrate (CM), a common sports performance supplement, may decrease the risk of CVD. The current study sought to determine if CM supplementation could lower ROS concentrations and improve SMBF in response to a meal, a known stimulator of ROS concentrations. Seven participants (n = 7; 3 males, 4 females, 26 ± 4 years, 27.1 ± 5.4 kg/m2, 30.8 ± 9 % body fat percentage) had microdialysis probes placed in their leg to measure in-vivo ROS (Hydrogen Peroxide (H_2O_2)) concentrations and SMBF (ethanol outflow/inflow ratio, inversely related to blood flow) at rest and for four hours post-meal consumption. Procedures were performed both before (PRE) and after (POST) five days of CM supplementation (20 g/day). Following CM supplementation, ethanol outflow/inflow ratio was lower (higher SMBF) POST

CM supplementation compared to PRE CM supplementation at 0-20 min (p= 0.036) and 20-40 min (p = 0.049) following meal consumption. At POST CM supplementation H_2O_2 concentrations were significantly elevated at several time points following the meal ($p \leq 0.05$). Therefore, this data shows that five days of CM supplementation could be an effective strategy for enhancing blood flow following meal consumption which may help to lower CVD risk.

Florida State University (FSU)

115. A Study of Hand Dexterity for More Functional Upper Limb Prostheses

Samantha Migliore, Courtney Williams and Calvin MacDonald

Mentors: Dr. Albert Manero, Peter Smith and John Sparkman

Use of electromyographic devices requires significant training, which can result in patient discouragement and device rejection. To minimize rejection and maximize functionality, prosthesis designers examine parameters of hand dexterity, which is a fundamental part of daily life and expression of creativity. The Box and Block Test (BBT) is a commonly-used research and rehabilitation tool to establish a baseline. This study aimed to understand how dexterity, strength, and hand measurements correlate while establishing baseline comparisons for future upper limb prosthesis design iterations. The IRB-approved study population consisted of 50 participants aged 18-24 with full control of their upper extremities. Parameters collected were scores from variations of the BBT, grip strength, hand measurements, and a comparison of handedness via the Edinburgh Handedness Inventory. Grip strength scores for the study-collected sample and national standards were consistent. Weak correlations between grip strength and BBT and modified BBT dexterity scores ($r = 0.268$ and $r = 0.167$, respectively) for organic hands signify a need to optimize device grip strength and dexterity. With validated equipment, results from this study will be used for comparison to prosthesis patients enrolled in the ongoing clinical trial training to use the Limbitless Solutions device. The results will serve as benchmarks for direct comparison to these prosthesis patients. The results will also be used to better assess the device for both performance and design considerations. This research's findings will be used to update design criteria and dexterity evaluation methods for prostheses.

University of Central Florida (UCF)

116. Development of a Near-IR Telomerase Activity Assay

Michael Yao

Mentor: Dr. Mingyi Xie

The extension of telomeric repeats plays a crucial role in preventing the loss of genetic information during cell division. Telomerase is a special reverse transcriptase that extends the telomeric DNA repeats in eukaryotes. The telomerase is constructed by two main components, the protein component called Telomerase Reverse Transcriptase (TERT) and a telomerase RNA component (TR), forming a unique ribonucleoprotein complex. As telomerase overexpression in cancer cells maintains telomere length, cancer cells are able to evade senescence or apoptosis, enabling continuous cell division. The measurement of telomerase activity is important in cancer and age-related research since telomerase activity acts as a proliferation marker. Since telomerase is upregulated in most tumor cells, it could be used for the diagnostics of neoplastic transformation and in search of telomerase inhibitors, aiding in the development of anti-cancer drugs. The major way to visualize telomerase activity is TRAP (Telomeric Repeat Amplification Protocol) assay by extending the telomeric DNA primer by telomerase, PCR amplification, and then detection through gel electrophoresis. This method includes certain imperfections such as poor image results from PCR. Another technique is the direct activity assay that doesn't require the amplification of PCR but uses the radioactive probe Phosphorus-32 creating safety concerns and the need for specialized equipment and waste disposal. Here, we incorporate an IR probe in the telomeric primer (5'-AGGGTTAGGGTTAGGGT-3') to be used in the direct activity assay, avoiding use of the radioactive probe. This method offers safe and direct observation of telomeric DNA repeats after gel electrophoresis, without needing PCR amplification.

University of Florida (UF)

117. Formation of Artificial Myoglobin Intermediates Encased in Silica Sol-Gels Towards Sulfur Removal

Emily Kiker and Allyson Ray

Mentor: Dr. Mary Grace I. Galinato

Sulfur impurities cause engine damage and air pollution when burned in gasoline, so they must be minimized. Hydrodesulfurization is the commercial removal method, however, oxidative desulfurization (ODS) reactions can be utilized as a sustainable alternative. Porphyrin systems catalyze ODS reactions in the presence of oxidants such as hydrogen peroxides or meta-chloroperoxybenzoic acid. In this work, artificial myoglobin (Mb) was generated by replacing the heme (or Fe(III)-PPIX) with Co(III)- or Mn(III)- protoporphyrinIX (Co(III)-PPIX, Mn(III)-PPIX). This was done to understand the effect of the metal center on the ODS efficiency. Incorporation of Mn(III)- or Co(III)- PPIX into apoMb (Mn(III)Mb and Co(III)Mb) forms the metal-N histidine bonding interaction that creates the high valent M=O (M = metal) intermediate. Mn(III)Mb and Co(III)Mb are then encapsulated in silica sol-gel matrices to stabilize the proteins while retaining their catalytic and spectroscopic properties. Reduction of Co(III)Mb, by sodium dithionite in sol-gel, to Co(II)Mb is necessary for intermediate formation. Changes in the sol-gel UV-vis absorbance spectra will determine if the intermediate formed after oxidant introduction. The bands in the absorption spectrum of Co(III) Mb appear between 375 nm - 460 nm and 505 nm - 590 nm regions, while the bands of Mn(III)Mb are generally shifted to higher energy. Studies are currently being explored to optimize the formation of the M=O intermediate. Vibrational spectroscopy will then be utilized to probe the metal-N (His) bond and M=O vibrational mode. Future work entails reacting dibenzothiophene with the artificial Mb systems to confirm their ODS catalytic property.

Jacksonville University (JU)

118. Development of an Improved Rare Earth Element Separations Method

Tatum Vomund

Mentor: Dr. Eric J. Werner

Rare earth elements (REEs) have gained substantial interest due to their application in many areas of everyday, modern technology including smartphones, medical equipment, and nuclear reactors for alternative energy production. Current sources of REEs are limited due to the difficulty to extract and isolate them from raw sources. Many of these metals are found in minerals where they are mixed with other metals and compounds. Additionally, there exists significant amounts of unusable waste from old technology containing REEs. The selective extraction of these metals has been increasingly studied, but thus far these efforts

have been met with little success. Efficient REE extraction methods would allow them to be recycled from old devices to reduce waste while affording more sources to obtain these metals. In our research group, we have seen promising results with extracting select lanthanides (Lns) using tripodal carbamoylmethylphosphine oxide (CMPO) ligands, especially with those incorporating the tri-(2-aminoethyl)amine (TREN) cap. Studies have analyzed extraction efficiencies using a larger tris-(3-aminopropyl)amine (TRPN) cap with ethoxy CMPO substituents, but found little success. However, the TRPN ligand capping scaffold paired with phenyl substituents (TRPN-CMPO-Ph) has resulted in relatively high extraction of the actinide thorium(IV). In this study, we will focus on extraction of thorium from aqueous Th/REE mixtures by liquid-liquid extraction using TRPN-CMPO-Ph with varying stir times of the aqueous metal and organic phase that contains the ligand. The effects of this larger TRPN ligand cap and the phase mixing time within the extraction protocol will be discussed.

University of Tampa (UT)

119. Machine and Deep Learning-Based EEG Signal Decoding for Visual Reconstruction: A Systematic Review

Thomas Trinh

Mentor: Dr. Md Baharul Islam

The integration of electroencephalography (EEG) signals for decoding visual information has gained substantial research attention in recent years. We offer to comprehensively evaluate the methodologies, advancements, challenges, and future prospects of EEG-based signal decoding for image construction. The review encompasses a thorough analysis of studies published between 2013 and 2023, sourced from major scientific databases. The review begins by outlining the fundamental principles of EEG signal acquisition and the underlying neural mechanisms associated with visual perception. It further explores the diverse approaches utilized in decoding EEG signals to reconstruct visual stimuli, encompassing techniques like machine learning algorithms, deep learning architectures, and pattern recognition methodologies. A critical analysis of the strengths and limitations of various EEG-based image reconstruction techniques is presented, considering factors such as spatial and temporal resolution, signal-to-noise ratio, and the ability to decode complex visual information accurately. Moreover, we review highlights the applications and potential implications of EEG-based image reconstruction in diverse fields, including neuroscience, brain-computer interfaces, virtual reality, and rehabilitation technologies. Ethical considerations, challenges related to real-time implementation, and the interpretability of decoded images are also discussed. This systematic review provides a comprehensive overview of the current landscape of EEG-based signal decoding for image construction. It underscores the progress made, identifies gaps in current research, and outlines avenues for future advancements, aiming to drive the field towards more efficient and reliable methodologies for reconstructing visual information from EEG signals.

Florida Gulf Coast University (FGCU)

120. Multi-Channel Dilution Analysis Using a Single Pump Channel

Robbie Huff

Mentor: Dr. Willis B. Jones

Multi-channel dilution analysis (MCDA) is a newly developed matrix matched analytical calibration method that requires the preparation of just two solutions. The first solution contains 50% of a sample solution and 50% of a standard solution containing analytes of interest. The second solution consists of 50% of the same sample solution and 50% of a blank solution. MCDA automatically prepares dilutions of the measured solutions by splitting the solution stream flowing into an instrument between three tubes of different lengths and diameters as the solution is driven by a peristaltic pump. The different channels result in a stairstep of signal level as the solution flowing through each tube reaches the instrument to be measured at different points in time. A calibration curve for each analyte is prepared using the signal plateaus in the stairstep. Initial proof of concept for the MCDA method was obtained using a peristaltic pump with multiple channels connected to an inductively coupled plasma optical emission spectrometer (ICP-OES), with each of the three tubing channels being driven by a separate channel on the same pump. The results described here further develop the MCDA method by using a single pump channel to drive the solution through all three tubing channels. This allows the MCDA method to have more wide-ranging applications, as the technique can be utilized for measurements on instruments that do not have multiple pump channels available.

University of North Florida (UNF)

121. Excess Body Weight and Its Association to Diabetes Mortality Amongst Florida Adults

Shivanie Sharma

Mentor: Dr. Joy Scheidell

"Excess Body Weight and Its Association to Diabetes Mortality" is a topic that has been highly studied and researched. However, there has yet been a study that specifically examines excess body weight and its association to Diabetes Mortality among Florida Adults by utilizing data from the Florida Health Charts. This study will include the analyzation by three factors: Person (Florida Blacks versus Whites), Place (Florida counties), and Time (rate of diabetes mortality though the years in Florida). This will be done to detect a possible risk factor (i.e. excess body weight) for diabetes mortality. This study is important because it will reveal that there Is a negative association between diabetes mortality and excess body weight amongst Florida adults. This finding provides information on the idea that being overweight is associated with diabetes prevalence and incidence, not diabetes mortality. The implications and limitations based on previous epidemiological analytical studies will be discussed, but more importantly this study will reveal the controversiality and complexity of the highly debated "Obesity Paradox."

University of Central Florida (UCF)

122. Quantifying Corticosterone in the Zebra Finch: Measuring Stress in Response to Social Isolation in a Gregarious Songbird

Diana Aliste

Mentors: Dr. Rindy Anderson and Morgan Slevin

Glucocorticoid hormones such as corticosterone (CORT) are essential in the vertebrate stress response, deploying stored glucose to meet metabolic demands and in response to acutely stressful stimuli. Baseline CORT levels are vital and always present, while acute stressors result in large but temporary levels of stress-induced CORT. The zebra finch (Taeniopygia guttata) is a highly social, gregarious songbird. In this study, we asked if prolonged social isolation evokes a stress response. Using an experimental approach, we tested the hypothesis that 10 days of social isolation induces mild but chronic stress, assessed by estimating CORT

concentration in blood through enzyme immunoassay. Nine captive birds provided baseline ("T0") and stress-induced ("T30") blood samples pre- and post-isolation; 3 control birds provided the same samples but were housed as a group for 10 days. T0 samples were taken at capture to assess baseline CORT; T30 samples were taken 30 minutes later after holding in a cloth bag. We predicted a rise in CORT from T0 to T30, and higher CORT in post-treatment samples compared to pre-treatment samples. Our results show high levels of individual variation within and between control and isolated groups, with only 2 birds supporting the full hypothesis, most providing partial support, and 1 bird not conforming to any predictions. These findings highlight the complexity of phenotypic variation in the stress response. Future experiments should consider a larger sample size and detailed documentation of individual behavior to assess stress responsiveness to social isolation.

Miami-Dade College

123. Effects of TNNI3K on Myocarditis in Novel Translational Mouse Model

Nick Farahani

Mentor: Dr. Katelyn Bruno

Myocarditis, inflammation of the heart muscle, is a frequently underdiagnosed disease and is a leading cause of sudden death from heart failure in children and adults under age 50 in the US and worldwide. Previous studies have identified cardiac troponin i3 kinase (TNNI3K) as a potential candidate to control susceptibility to viral myocarditis. We hypothesized that mice with TNNI3K will have increased resistance to viral myocarditis. We utilized a TNNI3K full knockout (KO) mouse, a mouse that expresses a kinase-dead form of TNNI3K (KD), and a wild-type mouse with normal TNNI3K activity (WT). To test our hypothesis, male mice were infected with coxsackievirus B3 (CVB3), and 10 days after infection, % inflammation was assessed to determine myocarditis severity. Both the KD group (88.3%) and the KO group (95.3%) had significantly increased percent inflammation, indicating more severe myocarditis compared to WT mice (74.8%). The increase in inflammation in the KD group compared to the WT group was due to increased gene expression markers for macrophages, neutrophils, CD4+ T cells, and the inflammasome pathway in the heart. We found that normal levels of TNNI3K expression may play a protective role against acute myocarditis by activating anti-viral cytokine, IFN□, which decreases viral replication and reduces immune cell infiltration to the heart, suggesting that TNNI3K may be a potential therapeutic target for myocarditis treatment. Further investigation of the mechanisms by which TNNI3K protects against myocarditis is needed.

University of Florida (UF)

124. Social Acceptance of Convenience Foods 1950-1970: Women's Agency and Influence

Carlye Mahler

Mentor: Dr. Emily Mieras and Dr. Eric Kurlander

In 1950 Mason Haire published a study in the Journal of Marketing which asked focus groups to give descriptive words for a hypothetical woman based on two different shopping lists. The lists were identical except for the inclusion of instant coffee on one list and traditional ground coffee on the other. The study revealed that people had harsh judgements for the hypothetical woman who bought instant coffee. 20 years later in 1970 a replication of the study was published which revealed that people had far lower levels of judgment for the woman using instant coffee. Laura Shapiro is one of the biggest contributors to writing about convenience foods and women's role in their preparation. Specifically Something from the Oven: Reinventing Dinner in 1950s America addresses the process of presenting convenience foods in more elegant fashions. The advertising aspect is written about by Katherine J. Parkin in her book Food is Love: Advertising and Gender Roles in Modern America which addresses the emotional heartstrings that food advertisers pulled to influence women to buy their products. My work contributes to the existing literature on convenience foods and women's agency in their increased social acceptance by addressing women's role in food production, food purchasing, and food preparation in a thematic chronological timeline during the twenty years from 1950-1970. I believe that it is important to view this process through the tracing of how women influenced the acceptance of these foods and were not merely passive adopters of change forced by corporations.

Stetson University (SU)

125. Soils as Markers of Marsh Migration into Natural and Created Upland Islands

Shannon Brew

Mentor: Dr. Scott F. Jones

Sea-level rise from human-caused climate change is threatening coastal wetlands with increased flooding and salinity stress. Efforts are underway to preserve natural migration corridors for wetlands and to restore impacted wetlands using approaches such as thin-layer placement of dredge material. Despite the pressing need for coastal wetland conservation and management, there is little information quantifying how wetlands in northeast Florida may respond to sea-level rise. Here, we leverage University of North Florida's unique access to natural and impacted coastal wetlands at the William C. Webb Coastal Research Station. We quantified soil properties across elevation gradients from natural marsh islands and marsh islands created from dredged material deposits. Results suggest that both created and natural marsh islands provide lateral migration corridors for coastal wetlands. However, soil composition and carbon density differ along the elevation gradient between created and natural features. Former upland habitat newly converted to marsh was clearly identified by soil core profiles. These data shed light on the potential for coastal wetlands in northeast Florida to adapt to sea-level rise, and specifically inform the efficacy of marsh restoration practices to enhance marsh resilience.

University of North Florida (UNF)

126. Cards and Confidence: Effects of Trading Cards in Bolstering Confidence in Science Literacy

Jessica Gaehle, Ariana Harris, Margaret Clark, Vanda Voroshazy, Malachai Jean and Shane Geraghty

Mentor: Dr. Patrick L. Smith

Science literacy among psychology students has become increasingly important. For instance, classes like neuroscience contain complex vocabulary that may be problematic for students with weaker science backgrounds by decreasing confidence with newly acquired information (Birkett & Shelton, 2011; Varma et al., 2008; Zukswert et al., 2016). However, using nontraditional learning methods like games has been suggested to alleviate scientific rigor within unconfident learners (Morris et al., 2013). The current study explored how trading card games (based on the anatomy of the brain) altered confidence reports for newly acquired vocabulary that is prevalent in neuroscience learning. 39 first-year psychology undergraduates were given a pretest to

assess preliminary knowledge of structures within the brain. They were also asked to rate confidence in their answers (0-100 percent) they provided. They were then shown a 20-minute video overview on the brain's organization followed by a similar assessment. Participants were randomly assigned to either a control trading card group (whose cards contained highlighted brain regions and their names) or a phonetic card group (whose cards included pronunciations of the names) to play a matching game with the cards for three weeks. Participants were then given a posttest and were asked to report confidence scores for their answers, and this was repeated for two weeks for long-term assessment. Results revealed elevated confidence scores in both groups after playing the game, but this elevation was not evident at the long-term assessment, suggesting that longer exposure to the cards may prolong any confidence in learning new vocabulary.

Florida Southern College (FSC)

127. Screening for Pseudomonas aeruginosa Efflux Pump Inhibitors

Sofia Angeloff Salerno

Mentor: Dr. Renee Fleeman

Pseudomonas aeruginosa is of particular concern in modern health care due to its extreme drug resistance. A major mechanism of resistance is efflux of antibiotics out of the cell. Efflux pumps can remove multiple classes of antibiotics from the cytosol. P. aeruginosa has multiple efflux pumps with overlapping specificity. Therefore, identifying a compound to inhibit efflux in P. aeruginosa would allow for the rescue of multiple classes of antibiotics. We utilized an Asinex chemical library of pharmacologically relevant compounds to identify efflux pump inhibitors towards P. aeruginosa. Our screening is unique because it utilized a parental strain of P. aeruginosa in addition to a mutant strain lacking the major RND efflux pumps. Using a multi-tiered screening approach, we assessed combinatorial activity of 1550 chemicals with tetracycline, a known efflux substrate. Checkerboard assays with the parental strain and efflux mutant were used to validate potential inhibition of efflux pumps. We identified a compound that was able to synergize with tetracycline in the parental strain but not the efflux mutant. We found that our potential efflux inhibitor could also synergize with Polymyxin B. Using both a membrane depolarization assay and membrane leakage assay, we confirmed that our potential efflux pump inhibitor is not disrupting the membrane but decreasing the energetics of the membrane as an ionophore. Ionophores have been shown to disrupt antibiotic efflux from the cell and increase the antibiotic influx into the cell. The findings of this research can guide future therapeutic development to fight the post-antibiotic age in healthcare.

University of Central Florida (UCF)

128. Development of an Assay to Assess Target Site Resistance in Organophosphates in Culex quinquefasciatus

Primrose Tanachaiwiwat

Mentor: Alden Estep

Insecticide resistance in Culex quinquefasciatus may be a major factor in the continued transmission of vector-borne diseases such as West Nile Virus, other encephalitides, and filariasis. In Miami-Dade County, where 20% of vector-borne diseases are transmitted by Culex mosquitoes, effective vector control is a primary concern and recent surveillance efforts have shown widespread insecticide resistance to the pyrethroids. Notably, these same studies found that insecticide resistance to organophosphates, like malathion, was much more variable from population to population. To determine possible mechanisms that may explain these differences in organophosphate resistance, we colonized five populations and determined resistance intensity by topical application of malathion. We then conducted acetylcholinesterase long-read transcript sequencing from susceptible and organophosphate resistant Miami-Dade Culex quinquefasciatus populations revealed the presence of a single nucleotide polymorphism in the most resistant strains, which may confer target site resistance to organophosphates. This mutation, which results in a glycine to serine change in the acetylcholinesterase protein, may have significant operational implications. We subsequently developed a competitive melt curve assay, using unpurified mosquito homogenate, to rapidly identify this mutation. We found a strong correlation between the frequency of this single nucleotide polymorphism and malathion resistance intensity. This study provides a toxicogenomic marker of organophosphate resistance in Florida Culex quinquefasciatus and provides an additional integrated vector management tool that can be used to rapidly identify populations likely to be poorly controlled by organophosphates.

University of Florida (UF)

129. How Does Salinity and Habitat Type Influence Black Gill Disease in penaeid Shrimp?

Sophia Williams

Mentors: Dr. James Morley and Dr. April Blakeslee

Black gill disease (sBG) is caused by a parasitic ciliate that infects the gills of penaeid shrimp and can lead to necrosis of gill tissue and death. It has been found in the Gulf of Mexico and Southeast Atlantic, areas where penaeid shrimp hold commercial value. This study aims to investigate the prevalence of sBG in Pamlico Sound, North Carolina within two habitat types in the summer and also determine how different salinities affect disease progression. Brown shrimp were collected weekly from two regions in Pamlico Sound and the gills were examined for signs of infection using microscopy. We also brought live shrimp back to the lab and kept them at four different salinities, and several behavioral observations were collected daily. Infection rates from June to July showed weekly fluctuations and the region located in the upper estuary had a higher infection rate and greater diversity of disease stages compared to seagrass habitat. Although none of the experimental shrimp showed signs of disease, they displayed decreased activity and growth at lower salinity, suggesting greater stress in those conditions. Our work suggests that consistent sampling is important to gain a better idea of the factors that influence infection rate patterns and progression. Further, shrimp at lower salinities might be more at risk for mortality from sBG, but additional work is needed.

Florida State University (FSU)

130. Immunomodulatory Effects of Bioactive Glass-Ceramic Nanoparticles for Use in Regenerative Medicine

Sun Latt

Mentor: Dr. Mehdi Razavi

The immune response of the host can adversely affect the functionality of any therapeutic biotechnology. As a result, there is considerable research on biomaterials that can regulate the immune reaction. Glass-ceramics nanoparticles in the CaO-MgO-SiO2 system hold great potential as an immunomodulatory biomaterial due to their bioactivity. The present study aims to determine the immunomodulatory

effects of glass-ceramic nanoparticles in the CaO-MgO-SiO2 system on macrophage M1-M2 polarization. The study also investigates these nanoparticles' biocompatibility, bioactivity, biodegradability, and characterizations. Hydroxyapatite nanoparticles were used as a comparable control. The nanoparticle was synthesized through a sol-gel method. These nanoparticles are spherical and 50-150 nm in size, as confirmed through transmission electron microscopy. X-ray diffraction identified diopside and monticellite phases in the nanoparticle. RAW264.7, a macrophage cell line, cells were treated with both glass-ceramic and hydroxyapatite nanoparticles separately at concentrations of 10 µg/mL, 50 µg/mL, 100 µg/mL, 200 µg/mL, 500 µg/mL, and 1000 µg/mL, then biocompatibility assays determined the cytotoxicity of the biomaterials. The 10 µg/mL and 50 µg/mL concentrations of the glass-ceramic nanoparticle were found to be non-cytotoxic (>80% cell viability), and the 100 µg/mL concentration was found to be weakly cytotoxic, with higher concentrations being cytotoxic. The 10 µg/mL, 50 µg/mL, and 100 µg/mL concentrations were further investigated through ELISA assays of the cell supernatant of the treated RAW264.7 cells to quantify pro-inflammatory cytokine TNF-α and the anti-inflammatory IL1-ra cytokine. The future applications of these nanoparticles lie in bone grafts, tissue engineering, and augmentation of orthopedic implants.

University of Central Florida (UCF)

131. Molecular Chaperone Tid1 in Maintenance of Mitochondrial DNA

Tania McCormack

Mentor: Dr. Szymon Ciesielski

Mitochondria are vital cellular organelles, whose various biological activities depend on the integrity of their genetic material (mtDNA). Numerous mitochondrial proteins associate with mtDNA to promote processes like transcription or replication. Dysfunction of these proteins can result in mutations, deletions, or even loss of mtDNA leading to cellular damage and diseases. Molecular chaperone systems, composed of J-domain proteins (JDP) and Hsp70, are crucial components of the quality control of virtually all other cellular proteins. In principle, the JDP cochaperone recruits Hsp70 and promotes its processing of substrate proteins. Previous studies have shown that yeast mitochondrial JDP protein colocalizes with mtDNA and its absence results in the loss of mtDNA. We hypothesize that the mitochondrial chaperone system composed of human Tid1 (JDP) and HSPA9 (Hsp70) proteins is important for the quality control of proteins associating with mtDNA, thus playing a role in the maintenance of mtDNA integrity. Our project aims to characterize the underlying mechanisms of how the human Tid1/Hsp70 system colocalizes to the mtDNA. Obtained preliminary results suggest that Tid1 poses the ability to bind DNA directly. To identify residues involved in the interaction of Tid1 with DNA we have performed bioinformatic analysis such as a multi-sequence alignment and structural data analysis. Next, we focus on purifying Tid1 variants to experimentally assess the importance of identified residues. Comprehending JDP's capability to colocalize with mtDNA is an essential stride to understanding the role of chaperones in preserving the integrity of the mitochondrial genome.

University of North Florida (UNF)

132. Cryptococcus neoformans Glucuronoxylomannan Compromises Microglial Chemotaxis via Inhibition of Purinergic Receptors

Rafael Garcia

Mentors: Dr. Luis R. Martinez and Dr. Claudia Charles Niño

Purinergic receptors (PR) are a class of cellular membrane receptors that respond to extracellular purines such as ATP and ADP, which may serve as an alternative mode of activation in immune cells. The ionotropic (P2X) and metabotropic (P2Y) PRs in microglia play a significant role in their activation, proliferation, and chemotaxis. Cryptococcus neoformans is an encapsulated fungus that causes life-threatening meningoencephalitis in individuals with AIDS. Given the limited data on the interactions of the fungus and microglia, we investigated the impact of glucuronoxylomannan (GXM), the main component of C. neoformans capsule, on P2X4 and P2Y12 receptors on microglia and phosphoinositol-3-kinase (PI3K) signaling pathway. We hypothesized that the GXM inhibits microglia's PR surface distribution and P13K signaling. To test this, microglia were pretreated with 10 µg/mL GXM for 4-hours at 37°C in 5% CO2, followed by 2-hours activation with ADP. Confocal microscopy and flow cytometry were used to measure microglial PR distribution upon GXM exposure, while immunoblot was used to assess the expression of PR and the components of the P13K pathway. Inhibitors NP-1815PX (P2X4) and Clopidogrel (P2Y12) were used as negative controls. Bacterial lipopolysaccharide, which activates PR's PI3K signaling, was used as a positive control. Our results indicate that GXM inhibits the expression of P2X4 and P2Y12, which may have a detrimental role in microglial chemotaxis and infection control due to inactivation of the PI3K signaling cascade. Future experiments will use mouse models of cryptococcal infection to understand the effects of Cn GXM on microglia PR in brain infection control.

University of Florida (UF)

133. Positive Self-Talk versus Brooding and Their Relationship with Creativity

Logan Denney

Mentor: Dr. Amanda McGraw

Many studies have established a relationship between depressive symptoms and creative thought. However, the relationship is not robust and can be found in both directions. Here, researchers wish to further investigate why this occurs. It is likely because studies have examined multiple symptoms of depression, some being related to creativity and others unrelated. We hypothesize that different types of self-talk will be correlated with creativity. Specifically, we predict a positive relationship between positive self-talk and creative thinking, and a negative relation between brooding and creative thinking. Participants from a college sample will be instructed to respond to a self-report measures of self-talk and brooding. Additionally, the ability of the participants to produce creative thinking will be measured using an alternative use task. To assess research question 1: Does positive self-talk predict creativity, we will run a regressional analysis where positive self-talk is the predictor and creativity is the outcome. Covariates include gender and age. To assess research question 2: Does brooding predict creativity, we will run a regressional analysis where brooding is the predictor and creativity is the outcome. Covariates include gender and age. This study is important due to the connection between creativity and depression potentially providing an individual an outlet

for understanding one's emotions. This outlet can lead to increased ability to problem solve and make decisions.

Jacksonville University (JU)

134. Expandable Music Recommendation Using a Joint Embedding Space

Tina Tran

Mentor: Dr. Rickard Ewetz

Current music recommendation algorithms use user data to recommend similar songs to other users. This method is prone to cold start, where the model requires initially gathering ample user data. In addition, updating the model requires a training process that grows exponentially with each new song in the database. My research will create a model for music recommendation borrowing methods used in music generation. The premise is for an input paragraph of text detailing aspects of the desired song to produce an existing song with the desired elements. To enable learning of audio given text, the model will utilize a lookup space where points in the space are vectors representing a single song. These song vectors are created by joining a text vector and audio vector, hence the term "joint embedding space". The distance between two points in the joint embedding space represent the similarity between those songs, with the closest point to the input text point being the recommended song. A music recommendation model created with the proposed method cuts costs for updating, since adding a point to the space is all that is needed. The method of using text data as an intermediate is versatile with promise towards creating a multi-media recommendation system. For example, a music piece can be recommended for an art piece with a text caption. A multi-media recommendation system would combine all creative platforms including music, art, and video to allow users to discover new varieties of media and increase exposure for lesser-known artists.

University of Central Florida (UCF)

135. Water-Resistant Products: Diving Into PFAS

Ernand Alzenor

Mentor: Dr. Renee Gordon

Many consumers actively use water-resistant products, but most consumers don't know how these products can affect overall health. I will research if there is a correlation between the health decline of an individual and water-resistant product use. Water-resistant products have become abundant and well-used by consumers such as rain jackets and umbrellas. Based on the research I collected, water-resistant products are linked to health decline.

Tallahassee Community College (TCC)

136. Raising (S)hell: Investigating the Cedar Point North Shellworks

Victoria Hayes

Mentor: Dr. Keith Ashley

In summer 2023, the University of North Florida (UNF) undertook a project at the Cedar Point North site that involved limited testing, topographic mapping, radiometric dating, and analysis of LiDAR imagery. This archaeological site, located on National Park Service land near the mouth of the St. Johns River, was once home to a community of fisher-hunter-gatherers who constructed an impressive array of shell mounds, arcs, and ridges, including a serpentine-shaped formation, approximately 185-meters long. Throughout Florida, past Indigenous populations have erected shell mounds of varying shapes and sizes for various reasons. Some shell formations have been interpreted as large piles of daily refuse, while others are seen as planned architectural features, such as temple platforms, monuments, or byproducts of ritual gatherings and feastings. UNF excavations seek to understand how and why the Cedar Point North shellworks were created by Native Floridians. Preliminary results indicate that the sampled mounds—consisting primarily of oyster shells, pottery, and animal bones—rise up to heights of one meter above ground surface and date to ca 1150-1300 CE. Moreover, shell formations along the marsh edge are suffering severe erosion due to rising sea levels. This poster provides an overview of fieldwork conducted at Cedar Point North thus far and outlines plans and goals for future research at the site.

University of North Florida (UNF)

137. Novel 3D Culture of Breast Cancer Cell Lines for Evaluating Drug Efficacy

Alexyss Savannah

Mentors: Dr. Jamel Ali and Dr. Navneet Kaur

Three-dimensional (3D) cell culture has emerged as a promising method to produce cancer tissues in vitro that closely mimics the in vivo tumor microenvironment. These model 3D tissues have the potential to provide more reliable data for preclinical studies and can aid in bridging the gap between preclinical and clinical outcomes. In comparison to tumor tissues formed with traditional two-dimensional (2D) culture techniques, cancers cells grown in 3D typically have more physiologically relevant cell morphology, proliferation, longer cell life span, enhanced cell-to-cell interactions, enhanced drug metabolism, and more tumor-like characteristics. In this work, we explore differences in 2D and 3D cell cultures for a triple-negative epithelial breast cancer cell line (MDA-MB 231). We observe enhanced cell growth in a novel micro-fibrous scaffold culture over a longer time span compared to 2D cultures. Clinically approved anticancer compounds, including Lapatinib, Cisplatin, Docetaxel, and Doxorubicin were tested against both 2D and 3D cultures for 24 and 48 hours, after which cell viability was assessed with 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyl tetrazolium bromide (MTT) assays. We observe that enhanced drug concentration leads to increased cell death in both 2D and 3D cultures, however 2D cultures are more sensitive to all compounds in part due to easier drug access compared to 3D culture where natural cell structure limits pharmacokinetic drug transport, thus attenuating apoptosis. Our results indicate that 3D culture of breast cancer cells with a micro-fibrous scaffold presents an effective platform for investigating cancer biology and drug screening.

Florida State University (FSU)

138. The Impact of Telemedicine on Patient-Provider Communication at a University Student Health Center

Venkata Naga Sreelalitapriya Duvuuri

Mentors: Dr. Ann Miller and Dr. James Schaus

Effective patient-provider communication (PPC) involves conveying sufficient information to a patient such that the treatment is agreed upon and implemented accurately. Furthermore, a patient must feel adequately involved in the treatment process. With the advent of the COVID-19 pandemic, many clinical visits were shifted online. Although telemedicine was successful in meeting pandemic-specific goals, such as lowering personal contact, it changes the communicative context. Both patients and providers get less input from body language (nonverbal communication) and rely more on verbal communication. Furthermore, the

number of telemedicine visits conducted remains elevated over pre-pandemic levels. Much of what is known about effective PPC is derived from studies in in-person contexts, with little information available in virtual contexts. Given that even occasional lapses in optimal PPC can have severe effects on patient outcomes, it is essential to understand PPC in various settings to optimize patient outcomes in the long run. This study was a secondary data analysis of the UCF Student Health Services Patient Satisfaction Questionnaire. A total of 6645 survey results from January 2021 to November 2022 were analyzed to compare patient perceptions of PPC variables and overall satisfaction with the clinical visit. The results indicated that there was no statistically significant difference in overall satisfaction and PPC variables between telemedicine and in-person visits. However, the results revealed that different PPC variables contributed to overall satisfaction with telemedicine and in-person visits.

University of Central Florida (UCF)

139. Effect of Self-Compassion Intervention on Negative Outcomes Associated With Social Comparison for College Students

Sadia Barua

Mentor: Erin Westgate

Self-compassion interventions are used to alleviate symptoms of low self-esteem, eating disorders, and general well-being. Self compassion can be promising to alleviate negative outcomes of social comparison. This study aims to test the efficacy of self-compassion interventions on the negative affect resulting from social comparison. Initial pilot study (800 participants) found a correlation between social comparison and self-compassion scales. An experimental study with 400 undergraduate participants will result in 80% power to detect an effect of d=.25 or greater. Experimental group will do an exercise of self-compassion beside the reasoning task. Participants will be shown their score on reasoning task and of previous participants (manipulated feedback). Choice will be given to view answers of one of these fictional participants; which will serve as a measure of comparison preference. It's hypothesized that participants in the experimental group will have less negative affect, show lower preference for upward comparison compared to the control group. This study will give crucial data on a population that experiences highest mental health issues related to social comparison.

University of Florida (UF)

140. Preserving Floridas Unique Biodiversity through DNA Barcoding

Rebecca Kesling

Mentor: Dr. Mintoo Patel

The Florida Ridges which is part of the North American Coastal Plains, the 36th Global Biodiversity Hotspot, is also integral to the state's historical narrative, harbor a unique tapestry of plant life found nowhere else on Earth. Within the Florida scrub, a biodiverse habitat emerges, hosting rare and endemic plants, embodying the intricate history of the region. Urbanization, industrialization, and pollution pose significant threats to these delicate ecosystems. Protecting these endemic plants is crucial, as they serve as vital representations of Florida's history. Moreover, these endemic species may hold valuable elements for medicinal breakthroughs. Prompt identification of species is a key necessity in preservation efforts, however, the current method of identification by morphological analysis is time consuming and requires highly trained taxonomist. This project aims to employ DNA barcoding to identify a specific plant in the Florida ridge area, eliminating the time-consuming traditional taxonomic process. DNA barcoding allows efficient correlation of genetic information with precise species, enabling easier access to plant classification. Unveiling the plant's significance not only contributes to scientific knowledge but also encourages active participation in preserving Florida's invaluable biodiversity. This project underscores the importance of understanding and safeguarding unique plant life, fostering a deeper connection between individuals and their environment.

South Florida State College

141. Dance and Tourism in Bali: How Processes of Sociocultural Change Impact the Instruction and Practice of Traditional Balinese Dance

Sarah Shiell

Mentor: Dr. Ronald Lukens-Bull

In the midst of millions of visitors every year, Balinese people emphasize traditional aspects of their religion and culture, by participating in ceremonies, both private and public, that infuse drama, dance, prayer, story-telling, and music. This research project situated the education of dance within individual responses to sociocultural changes from Bali's tourist economy. The researcher engaged theories from contemporary anthropological perspectives on dance, reflexivity, modernity, and globalization to frame her research questions: How does the practice of dance contribute to Balinese culture? How has tourism affected the instruction of traditional Balinese dance? How does the researcher's positionality impact the production of an ethnographic research project? The researcher conducted participant observations at dance schools in Ubud, Bali, interviewed local teachers and performers of dance, and coded data for analysis. Three relevant themes emerged from the data: first, the researcher's positionality impacted the scope of this project through race, language, and dance experience; second, participant conceptions about dance stressed the belief that teaching and performing traditional Balinese dance continues the culture; third, changes from a rise in tourism, the Covid-19 pandemic, and younger generations affected the teaching and performance of dance in Bali. Overall, this project demonstrated that Balinese people respond to processes of sociocultural change by prioritizing their economic survival and adapting traditional aspects of their culture to fit growing needs of marketability, specifically in terms of dance practices.

University of North Florida (UNF)

142. Perceived Discrimination, Test Anxiety, and Intelligence Mindsets

Trinity Bryant

Mentors: Dr. Victoria McNeil-Young and Dr. Amanda McGraw

Among college students, perceived discrimination is associated with lower levels of well-being and impacts educational outcomes (Schmitt et al., 2014). However, there is little understanding regarding the process of how perceived discrimination impacts performance amongst diverse college students. Furthermore, previous studies have shown that an individual's intelligence mindsets (e.g., whether one believes intelligence is a fixed trait or is malleable) is predictive of their academic outcomes (Haimovitz & Dweck, 2017). This research project will assess the impact of perceived discrimination on test anxiety and if intelligence mindsets serve as a mediator of this impact. This study seeks to answer two research questions: (1) What is the relationship between perceived discrimination and level of test anxiety? and (2) How does mindset (growth vs fixed) impact this relationship? It is

hypothesized that perceived discrimination and test anxiety will be positively related and that intelligence mindsets (growth mindsets and fixed mindsets) will partially mediate the relationship between perceived discrimination and test anxiety. Participants for this study are adult college students. Study data was collected via an online survey that consisted of the following instruments: (A) Demographic Questionnaire; (B) The Everyday Discrimination Scale; (C) Cognitive Test Anxiety Scale; and (D) the Intelligence Mindsets Questionnaire. Regression analyses will be used to address the research questions and hypotheses. The results of this study will inform future interventions for students who are more susceptible to experiences of discrimination. These results will help identify how intelligence mindsets and test anxiety interventions can provide support to diverse student groups.

Jacksonville University (JU)

143. The Future of Digital Marketing: Brand Advertisers on Twitter and the Deployment of Parasocial Relationships

Sophia Reynolds

Mentor: Professor Amy Bohan

This paper attempts to link parasocial marketing and increased popularity and follower retention on Twitter. Parasocial marketing has not been previously defined as its own concept before, but it is the attempt of brands to create parasocial relationships — relationships between a fan and a celebrity — with their follower base, usually almost entirely without any mascot attached to their brand. Previously, parasocial relationships were used in marketing by translating a viewer's relationship with a celebrity to the brand they were promoting. However, this type of marketing cannot be accurately successful, due to the shifting view on certain celebrities over time. With social media becoming more of a ground for marketing in recent years, the potential for these brands to utilize parasocial relationships in advertising has skyrocketed. Using a dual method of a simulated tweet survey and a causal-comparative content analysis of the most popular parasocial and non-parasocial brands, this paper tracks the immediate and long-term effects of attempting parasocial marketing on potential customers. Both methods came back with highly positive responses to parasocial marketing in comparison to the "regular" version that included techniques of bandwagon, expert recommendations, etc. However, results were limited based off social media platform and skewed survey response based on sex (with a 3:1 ratio of female to male). Further research is promptly needed, extending the reach of this topic to other social media that fall within this cross section of marketing and the creation of parasocial relationships.

University of South Florida (USF)

144. Evaluating JWST's Ability to Detect Low-Abundance, Non-Equilibrium Molecules in Exoplanet Atmospheres

Sierra Sanne

Mentor: Dr. Jason Dittmann

The James Webb Space Telescope (JWST) is a space-based observatory that allows for detailed infrared observations of objects, enabling the study of the formation of our universe and stars, as well as the composition of exoplanet atmospheres. Of particular interest is obtaining a full chemical inventory of exoplanet atmospheres, including low abundance molecules and molecules produced outside of chemical equilibrium. Here we investigate the feasibility of detecting low abundance molecules like phosphine in JWST spectra by modeling exoplanet atmospheres and making mock observations with JWST. We generate models of representative Hot Jupiters like Wasp-39b, and reduce the resulting spectra to a similar resolution of that of JWST, and attempt to detect injected chemical compounds into these data to assess JWST's sensitivity to these signals.

University of Florida (UF)

145. Examining the Effects of Artemisia annua Extracts on Neuro2A Cells

Wesley Lim

Mentor: Dr. Alicia Hawthorne

Artemisia annua, a medicinal herb, has been used in Traditional Chinese Medicine for centuries and is known for an active compound discovered in 1971 called artemisinin, which exhibits antimalarial properties (Woodrow et al., 2005) and is a potential treatment for SARS-CoV-2 (Zhou et al., 2021). However, the neurological effect of A. annua and its compounds are poorly understood and have only recently been proposed to be potentially neuroprotective (Yan et al., 2017). We hypothesize that A. annua extracts and artemisinin will provide a protective effect against hydrogen peroxide-induced oxidative damage in mouse neuronal Neuro2A cells. Superoxide dismutase 1 (SOD1) is a critical antioxidant enzyme that protects cells from oxidative damage (Xu et al., 2022). The expression of SOD1 mRNA was measured through RT-qPCR and analyzed using the 2-ΔΔCt statistical method. The housekeeping gene was GAPDH. Cell viability was measured through a cell death assay using NucBlue, Annexin V, and propidium iodide stains that will differentiate apoptotic and necrotic cell death. Cell counts were quantified using ImageJ (NIH). We visualized Morphological changes through immunofluorescence with rabbit anti-beta-tubulin III antibodies, ActinRed phalloidin to label actin filaments, and DAPI (4',6-diamidino-2-phenylindole) to label nuclei. Neurites were traced and measured using NeuronJ (ImageJ). We expect that A. annua extract and artemisinin treatment will protect Neuro2A cells before inducing cell stress, yielding higher cell viability, better antioxidant defense, altered SOD1 expression, and increased neurite length. Understanding the potential neuroprotective effect of A. annua and artemisinin will highlight the significance of A. annua in modern medicine.

University of Central Florida (UCF)

Poster Session III — Abstracts

1. Rapid Synthesis of Porous Ceria Nanoparticles for Effective Drug Delivery

Agastya Mittal

Mentor: Dr. Sudipta Seal

Deterioration of bone tissue is a very common clinical outcome specific to illnesses such as bone cancer and osteoporosis. The risedronate class of drugs is presently used as therapeutic agents to slow the rate of bone tissue loss in clinical presentations of these and related illnesses. However, the efficiency of risedronate is substantially diminished by its limited bioavailability. Cerium oxide (ceria) nanoparticles are metal oxide particles possessing redox-active, catalytic character which has demonstrated significant therapeutic value in the scavenging of cytotoxic reactive oxygen species associated with a wide range of pathologies. In consideration of addressing bone pathologies, a rapid synthesis predicated on microwave radiation-mediated particle formation was used to create porous ceria nanoparticles (pCNP). Further, this approach was supplemented with therapeutic drug molecule conjugation to the exposed particle surface. pCNP have been shown to enable higher drug encapsulation through conjugation to the greater specific surface area of particle products. To optimize pCNP specific surface, we have considered multiple sacrificial component template materials; such as silica, glucose, agarose, polyvinyl alcohol (PVA), polyvinylpyrrolidone (PVP), and cetrimonium bromide. The pCNPs, as-synthesized, were characterized using transmission and scanning electron microscopy imaging (TEM and SEM, respectively), which, in complement to BET measurements, showed substantial specific surface area. Further, these characterizations showed that silica and other stronger template materials vastly increased surface defects during the fabrication process. Drug release studies are currently in progress to determine if pCNPs can effectively provide a drug delivery solution.

University of Central Florida (UCF)

2. The Relationship Between Cultural Misorientation and Afrocentricity

Alyssa-Resha Williams

Mentor: Dr. Mu-Tor Flood

The proposed study will investigate the relationship between cultural misorientation and afrocentricity. There is a significant lack of research between cultural misorientation and afrocentricity. The study proposes two research questions: Does cultural misorientation significantly predict afrocentricity in college students at an HBCU? Do male and female college students at an HBCU have significantly different levels of cultural misorientation? The study will use a quantitative research methodology and correlational research design. The sample will include 100 students at a southeastern HBCU. A correlation and independent samples T-test will be conducted. It is expected that in research question one cultural misorientation will be found to be significantly related to afrocentricity. In research question two the expected findings are that male and female college students will be found to be significantly different in their levels of cultural misorientation.

Bethune-Cookman University (BCU)

3. Development of 3D Digital Twin Environments with Agent Behavior Modeling

Abigail Joseph

Mentor: Dr. Jinwoo Jang

Digital twin simulation environments that build on real-world datasets have the capability to advance our understanding of the interactions and operations of real-life objects, systems, and processes. Most of the current civil infrastructure simulation tools cannot include the social science components and human interactions with surroundings and reflect the functioning of city dynamics. This research project aims to create a 3D digital twin representation of the city of West Palm Beach, Florida, coupled with agent behavior modeling. The objectives of this research include (1) leveraging 3D building inventory data to create virtual building infrastructure and (2) incorporating human behaviors and their interactions with streetscapes into the simulation environment. Unity and C# programming languages were used in this study. This research work integrated multiple agents into the digital twin environment by defining their human behaviors and interactions with the streetscape infrastructure. First, the pathfinding behavior of the agents was developed for each virtual agent. Their travel patterns were modeled to represent human-to-human interactions. Then, the agent-surrounding interactions were developed and included in the digital twin environments. The performance of the agent behavior and their interaction models were tested and validated in the simulation environments. The potential growth of this research project is exceptional as researchers continue to improve its design and simulate more streetscape interactions, furthering the goal of making streetscapes safer, more efficient, and more accessible to all.

Florida Atlantic University (FAU)

4. Manipulation of Cohesive States in Active Colloidal Chiral Fluids

Allison Cornelius

Mentors: Dr. Jamel Ali and Dr. Jaideep Katuri

Chiral fluids, composed of spinning colloidal particles, represent a new field of active matter systems, exhibiting novel self-organization and emergent behaviors. In a recent experiment, a dense chiral fluid consisting of spinning microscopic magnets have been realized where magnetic and hydrodynamic interactions lead to the formation of circulating clusters characterized by unidirectional edge currents. In this work we introduce additional diffusiophoretic interactions between constituent particles to externally influence the collective behavior of the spinning colloids. Our system is composed of ellipsoidal hematite micro particles suspended in H_2O_2. In the presence of an external rotating magnetic field, we recover the phase separation into circulating clusters. However, when the UV illumination is turned on, additional diffusiophoretic interactions are introduced and we observe a loss in structural cohesion of the spinning clusters. The added chemical interaction causes the circulating clusters to expand to a finite limit while maintaining global inter-connectivity. The expansion of the cluster is entirely reversible causing the cluster to revert to its original cohesive state when UV

illumination is removed. Incorporating chemical activity-based interactions into chiral fluids opens up novel pathways for self-organization, not only within these fluids but also in broader categories of active colloidal matter.

Florida State University (FSU)

5. The Significance and Impact of Ancient Greek Medical Tradition

Alexander Theophilopoulos

Mentor: Dr. Chrysostomos Kostopoulos

The proliferation of modern, evidence-based medicine has been characteristic of the last two decades. However, evidence reveals that the spirit of evidence-based medicine lies in Greek antiquity. From the Hippocratic Oath to the roots of medical terminology, there is no question of the Greek medical influence. This research contemplates the significance of the Ancient Greek medical theories and practices and their impact on modern medicine. First, I provide a brief history of Greek medicine, starting from the first medical references within Homer's Iliad. An analysis of the Hippocratic Corpus, including the Hippocratic Oath, reveals a nuanced understanding of medical care while revering humanism within a scientific approach to medicine. The continuity in usage, although with modifications, of the Hippocratic Oath reaffirms the influence of ancient Greek physicians on modern, evidence-based medicine. Finally, an analysis of ancient Greek medical care methodology introduces a broader philosophical discussion on the future of medicine and medical research. Debated topics in modern medicine, such as the use of managed care and the proliferation of Artificial Intelligence in medical research, are articulated through the lens of the Ancient Greek Medical tradition.

University of Florida (UF)

6. Make it Stand Out! Children's Memory for Dinosaur Facts

Adriana Lutzio, Sofia Condorelli and Spencer Henning

Mentor: Dr. Sara Festini

Higher importance or value has been shown to improve memory (e.g., Castel et al., 2002). In most experiments, value is manipulated explicitly by the experimenter, such as by giving people instructions that certain information is worth more points (e.g., Griffin et al., 2019; Hayes et al., 2013) or more money (e.g., Klink et al., 2017). However, less research has been conducted to examine naturalistic manipulations of value. Here, we aimed to examine a naturalistic manipulation of value, specifically if a dinosaur fact was prominently-displayed or not. We hypothesized that children would remember more eye-catching, than lower-profile facts. After visiting a triceratops exhibit at a children's museum, children aged 4-9 were re-exposed to ten facts from the exhibit, five prominently-displayed and five less-prominently-displayed. One week later, parents recorded their child's answers to the same questions via recall and recognition assessments. Results indicated that participants recalled and recognized significantly more prominent facts ($M = 48.91$, $SE = 3.00$; $M = 79.40$, $SE = 2.39$) than minor facts ($M = 18.21$, $SE = 2.22$; $M = 53.94$, $SE = 3.33$), $p < .001$. There was also a significant main effect of age group, as younger children had worse recall than older children, $p = .001$. Notably, there were no interactions between fact type and age group for recall or recognition, meaning prominent facts were recalled and recognized better across ages. Overall, these results show that children display superior memory of prominently-displayed facts.

University of Tampa (UT)

7. Creating a Collaborative Digital Edition of Revista Tierra (1923)

Adele Manwell and Erin Garry

Mentor: Dr. Clayton McCarl

The daily newspaper Tierra was founded in 1918 in Mérida, Yucatán, as the official publication of the Socialist Party of Southeastern Mexico (PSSE in its Spanish initials). Following the election of Felipe Carrillo Puerto in 1922, with which the PSSE assumed control of the State of Yucatán, Tierra became a weekly magazine, and in 1923, a series of 32 issues was published. Each is thirty pages in length and has a original work of art on the cover. Digital facsimiles of the issues are available on the website of the Ministry of Culture of the State of Yucatán, but they contain images only, are not easy to navigate, and are not searchable by full text. Estefanía Damiana Leyva Loría is a doctoral candidate at the Benemérita Universidad Autónoma de Puebla. She previously assisted in the preparation of a print version of the 1923 issues of Tierra, and recently began work on a digital edition, in collaboration with Dr. Clayton McCarl of the University of North Florida. Dr. McCarl has invited us to be student leaders of this project, and to work with him and Ms. Leyva Loría to help coordinate the project as part of the work of the students in a Spring 2023 course on Latin American Digital Humanities. At FURC 2024, we will consider the importance of the 1923 issues of Tierra as textual and visual artifacts, reflect on the process of creating the collaborative edition, and share examples of the edition in progress.

University of North Florida (UNF)

8. Meedai and Need for Cognition

Alfredo Hurtado

Mentors: Dr. Martha HUbertz and Dr. Karen Mottarella

This study examines the importance of need for cognition (NFC) and self-esteem in relation to an individual's media habits. Individuals tend to seek out media that stimulates their specific psychological, cognitive, and emotional needs This is supported by the uses-and-gratifications theory (Katz et al. 1973, Rosengren 1974, Rubin 2009) and the selective exposure theory (Knobloch-Westerwick 2015, Zillmann & Bryant 1985). Previous research found that those who rank highly in need for cognition tended to be more stimulated by written literature and found television to be under-stimulating due to its passive nature (Henning & Vorderer 2001; Dai & Wang 2007). The current study would like to examine the relationship between those high in need for cognition and certain genres of TV, such as non-fiction. The current study also examines mediums of media such as literature, music, podcasts, movies, social media, and games. Some of these mediums are active (such as video games or literature) while others are passive (television and movies). We hypothesize that those who rank high in need for cognition will tend to consume active mediums. Other personality traits, such as self-esteem, will be examined in relation to how it interplays with preference for different mediums. Teenagers who spend more time on social media tend to see a significant decrease in self-esteem (Jiang and Ngien, 2020). The current study wishes to look at other mediums and examine if there are any differences in the level of self-esteem.

University of Central Florida (UCF)

9. Hope is Not a Strategy: Challenging the Status Quo of How Colleges Are Handling the Campus Sexual Assault Crisis

Emma Diehl

Mentor: Dr. Sandra Pavelka

Campus sexual assault rates are at an all-time high across the country, with one in four female students being sexually assaulted within their four years of undergraduate study (Kerner et al., 2016). This crisis continues to worsen as universities and their police departments are underprepared to support victims in their community, and students who have been assaulted go without resources to help rebuild after enduring their attack. Students who are assaulted are less likely to report cases for fear of retaliation from their attackers and fear that their voices will fall on deaf ears, and they are beginning to stop coming forward for fear of having to relive their worst moments during an investigation which often leads to no productive results (Sable et al., 2010). Those who do come forward are faced with a harsh reality that their universities are failing to support them, and they start failing courses, dropping out of school, and withdrawing from society (Curtis, 2022). This honors thesis presents research that will illuminate issues surrounding the campus sexual assault crisis and what universities and their subsidiaries can do to support, protect, and defend their students from the increasing number of campus rapes that are happening each academic year.

Florida Gulf Coast University (FGCU)

10. Age-Related Differences in Pain and Sleep Among Individuals in Treatment for Substance Use Disorders

Allison Vollmer

Mentor: Dr. Ben Lewis

Chronic pain and disrupted sleep are important factors in recovery from substance use disorders (SUDs), functioning as both precursors and consequences of heavy substance use and risk factors for relapse. Despite the higher prevalence of pain/sleep problems among older community-dwelling adults, it remains unknown whether such problems confer unique risks among older adults in SUD recovery. This study characterizes pain and sleep changes during treatment, emphasizing age differences. We hypothesized greater problems among older adults at treatment initiation and explored potential group differences in rates of change. SUD patients at the UF Health Florida Recovery Center completed sleep quality (PSQI) and pain intensity (NIH PROMIS) assessments at admission, 30 days, and discharge. Individuals were categorized as older (55+ years old) or younger (30-40 yrs). Samples were matched using propensity scores from demographic measures (e.g., education). Analyses utilized chi-square tests and longitudinal mixed models. At intake, older patients endorsed pain at higher rates than younger ($\chi 2 = 6.73$; $p=.009$). Among individuals endorsing pain, older patients reported greater pain intensity at baseline ($p=.01$) and throughout treatment ($p=.020$). Both groups experienced reduced pain intensity, but older individuals improved at a slower rate ($p=.028$). No group differences were noted for baseline sleep disturbance, however improvements in sleep quality progressed at a depressed rate among older, relative to younger, patients ($ps \leq .009$). These results highlight the importance of considering age-contingent effects in recovery. Further, they imply that existing treatment adjuncts known to improve pain/sleep outcomes (e.g., physical exercise) may be particularly useful among older patients.

University of Florida (UF)

11. Assessment Of Adverse Childhood Experiences (Aces), Violence, And Substance Abuse Prevalence Among Honduran University Students

Andres Felipe Gil Arana

Mentors: Dr. Charles Fleischer and Dr. Carlos Reyes-Ortiz

Undergoing Adverse Childhood Experiences (ACEs) at an early age can significantly impact a child's development. Unfavorable circumstances can lead children to have ACEs including unstable housing, malnutrition, inaccessibility to health-care or education services, and poor environmental conditions. ACEs can be screened by administering a validated ten-item questionnaire called the "ACEs questionnaire." The ACEs' score helps identify the relative severity of the ACEs someone has undergone, breaking down selections into abuse, neglect, and household challenges. Although it is known that one in six adults in the U.S. has experienced at least one ACE, their prevalence among Low-to-Middle-Income Countries (LMICs) has not been deeply examined. ACEs correlate with a higher risk of engaging in risky behaviors like violence and substance abuse, even more so among marginalized communities. Still, the lack of research exploring ACEs among LMICs leaves gaps in knowledge. Honduras has one of the highest homicide rates worldwide, which are exasperated by socioeconomic inequalities, centralized drug trafficking, and political instability. This FSU-UNAH IRB approved cross-sectional study aims to 1) evaluate the prevalence of ACEs experienced by UNAH students, 2) assess attitudes and beliefs associated with violence through the use of the "Maudsley Violence Questionnaire (MVQ)", and 3) screen for drug and substance abuse using the "Tobacco, Alcohol, Prescription medications, and other Substances (TAPS) questionnaire." It is hypothesized that due to the high ACEs in marginalized populations, UNAH students will present a statistically significant positive correlation between ACEs, violence, and substance abuse.

Florida State University (FSU)

12. Analysis of Raman Spectra of Cu2ZnSnSe4 Under High Pressures

Daniel Garcia

Mentor: Dr. Irina Chuvashova

Throughout the energy crisis in today's world, there are some materials that are of great importance to the solar panel industry. They contain metals and chalcogens due to their high absorption coefficients, permitting for a more efficient solar cell to be constructed, taking up less space, while still collecting a sufficient amount of incident photons. Since solar cells are commonly made up of toxic, high-costing materials, Cu2ZnSnSe4 (CZTE) acts as a perfect bridge between an environmentally safe and cost-effective option. Samples of CZTE are made up of metals and chalcogens, which contain non-toxic elements that are also plentiful in the Earth's crust. While CZTE photoelectric property has been investigated its behavior at extreme conditions, specifically at high pressures, is unknown. A diamond anvil cell (DAC)high-pressure device utilizing two opposite-facing diamonds and a rhenium gasket to compress and confine small samples, enabling the study of materials under extreme pressure conditions. In order to expose CZTE to a high-pressure environment, CZTE samples were synthesized and inserted into a DAC. High pressures may change, the molecular structure of the material, resulting in creating a pathway towards creating a more efficient solar cell. To identify structural changes of CZTE at elevated pressures, Raman spectroscopy was used. Samples of CZTE were compressed up to 51 GPa, and as observed by

trends in our Raman Spectra, we observed three different phase transitions around 1 GPa, 12 GPa, and 36 GPa.

Florida International University (FIU)

13. Assessing the Net Advantage of Living Shoreline Stabilization on the Ecological Success of a Restoration Method for Halodule wrightii

Angie Tasayco

Mentors: Dr. Melinda Donnelly and Dr. Linda Walters

Living shoreline restoration is exercised under the contending evidence that it can create a less-eroded and more stable sedimented shoreline community. Seagrass restoration, in its earliest stages, may neglect to consider the ecological interactions between seagrass and adjacent shorelines. This research intended to determine the suitability of the Indian River Lagoon for Halodule wrightii restoration in combination with living shoreline stabilization. Determining habitat suitability that promotes seagrass persistence, creates a statute for living shoreline stabilization that aims to mimic these characteristics, and could be used to improve seagrass planting. To test this, three site types with three replicate locations, for a total of nine locations, were labeled as 'eroded shoreline', 'not eroded', and 'newly stabilized'. Metal gabion oyster bags were chosen as the experimental method for shoreline stabilization and metal garden staples were chosen as the most effective way to plant seagrass. At each location, a soil sample was taken and a 'natural-recruitment' plot was marked adjacent to plots where seagrass was planted to visualize the garden staples' predicted level of improvement to seagrass biomass. Results showed the planted treatment had a significant effect on seagrass density at eroded and newly stabilized shorelines ($p<0.001$). Abiotic factors were explored to isolate 'newly stabilized-specific' characteristics. This model showed shoreline stabilization had an insignificant effect on seagrass density after planting ($p=0.9345$). Soil analysis showed that homogenous soil compositions produced higher seagrass counts. Finally, discussion about these results enhanced habitat suitability models for H. wrightii.

University of Central Florida (UCF)

14. The Search for Happiness: Identifying Cortical Biomarkers of Optimism, Agency, and Connectedness using fNIRS

Alissa Vani

Mentors: Dr. Katherine Hooper and Dr. Tracy Alloway

Previous research using functional near-infrared spectroscopy (fNIRS), a non-invasive brain imaging technique, demonstrates that depression is associated with reduced activity in the left prefrontal cortex (PFC) when completing a verbal fluency task (VFT). By contrast, fNIRS research on the association between happiness levels, scores on VFTs, and activation in the PFC is limited.

This study's aim is to identify biomarkers for happiness by focusing on three of its major components. The first factor is optimism- defined as the belief that future events will be positive. The second is agency, the likelihood of taking action to achieve goals. The final factor is social connectedness, a sense of belonging to social groups. Participants complete scales that measure these constructs to determine happiness levels, then neural responses in the PFC are recorded as they complete a VFT consisting of four blocks. The baseline is a basic VFT where participants come up with as many words as they can that start with a specific letter. The next three randomized blocks ask participants to list as many words as they can think of about situations that center around the three factors. Participants are hooked up to an fNIRS machine for the entire duration of the VFTs. By measuring hemoglobin concentrations and VFT scores, the hope is to understand the differences in activation of the left PFC regarding relative participant happiness levels. It is expected that happier individuals will have more activity in the left PFC and better performance on the VFT than less happy individuals.

University of North Florida (UNF)

15. Gender and Racial Bias in Representations of Scientists

Andrea Sanchez

Mentor: Dr. Melissa Lehman

Women and non-white individuals are underrepresented in the scientific community. This may be influenced by a lack of diverse representation of scientists in the media. We studied gender and race representation in Google Image search results by classifying the first 100 Google Image search results for "scientist" by gender and race, and based on the content of the information in the associated webpage. The overall results showed roughly equal representation of males and females, and of white and non-white faces; however, when articles focused specifically on gender were excluded, males made up a larger portion of images. Similarly, when articles focused on race were excluded, white faces made up a larger portion of images. We also found differences in gender and racial representation for webpages focused on other topics, including education, STEM, and health. In a follow-up study, university students and community members were asked to select photos that best represent their idea of a scientist from a set of headshot and lab-setting photos of scientists varying in race and gender. Contrary to our hypothesis, female faces were selected more frequently. Within headshot photos, Latino faces were also more likely to be selected, but the same trend was not seen in the lab-setting photos. A follow-up study will examine whether gender bias exists within language about scientists. Common adjectives associated with scientists will be rated by participants to determine whether they are perceived as gendered.

Lynn University (LU)

16. Innovative Grafting to Improve Dwarf Tomato Production

Andrew Raffenberg

Mentor: Dr. Xin Zhao

Grafting is a technique used in commercial tomato (Solanum lycopersicum) production to manage soil-borne pathogens and improve fruit yield. However, little is known about the growth response of dwarf tomato types to grafting. Dwarf tomato cultivars are commercially desirable for their small stature and ability to grow without trellising when growing space is limited. This work aimed to assess the effects of grafting on dwarf tomatoes to test the viability of the wild-type Everglades tomato (Solanum pimpinellifolium) as a commercial rootstock. Miniature dwarf tomato scion cultivars including 'Micro-Tom,' 'Red Robin,' 'Florida Lanai,' and the non-dwarf 'Yellow Choice tomato were grafted onto the 'Everglades' tomato rootstock and grown in a research greenhouse, with non-grafted tomato scions as the control. Biometric parameters including relative chlorophyll content, NDVI, and plant height were monitored, and fruit yield was determined at 145 DAT (days after transplanting). Grafted 'Red Robin' demonstrated a decrease in height while maintaining significantly higher relative chlorophyll content,

NDVI value, and fruits per plant, compared to the non-grafted control. Results were inconclusive among other dwarf tomato cultivars due to poor graft survival; this suggests possible graft incompatibilities when using 'Everglades' as a potential tomato rootstock and introduces an area of further research.

University of Florida (UF)

17. Effects of Celebrity Media Videos on Attitudes Toward Seeking Professional Psychological Help: Preliminary Results

Anne Jaeger

Mentor: Dr. Erica Yuen

This study aims to investigate the influence of popular celebrities disclosing their mental health struggles on the mental health stigma and help-seeking behaviors of college students. Previous research has claimed that hearing celebrities' self-disclosures on their mental health can reduce stigma and increase help seeking. However, other research suggests that the differences between celebrities and the general populace may weaken the impact of celebrities' disclosures on reducing stigma and increasing help-seeking. This study aims to determine if celebrity self-disclosures about their own mental health struggles can reduce stigma surrounding mental health and increase help-seeking behaviors.

Participants are undergraduate students recruited from General Psychology courses at the University of Tampa. Data collection is ongoing, with over 150 participants thus far. Each participant is randomly assigned to one of three conditions: watching celebrity interviews where mental health struggles are disclosed, viewing celebrity interviews on topics unrelated to mental health, or watching nature videos. After watching their assigned videos, participants are then instructed to complete several online surveys which assess their attitudes toward seeking professional help and willingness to seek professional help. The results of this study will contribute to psychologists' understanding of how disclosures from popular celebrities' impact mental health stigma and influence willingness to seek professional help for mental health difficulties. In our poster we will present the preliminary findings and discuss the possible implications.

University of Tampa (UT)

18. OWL2 DNA Hybridization Sensor: Detection of Mutant Oncogenes

Antonio Perez

Mentor: Dr. Dmitry Kolpashchikov

DNA nanodevices serve as a tool to detect single nucleotide variations (SNVs) within target sequences, imperative to recognition of potentially cancerous genetic mutations. Alterations to the epidermal growth factor receptor (EGFR) and genes within its signaling pathway show links to various types of cancer, including lung, breast, and colorectal.1 The OWL2 sensor aims to detect SNV-containing analytes, and differentiate them from wild-type analytes, constituting a small percentage of the total concentration of DNA. The sensor produces a fluorescent signal when hybridized with mutant EGFR due to the formation of a structure separating the fluorophore and quencher of the universal molecular beacon probe (UMB); greater fluorescence output indicates a higher concentration of mutant analyte present. The OWL2 demonstrates high selectivity and specificity regarding the detection of SNVs in EGFR, and an improved limit of detection in comparison to other available DNA-based nanostructures. This nanodevice is both cost-effective and flexible, due to the adaptability of the P and R strands, capable of undergoing modifications to fit the analyte of interest. It is also effective in hybridizing with stable, folded DNA structures, a condition that other sensors fail to meet.2 This sensor serves as a valuable tool in the development of novel DNA nanotechnology and can be implemented in early cancer detection as a diagnostic advantage that results in more positive clinical outcomes.

University of Central Florida (UCF)

19. Symphonic Tragedy: How Rap Music and Gun Violence Affects the African American Community

Bryan Linnen

Mentor: Ms. Akeemia Clements

This study examines one of the most tragic downfalls of the African American community due to the corruption of vulgar rap music and how it influences gun violence. Rappers such as NBA YoungBoy, Kodak Black, Fredobang, and Moneybagg Yo are some that significantly affect more of the minorities, and they recite verses verbatim which leads them to copy what they hear. This study explores the research that was conducted with the intent to not only examine but also inform about how rap music and gun violence affect the African American Community. The influence of Rap Music and Gun violence is not just an issue statewide, but it is a problematic situation that has taken over minorities and their communities across the United States. The initial hypothesis involves how social media, music videos, explicit content, and song lyrics create cultural influence on the African American Community. Qualitative Research methodology demonstrates that the combination of Media Dependency Theory and Classical Rhetorical Theory reveals that the African American Community has been influenced by rap music to do harm to others and promote advanced weapon savagery. The Preliminary Findings support the hypothesis that artists and their music have a profound influence on the African American Community from their lyrics to music videos, social media, fashions, and other influences, which can lead to firearm brutality.

Bethune-Cookman University (BCU)

20. The Influence of Working Memory, Grit, and Personality on Resident In-Training Performance

Alexis Crowder

Mentor: Dr. Michael DeDonno

A better understanding of factors associated with academic performance is of value to institutions of higher education. By understanding these factors, mentors and advisors can better prepare students to achieve desired academic goals. Working memory is one of the executive functions of the brain which processes short-term storage of information. The influence of working memory on academic performance is of interest to cognitive psychologists and human performance researchers. Grit which can be defined as one's passion and perseverance towards long term goals, is also a predictor of academic performance. The factors of personality as offered by the big-five factors of personality have also been aligned with academic performance. A question arises as to how these factors collectively influence medical residents' performance on in-training exams. Our goal is to offer a model to medical resident programs that will enhance the training of physicians.

Florida Atlantic University (FAU)

21. C3forMe: Enhanced Self-Determination Training for Transition-Aged Young Adults with Disabilities

Dara Cohn

Mentor: Dr. Janae Duclos-Francois

This study explores the fostering of self-determination (SD) skills in students with disabilities (SWDs) and its impact on their post-school outcomes. Self-determined individuals are often seen as those who understand their goals and how to achieve them. Research indicates that SD skills are crucial in promoting goal-directed behaviors and positive outcomes for students. The literature underscores the importance of self-determination in successful transition planning for SWDs, predicting positive post-school results. The study, utilizing an experimental case study design, focused on a special education teacher and 10 transition-aged young adults with disabilities at a summer transition institute. The aim was to investigate the effects of enhanced self-determination instruction using small-group communication activities (C3 for Me) alongside a published self-determination curriculum ("Whose Future is it Anyway"). The data collected through the AIR Self Determination Scale were analyzed to assess the impact of enhanced instruction on SWDs' self-determination levels. Results, analyzed using descriptive and inferential statistics, including a Paired Samples t Test, revealed a statistically significant increase in student self-determination levels after receiving the enhanced training. This suggests that targeted interventions and enhanced instruction positively influence the development of self-determination skills in SWDs. The findings align with previous research indicating that higher levels of self-determination correlate with positive post-school outcomes, such as continued education, employment, and independent living. The study contributes to understanding how fostering self-determination can enhance the transition and overall success of students with disabilities.

Florida State University (FSU)

22. Assessment of Training Game for Hands-free Wheelchair Control

Calvin MacDonald and Courtney Williams

Mentors: Dr. Peter Smith, Matt Dombrowski, John Sparkman and Dr. Albert Manero

Amyotrophic Lateral Sclerosis (ALS) is a progressive neurodegenerative disorder (Boilee 2006) that leads to a loss of voluntary control and mobility (Masorini 2020), diminishing independence and quality of life (Van Groenestijn 2016). Patients may rely on wheelchair use but lack the motor function to operate a joystick (Oskarsson 2018, Manero 2022, Smith 2022). Electromyography (EMG) interfaces offer an alternative to traditional control methods; though have proved challenging for patients to operate (Manero 2022). Limbitless Journey, a serious game, provides virtual training to lessen this challenge. The game integrates an eye-tracking technology user interface (UI) and EMG character controls to provide an autonomous training experience (Smith 2022).

A study was conducted to determine the usability of this virtual training environment. Participants were assigned to one of three cohorts, eye-tracking control, user mouse control, and researcher mouse control, varying their UI and calibration method. The participants played four levels of Limbitless Journey while engaging in a "talk-aloud" narration. The Game User Experience Satisfaction Scale (GUESS) and the System Usability Scale (SUS) were implemented to assess user satisfaction, usability, and ways to improve the training interface (Phan 2016, Brooke 1996). A quantitative analysis of 15 participants' GUESS scores indicated that overall, the game scored positively in all categories excluding social connectivity. The SUS scores averaged 62.5, indicating the usability of the EMG training game to be "OK." Following additional quantitative assessment, qualitative analysis will be conducted and consolidated to inform further usability improvements.

University of Central Florida (UCF)

23. Exploring the Role of DNAJB1 as a Novel Oncoprotein

Baher Boktor

Mentor: Dr. Szymon Ciesielski

The human body is a complex system composed of trillions of cells whose growth, development and proliferation need to be regulated for the overall well-being of the organism. Through carcinogenesis, cells can break free from this regulation and gain the ability to uncontrollably proliferate and spread to other parts of the body. This transformation results from genetic mutations altering the function of specific proteins regulating the cell cycle and response to hormonal regulation to benefit the development of cancer. This rapid growth and proliferation demand the increased production of cellular proteins, which are unstable due to mutations. Under physiological conditions, a subset of cellular proteins called molecular chaperones are dedicated to maintaining proper folding, trafficking, and overall quality control of other proteins in the cell. Higher activity of various molecular chaperones has been observed in different types of cancer, presumably contributing to the viability and proliferation of cancer cells. We hypothesize that increased activity could result from mutations altering particular molecular chaperone activity to promote the process of carcinogenesis. This project is focused on investigating potential mutations in the essential human cytosolic J-domain protein DNAJB1. As a co-chaperone, DNAJB1 interacts with and regulates the activity of Hsp70, which serves as a central hub in the cellular chaperone network. Identifying such mutations will provide insights into the potential role of the DNAJB1/Hsp70 system in the process of carcinogenesis as well as expand our understanding of the activity of these molecular chaperones.

University of North Florida (UNF)

24. The High-Quality Isolation of RNA from Zebrafish Skeletal Tissue for Transcriptomic Applications

Ashley Guarino

Mentor: Dr. Tracie Baker

Transcriptomics is an increasingly important field of quantitative science that allows for the analysis of genes under specific environmental conditions. The isolation and purification of high-quality RNA is required for the success of downstream transcriptomic analyses including quantitative PCR, microarrays, and RNA sequencing. RNA is routinely isolated from soft tissues without the use of specialized methods, but the hypocellular and mineralized nature of skeletal tissue makes RNA isolation from bone uniquely difficult. Because of this, genomic profiling and analysis of bone is underutilized in some species, including zebrafish. Zebrafish are a vertebrate model that can be used to study human congenital and degenerative bone diseases through morphological and transcriptomic means. The successful extraction of RNA from zebrafish jaw and vertebral tissue would allow for novel analysis of the mechanisms behind craniofacial and spinal disorders. Six methods combining various homogenization and RNA extraction techniques from zebrafish bone were developed with the goal of

obtaining sufficient RNA quality and quantity for downstream transcriptomic applications. Variations of guanidine-based sample lysis and silica-membrane purification were tested using dissected and flash-frozen zebrafish jaw and caudal vertebrae. Homogenization using a handheld pellet pestle combined with a guanidinium thiocyanate/Î²-mercaptoethanol lysis reagent yielded the most consistent and highest quality RNA yields from zebrafish skeletal tissue. An optimized, effective procedure capable of producing high-quality RNA samples from zebrafish bone is presented, as the RNA quantity and integrity values achieved are sufficient for performing downstream transcriptomic analyses.

University of Florida (UF)

25. The Lived Experience of Time Dilation

Luke Bleyer

Mentor: Dr. Stefanie Morris

This qualitative study utilizes Giorgi's (e.g., 2009) method of phenomenological analysis to understand the lived experience of time distortion. Seven participants were asked to write a detailed account of a specific experience of time distortion, which was then analyzed in an effort to understand the essential structure of time distortion. The data revealed the differences between experiences of time speeding up (time constriction) and time slowing down (time dilation). Whether the moment was experienced as positive or negative also markedly changed the essential structure of the experience. Additionally, the data revealed instances in which time was neither experienced as speeding up or slowing down, but instead, as completely nonexistent. These distinctions show the five types of time distortion: 1) unpleasant time dilation, 2) pleasant time dilation, 3) unpleasant time constriction, 4) pleasant time constriction, and 5) timeless experiences. While all five types of experiences were unique, they shared some commonalities. In experiences of both unpleasant time dilation and unpleasant time constriction, the participants experienced an uncomfortable heightened awareness of the passage of time. Conversely, in pleasant instances, the participants experienced a prolonged loss of a sense of time. Building on previous research on time distortion, such as Arstrila's (2012) study on time dilation in dangerous situations, this study helps further the understanding of the phenomenological experience of time dilation, its subdivisions, and its essential components.

Ave Maria University (AMU)

26. Student Perceptions of GTA Instructional Practices in Introductory Chemistry Labs

Cynthia Georges

Mentor: Dr. Erin Saitta

Graduate Teaching Assistants (GTAs) play a significant role in student engagement and learning in introductory classroom labs. To effectively implement active learning in the laboratory setting, it is important for them to learn and practice a variety of teaching skills. Although these research-based skills may be helpful in supporting undergraduate student learning, it is unclear to what extent students notice their implementation and how they perceive the impacts on the learning environment. In this study, GTAs were prepared for active learning by repeated rehearsal in a mixed-reality teaching simulator. Semi-structured interviews were used to investigate student perceptions of GTA instructional practices implemented in the lab classroom. These responses, collected from fall of 2019 and spring of 2020, were coded and analyzed. The data is displayed through comparative analysis in which undergraduate student responses were matched with observational descriptions of GTA instruction. From this, it was deduced that students view GTAs as having a multifaceted role in the teaching lab, perceiving them to be instructors, facilitators, and mentors.

University of Central Florida (UCF)

27. Dedicated Edge Resource Utilizing Machine Learning & Zero Trust Principles to Secure Tactical Edge Network Environment

Kevin Kostage

Mentors: Dr. Chengyi Qu, Dr. Alicia Esquivel Morel and Dr. Prasad Calyam

The tactical edge network environment presents challenges of denied, disrupted, intermittent, and limited impact characteristics, leading to insecure, resource-heavy, and unreliable communication between devices. Despite the importance of Zero Trust (ZT) principles in securing communications, their application is limited to resource-rich locations such as data centers and pre-established infrastructure such as a cell tower. This study proposes a resource-aware approach to implement ZT in resource-constrained tactical edge networks. Specifically, a central-edge resource is introduced to minimize overhead on edge devices while utilizing ZT principles. The central-edge resource aims to provide essential resources, establish secure connections in tactical-edge environments, and mitigate challenges posed by resource scarcity. To enhance security, machine learning strategies such as Federated Generative Adversarial Network (GAN)-Based Machine Learning has been integrated to identify specific network and sensory or payload attacks among edge resources. To evaluate our model realistically, we applied our model on ruggedized servers and Kubernetes K3 for compatibility with resource-constrained conditions. Experiment results show that by incorporating ZT principles and leveraging Federated GAN-Based Machine Learning, the proposed solution enhances overall communication security and reliability. Rigorous testing in simulated and real-world scenarios will validate its effectiveness.

Florida Gulf Coast University (FGCU)

28. "This Tastes Weird!" A Dive into the Correlation Between Drinking Water in the Tampa Bay Area and Head and Neck Cancer

Danielle Abel

Mentor: Dr. Kimberly Dobrinski

Many sources have indicated a rising number of head and neck cancer rates especially in the state of Florida. The mutation and overgrowth of cells are what lead to cancer and there can be many different causes for each different type of cancer. These numbers may differ depending on location such as rural or urban areas and socioeconomic status. A factor that links these variances of numbers is the quality of the water that we drink every day. Individuals living in rural communities or underprivileged communities may have poorer quality water and increased cancer rates. Drinking water must be chlorinated to remove dangerous microbes; however, this may lead to disinfection byproducts which can lead to cancer. Our research looks at the quality of drinking water in the Tampa Bay area and the correlation that these numbers might have with the occurrence of head and neck cancer in zip codes with different socioeconomic status. Water samples were collected throughout the Tampa Bay area and tested for chlorine and bromine levels for eventual comparison. By looking at existing data of high head and neck cancer, we aim to be able to correlate the researched

data to our collected water data using statistical analysis. Additionally, this research is looking at regions across Florida grouped by income and underserved communities for links to cancer occurrence. Income data from sources such as the Census Bureau as well as cancer rates The American Cancer Society allow us to be able to calculate such correlations.

University of Tampa (UT)

29. Reassessing Foraminifera Density Sampling Used To Judge Benthic Oil Spill Recovery

Aidan Webster

Mentor: Dr. Patrick Schwing

Foraminifera are a diverse group of single-celled organisms found in all depths of the world's oceans. After the Deepwater Horizon oil spill, benthic foraminifera have been collected via sediment core at several sites in the northern Gulf of Mexico. A subset of 300 benthic individuals has been used to judge the diversity and density of the benthic foraminifera population and is used as a proxy for benthic ecosystem recovery. This study collected a sediment core at site PCB06 in the northern Gulf at 1000 meters water depth. The core was extruded at 2mm intervals and each layer was passed through a 63-micrometer sieve to separate foraminifera from silt. Each sample was dried in an oven and stored in a vial. During analysis sample sizes of 300, 500, and 1000 individuals from the top 2mm increment were compared to look for differences in density or diversity. If sampling is truly random, density and diversity differences between sample sizes should be marginal. This research showed a >60% higher density between 300 and 1000 identified individuals. Such difference exposes an opportunity for improvement in the sampling procedure used since 2016 by Eckerd College to judge oil spill recovery showing foraminifera have been identified through a density gradient. Larger but less dense foraminifera are poured from a vial first, missing the true population of smaller denser foraminifera on the bottom. The impact of this difference would mean past data used in current literature has underestimated the true foraminifera population's density at site PCB06.

Eckerd College

30. Relationship with Dietary Inflammatory Potential, Dietary Quality, and Cognition in Elderly Adults

Carole Stringfield

Mentors: Dr. Corinne Labyak and Dr. Andrea Arikawa

Background: Research suggests that diet quality is associated with cognitive function. Nutrition intake has been shown to impact development of cognitive disorders like dementia. The purpose of this study was to examine the relationship between diet quality, assessed via the Healthy Eating Index (HEI) and the Dietary Inflammatory Index (DII) and cognitive function measured by the Montreal Cognitive Assessment (MoCA) in elderly adults. Methods: Participants completed a 24-hour dietary recall (ASA-24). In addition, participants completed the Montreal Cognitive Assessment (MOCA) to assess cognitive function. Those with MOCA scores of 25 or lower were classified as having cognitive impairment. Pearson correlations were used to examine the relationship between diet and cognitive impairment. Results: Participants (N=74) 60 years of age or older (Female=51 and Males=23) completed the 24- hour diet recall assessment (ASA 24). There was a significant positive correlation, r =0.248, 95% CI [0.002, 0.451], p=0.033 between HEI scores and MOCA scores. Participants with cognitive impairment had significantly lower HEI scores r (50.6 ± 4.1) compared with participants with no cognitive impairment (63.8 ± 2.2), p=0.006. In addition, those with cognitive impairment had significantly higher DII scores, r=-0.305 95% [-0.498, -0.083], p=0.008.
Conclusion: The research conducted suggests that there is a correlation between diet quality and cognitive function showing that participants that had higher HEI and lower DII scores had higher scores on the MOCA. This research could be used by dieticians to educate elderly populations on the importance of nutrition in cognitive health and eating for cognitive health.

University of North Florida (UNF)

31. Probiotic L. acidophilus Secretes Postbiotic Factors that Reduce DNA Damage in an Experimental Model of Gastroesophageal Acid Reflux Disease

Divya Joshi

Mentor: Dr. Claudia Andl

The progression of gastroesophageal reflux disease (GERD) to Barrett's Esophagus (BE) and finally to esophageal adenocarcinoma (EAC) is commonly implicated in the prevalence of esophageal cancer. During GERD, various types of bile engender oxidative stress through reactive oxygen species (ROS), resulting in DNA damage and inflammation in cells. Although there is a well-documented shift from gram-positive to gram-negative bacteria in the esophageal microbiome during this progression, there has also been an observed increase in the presence of Lactobacillus, a gram-positive probiotic bacterium, in the esophagus. Our previous research has demonstrated Lactobacillus' ability to colonize the esophagus under in vitro conditions of GERD and its anti-inflammatory and anti-genotoxic properties on bile-exposed esophageal cells. To assess the extent of reflux-induced DNA damage during BE, we exposed two BE cell lines and an EAC cell line to one of two biles mimicking GERD. Both bile types demonstrated significant increases in phosphorylated H2AX, a marker for pronounced DNA damage repair. Next, we supplemented both live L. acidophilus and its postbiotic metabolites to bile-exposed cells and observed a significant reduction in pH2AX-measured DNA damage with both the live treatment and the treatment with postbiotic metabolites when compared to untreated, bile-exposed cells during BE and EAC. Ongoing experiments include assessing Lactobacillus' anti-genotoxic effects with DNA repair proteins, reductions in oxidative stress though ROS markers, and anti-inflammatory effects. Potential effects on cell viability and proliferation will also be studied. This study aims to investigate the role of Lactobacillus in the prevention and intervention of esophageal adenocarcinoma development.

University of Central Florida (UCF)

32. Finance in the Age of Influence

Gabriella Nicole Gallardo

Mentor: Monika Pareek

As digital media has become more prominent in culture, more and more people find themselves getting their information from sources online. This information ranges from makeup recommendations to mortgage rate analysis, which is gained from influencers. A certain subsection of influencers is Fincial Inflci, also claimed under the term Finfluncers, these influencers give advice online about personal finance ranging from saving tips to credit advice. Since the rise of Financial influencers, more and more people have shared their concerns about the accuracy of the information that these influencers are sharing too often easily manipulating audiences that lack prior knowledge. Starting with a literary analysis of prior research on financial

influencers to find unanswered questions, and leading to data analysis on content from popular financial influencers, the research is aimed to categorize, asses the quality, and evaluate the impact that the information spread by financial influencers on public financial literacy and risks taken by consumers. Furthermore, as research based in the sociology field, the study explores the relationship between the credibility of the influencers, the demographics of their audience, and the likelihood of the content influencing risky financial behavior. The research combines economic sociology and digital media studies to contribute to the understanding of the growing digitalization of financial culture and the implications it has on financial literacy.

Florida State University (FSU)

33. Death by the Badge: Race, Age, Gender, and Police Brutality

Courtney Williams

Mentor: Dr. Frank Wood

Since 2015, police killings have been on the rise. As a result of this increase, there has been a growing call to address the issue of police brutality. Furthermore, scholarship has underscored the importance of understanding police brutality through a lens of critical race theory and intersectionality theory. Hence, this study proposes to examine the effects of gender, race, and age on police killings in the United States in 2016. To accomplish this, this study will provide a review of the literature examining the effects of race, age, and gender on police killings, to include applying critical race theory and intersectionality to explain these associations. Finally, the proposed methodological approach to studying this issue will be presented.

Bethune-Cookman University (BCU)

34. Evaluation of Quality-of-Life Measurements and Reporting in Randomized Controlled Trials of Pancreatic Cancer

Chibeze Oguejiofor

Mentors: Dr. Steven Hughes and Dr. Song Han

Background: Pancreatic ductal adenocarcinoma (PDAC) patients experience significant physical and emotional symptoms, impacting their quality of life. However, varying health-related quality-of-life (HRQoL) measurement methods in PDAC randomized controlled trials (RCTs) limit their comparability and generalizability.
Methods: We included first-line phase 3 RCTs on PDAC, published until March 21, 2023, from PubMed.gov and ClinicalTrials.gov, focusing on studies measuring quality-of-life. Data was abstracted up to the same date, with trials grouped by stage (metastatic, locally advanced/metastatic, and localized/resectable).
Results: Of 53 identified RCTs, 23 (43.4%) measured HRQoL. Instruments used included the EORTC QLQ-C30 (n=14), FACT-HEP (n=3), Spitzer QoL Index (n=2), EQ-5D (n=2), LASA (n=1), and the FACT-PA (n=1). The predominant endpoint assessed HRQoL until disease progression or death (9/23) with 4-week interval evaluations (7/23). Of 23 RCTs measuring HRQoL, 15 reported survey completion rates. A 50% survey completion rate was achieved at 12.41, 14.14, and 54.2 weeks for trials with metastatic (n=2), locally advanced/metastatic (n=10), and resectable disease (n=3), respectively. All 23 RCTs reported ages of the patient cohort being assessed, and four of the 23 trials (17.4%) reported race and ethnicity.
Conclusions: Our work emphasizes the need for standardized HRQoL measurements and reporting in PDAC RCTs. Most RCTs did not measure HRQoL, and significant improvements in these trials were rare. Tailoring survey frequency to the specific patient cohort and assessing HRQoL longitudinally could enhance survey completion rates and detect significant shifts in patient HRQoL more effectively.

University of Florida (UF)

35. College Students and Nutrition Misinformation: Correlation Between Perceived Health and Social Media

Hannah Kowanes

Mentor: Dr. Melissa Williams

The promotion of nutrition fraud can be driven by many forces and can impact citizens in numerous ways. For instance, the economic gain with companies marketing toward uneducated individuals makes it difficult for consumers to decipher what products, diets, supplements, etc. are harmful or potentially useless in terms of results. Additionally, the continuation of false nutrition information portrayed online contributes to the increase in mental health issues in society. Influencers promoting unrealistic diets or ineffective products can deeply alter the mental state of their viewers (Bissonnette-Maheux et. al, 2015). Lastly, misuse of dietary products can also impact the physical health of humans. If people are misguided into overconsuming foods they shouldn't indulge in, or disregarding products they shouldn't be, it can impact their nutrient retention to exert proper physical functions (Husain et. al, 2021). Overall, nutritional misinformation and lack of dietary education have impacted society due to false advertisement of products for economic gain, harming consumers' physical health, and even altering their overall mental state.

This project aims to address a critical issue with implications for college students and society. The sample population for this study will be composed of undergraduate students ages 18-21 at the University of Tampa. Students who will participate in the study will range from those in a nutritional course required for allied health majors, to an entry-level class containing non-health majors. These classes were focused on in the hopes that they'll provide a good comparison of diverse nutrition knowledge in health and non-health-related majors.

University of Tampa (UT)

36. Assessing Nitrogen Concentration and the Impact of Reclaimed Water on Turfgrass

Juan Porras

Mentor: Dr. Marco Schiavon

Turfgrass is used in golf courses and other sports land like football and soccer. Additionally, some species are adapted for residential areas. Turfgrass' durability, versatility in different weathers, and aesthetically pleasing appearance make it a perfect landscaping material. Laws in Florida, such as black-out fertilizer periods, have been designed to protect the soil and water sources from contamination produced by fertilizers, and various chemical agents used for treatment and maintenance of turfgrass. Recently applied fertilizer followed by an abundant rain event leads the excess water with wasted fertilizer to lakes where elevated amounts of nitrogen set the possibility of environmental damage due to freshwater algae overgrowing. Alongside these regulations, water management has been an increasing focus of attention due to its elevated usage in turfgrass maintenance. Alternatives for water sources have been studied, and it is imperative to assure the quality of these alternatives for turfgrass maintenance due to the high market standards for turfgrass usage. Reclaimed water often contains nutrients

needed for turfgrass growth like nitrogen and phosphorus, which benefits the environment and the lawn quality. Effluent reclaimed water and slow-release Nitrogen-based fertilizer have been tested on their effectiveness on 'Citrablue'-St. Augustinegrass. The effectiveness of the treatment is measured by nutrient leaching, and it is expected to show an improvement from the control using fresh water.

Miami Dade College

37. Epitope Mapping Novel Monoclonal Antibodies Against Borrelia burgdorferi Surface Proteins OspC and BmpA

Eliza Doyle

Mentor: Dr. Mollie Jewett

Lyme Disease is the most common tick-borne illness in the United States, with approximately 476,000 people being diagnosed annually. Lyme Disease stems from the infection of the bacteria Borrelia burgdorferi, which is transmitted via tick bites. Early symptoms include a skin rash, fever, or headache. If left untreated, it can progress into severe conditions such as arthritis or encephalitis. Due to the progressive nature of the disease, early diagnosis is critical to ensuring a quicker and complete recovery. As a result, there is a need for improved diagnostic testing. Current testing utilizes a two-tier approach and functions by identifying the presence of host-generated antibodies. However, these host-generated antibodies take approximately 7-14 days to reach detectable levels. To discover testing that would decrease the time between infection and diagnosis, the focus is shifting away from indirect detection via antibodies to direct detection of the bacteria within the host. For direct detection, monoclonal (lab-created) antibodies would bind to certain proteins (specifically BmpA and OspC) located on the surface of the bacteria. The project aims to determine the location of the binding point (epitope) between these proteins and monoclonal antibodies. The location of the epitope can be specified by cutting the bacterial proteins into multiple fragments and testing the binding reactivity to the monoclonal antibodies via immunoassay tests. The results will provide insight into the effectiveness of the created monoclonal antibodies for direct detection.

University of Central Florida (UCF)

38. Shifting Presentation: How Nonbinary College Students Respond to Deadnaming and Misgendering

Charlotte (Charlie) Arechederra

Mentor: Dr. Jenny Stuber

As society becomes more open and welcoming to those of gender identities beyond the binary, it becomes increasingly important to understand their gender identity and presentation. Part of understanding these concepts means understanding how gender identities can exist relationally. Using in-depth interviews, this study explores how nonbinary college students respond to misgendering or deadnaming. These responses involve reflected appraisals, which social psychologists find can impact one's sense of self and cause alterations in their self-presentation. These data show that nonbinary college students navigate being deadnamed or misgendered through their gender presentation in two primary manners: one, by adjusting their presentation to be more affirming to their gender identity; and two, by maintaining their current presentation with the goal of preserving their physical comfort. These data support the notion that gender presentation is a performance, showing that nonbinary young adults consciously adjust their gender presentation to bring about social and physical comfort with their gender identity and, to some extent, to limit conflict in social interactions.

University of North Florida (UNF)

39. Post-Covid Mental Health Rates: Have We Fully Recovered?

Charity Rodriguez

Mentors: Prof. Monica Escaleras and Prof. Eric Levy

Years after the COVID-19 pandemic, mental health rates have skyrocketed among Americans and suicide rates are increasing after 2020. However, this increase cannot entirely be attributed to these events, but to external factors that arose later. After collecting data on Amazon Turk using a 14-question survey I created to evaluate the probable causes for post-pandemic mental health rates, two reasons why people believe their mental health has suffered has been due to job and financial insecurities. Also, most individuals believed that during the pandemic their mental health was positively impacted or had no impact. In other words, rather than individuals being negatively affected by COVID-19 during lockdowns, people's mental health has suffered due to the later effects placed on the workplace. These findings can be attributed to the fact that people were able to take a break from the workforce during lockdowns, which explains why people felt less distraught. Adding on, the workplace was facing obstacles even before the pandemic and has only worsened post-COVID-19, since companies have been finding it harder to scout and keep employees due to competitive wages, increased social media use, and remote positions offered by other larger and advancing companies. Lastly, people have become more financially insecure because of forced unemployment. After the life-altering events posed on Americans recently and with mental health rates on the rise after the pandemic, it is important to determine the root of the problem before finding ways to solve these issues.

Florida Atlantic University (FAU)

40. Does Social Media Affect Academic Performance and Self-Care?

Luis Munoz

Mentor: Dr. Andrea Marsden

The purpose of this study is to explore if social media can affect students' academic performance. There is very research little research on if social media can affect students' academic performance. The current study interviewed 5 college-age participants. All students use at least one or more social media apps. Data collection has just finished, and by the time of the conference, data analyses will be completed. Initial analyses seem to suggest there is some type of relationship between student's academics and social media. Final research results, limitations and additional ideas for future research will be discussed.

Beacon College

41. Nicolas Olivari's Livro de Lecciones a Solo Violín: Historical Violin Pedagogy in Light of New Scholarship

Michael Cherbini

Mentor: Dr. Thomas Cimarusti

In light of recent scholarship done on the pedagogical methods of the 18th century Neapolitan conservatories, practitioners and scholars of early music are being exposed to hitherto unknown concepts when it relates to how music was composed, performed, and most especially,

taught. Baragwanath's monograph The Solfeggio Tradnition explains that the hexachordal system first laid out by Guido d'Arezzo in the medieval period was being utilized up until the nineteenth century. The pedagogical structure that the conservatories in Naples employed was very popular, and across the Atlantic in colonial New Spain, this model was adopted by the criollas (Euro-descended girls born in the colony) San Miguel de Belém school in Mexico City. Many musicians were shipped from Europe (mostly Spain or Italy) to teach at the colegio. Nicolas Olivari for example, was an Italian violinist who composed lecciones for solo violin. It is certain that these were composed as pedagogical material, but in light of new scholarship, we can understand how this music was composed, and how this music was not simply repertoire to be studied and replicated as stylistic études, but rather, as exemplars of melodic improvisation for a solo instrument under the framework of hexachordal solfeggio. In this paper Olivari's Livro de Lecciones will be examined in order to argue that this music was not just a suite of lessons to fit a pedagogical demand, but also a guide in extemporising melodies on a solo instrument within the framework of eighteenth century hexachordal solfeggio.

Florida Gulf Coast University (FGCU)

42. How do Personality Traits Correlate With Attitudes Towards COVID-19?

Eric Haseman

Mentors: Dr. Martha Hubertz and Dr. Karen Mottarella

It is the belief of many psychologists that there are the five fundamental dimensions of personality, known as the big five personality domains. These include extraversion (how social someone is), agreeableness (how prosocial someone is), openness (how curious someone is), conscientiousness (how thoughtful someone is), and neuroticism (how emotionally unstable someone is) (Goldberg, 1992). During the height of the COVID-19 pandemic, Americans largely varied in their attitudes towards COVID-19 (Deane, 2021). This included their beliefs about the severity of COVID-19, the effectiveness of suggested precautions against COVID-19, and their concerns about how COVID-19 may impact their lives. The present study investigates the relationship between the big five personality domains and attitudes towards COVID-19. Data analysis is underway. 595 college students at the University of Central Florida participated in a survey in 2021 that measured their attitudes towards COVID-19 and their scores within the big five personality domains. Scores within the big five personality domains were measured using the Ten Item Personality Measure (TIPI; Gosling, 2003). Scores on the TIPI will be compared with responses provided for questions related to attitudes towards COVID-19 to see if any correlations can be drawn between specific personality traits and common attitudes. It is hypothesized that attitudes towards COVID-19 will vary based on the prevalence of certain personality traits within individuals. Certain personality traits may play a significant role in shaping attitudes and thoughts towards diverse and popular topics. These personality traits may also act as predictors for individual attitudes towards COVID-19.

University of Central Florida (UCF)

43. Unacclaimed Propagators: Female Ascendacy in the Office of War Information and the Resulting Feminine Influence on the Development and Dissemination of World War II Propaganda

Dalia Dooley

Mentor: Dr. Neil Weijer

During World War II, the American government placed a significant emphasis on understanding and harnessing female opinion, particularly as it pertained to the war effort. This prioritization manifested in targeted propaganda campaigns designed to inform and entice women, accentuating the opportunities presented by the conflict, notably in roles that had previously been devoid of feminine influence.

In the context of this era, the establishment of the Office of War Information (OWI) represented a strategic response to the need for efficient wartime information dissemination. The OWI was tasked with formulating and executing comprehensive information programs to enhance understanding of the war's status, progress, policies, activities, and aims, both within the United States and abroad. While a majority of the directors of this office were run by men, a handful of the directors of the OWI were women.

My research encompasses the OWI's records of these women and their roles in the Office. The totality of these documents is undigitized which warranted a visit to the National Archives in College Park Maryland. By focusing on key female figures within the organization, such as Catherine Lanham, who served as the Program Manager for the Security of War Information Campaigns, and Mary Keeler, the Program Manager for the Recruitment of Women, this research unveils their backgrounds and the remarkable paths they traversed to ascend to leadership positions in a domain historically dominated by men and aims to contribute a new understanding of gender dynamics, propaganda, and influence during WWII.

University of Florida (UF)

44. Collection and Analysis of River, Lake, and Ocean Water and Riverbank, Lakeshore, and Beach Sediments to Determine Types of Microplastics Present

Raelin Kuhn

Mentors: Tina Kuhn and Dr. Tammy Laberge

Microplastics are materials that are less than 5mm in length and pose many threats to wildlife and the environment because they contain and absorb toxins that are harmful when ingested. Primary microplastics are manufactured as small pellets ("nurdles"), fragments, and fibers used to create other products. Secondary microplastics are derived from larger plastics such as bottles, bags, and wrappers that are broken down through chemical and physical processes such as UV radiation and wave action. In this experiment, 10 water samples and 10 sediment samples were collected from various locations and analyzed using several methods to determine the forms of microplastics present. Beach sediment and ocean water samples include Jacksonville Beach, FL; Tybee Island, GA; and Cocoa Beach, FL. Riverbank sediments and river water samples include the St. Johns River, FL; the Nolichucky River, TN; the Ohio River, OH; the Great Miami River, OH; the Potomac River, MD; and the French Broad River, NC. The lakeshore sediment and lake water sample include Paintsville Lake, KY. Water samples were vacuum filtrated 3 times for accuracy and sediment

samples were separated using 4.75mm, 1mm, 500µm, 250µm, 150µm, 63µm, and 38µm sieves. All samples were analyzed and photographed using an Amscope high-powered microscope with a MU1400 camera attachment. Fibers, beads, and other fragments were detected, and blue fibers were the most prevalent in all samples. Differences in the quantity of microplastics between rivers, beaches, and lakes could be due to high versus low energy environments, proximity to urban density, industry, and ocean outlets.

Miami Dade College

45. Caring for Students as Thinkers: A Case Study

Haley McCoy

Mentors: Allison Metcalf and Dr. Lama Jaber

The field of science teacher education research has a burgeoning imperative to understand and support more equitable science teaching such that all students not only learn science but feel a sense of belonging and community in science classrooms. In this work, we seek to add to this literature by sharing an in-depth exploration of the interactional dynamics in the classroom of a public high school science teacher, Danny, during a lesson on periodic trends in which his students are enthusiastically engaged in the doing of science to figure out how and why these trends exist. This qualitative case study (Merriam, 2008) draws on Nell Noddings' (2012) conceptualization of care as an analytical lens to name, describe, and analyze the ways in which Danny uplifts his students' engagement and excitement in his AP Chemistry class. This is specifically through his interactions with them during a lesson on periodic table trends. We argue that, throughout the 2-day lesson, the care and respect that Danny demonstrates for his students as thinkers and as doers of science supports their sustained and outwardly emotional engagement in science. Naming and describing the ways in which teachers like Danny demonstrate such care for their students is important work for the field of science teacher education, as this effort can make practices of care more easily accessible and achievable for other teachers to incorporate into their own pedagogies and interactions with students.

Florida State University (FSU)

46. Motivations for Retaliatory Aggression on Social Media Among Borderline Personality Endorsers

Hannah Grimes

Mentor: Dr. Grace White

Social media has become a popular way of connecting with people, but it has also led to an increase in cyber aggression. Borderline Personality Disorder (BPD) is a condition that is characterized by retaliatory aggression, difficulty in interpersonal relationships, and high impulsivity. Those who endorse BPD symptoms experience unstable interpersonal relationships and struggle to maintain connections with others which can lead to problematic behaviors on social media like retaliatory aggression. Understanding the motivations behind those behaviors can help inform the experiences of the diagnosed population, mitigate problematic behaviors, and facilitate healthy social relationships. This study aims to explore the motivations that BPD symptom endorsers most identify with, such as self-protection, affiliation, and status, and the prevalence of retaliatory aggression on social media. The participants will complete a self-report survey that measures their motivations, online revenge behaviors, and BPD symptom endorsement. A correlation analysis between variables will be conducted, alongside a moderation analysis that will identify how the motivations influence the relationship between BPD symptom endorsement and retaliatory aggression. An exploratory analysis will help determine the most prevalent motivation and inform coping strategies for those who exhibit symptoms of BPD. The findings of this study will help to strengthen existing literature about BPD features of impulsivity and reactivity. It will inform treatment and therapeutic methods by identifying the frequency of retaliation and motivations for those who exhibit symptoms of BPD. It will also have clinical implications for how social media use is advised and addressed.

University of Central Florida (UCF)

47. Validation of Sketching Survey to Study Student Mental Model of a Community of Practice

Daniela Zavala

Mentor: Dr. Brian Lane

It is important to understand how students feel in their research groups in order to improve learning outcomes. Therefore, we are conducting research of how students feel in their respective research groups in the physics department. We have developed a semi-structured interview protocol where students draw sketches to represent their experiences in a research group and explain their sketches using examples. This protocol helps us understand how students perceive the members, practices, and goals in their research group, their position within the group, and their alignment with the group's practices and goals. The initial set of interviews we have conducted have revealed a wealth of insights, including alignment and divergence between the student's personal goals and the group's goals, emotional dispositions toward students' participation in research, and sources of student motivation.

Our goal in this research is to demonstrate that, with sufficient prompting, sketches can offer insight into students' perceptions of their position within the research group's community, their alignment with the research group's goals and practices, and the quality of their interactions with the research group's members and norms. A major product from this study will be a validated survey that researchers and academic leaders can use to assess student research experiences.

University of North Florida (UNF)

48. Humpback Whale Behavior in Response to Boat Density

Kaitlyn Ho

Mentor: Dr. Kimberly Dobrinski

Whale watching is a multi-billion-dollar industry that gives people the opportunity to view organisms much larger than themselves in their natural habitat. It is growing increasingly popular in ecotourism and also plays a pivotal role in the research of whale populations. During a whale watch, passengers are taken out into the ocean on boats to see groups of whales often while being engaged in educational conversations about marine life and conservation. Also, data is collected on trips and is often contributed to various research projects as well as population surveys. The growth of whale watching has been very beneficial both economically and scientifically. However, this increase in boat traffic also brings growing concern for how whale watching may negatively impact whales. It has been observed that disturbances from whale watching vessels can cause behavioral changes in whale populations and compromise their ability to thrive in their environment. This research intends to study the possible relationship between increased

boat quantities and the frequency of Humpback Whale behaviors observed in Stellwagen Bank. It hopes to discover patterns that may indicate if there are higher incidences of stress in the presence of larger numbers of vessels. Understanding the impacts of vessel traffic on humpback whales in the area will allow for improvements to be made in regard to whale watching guidelines as well as recreational boating regulations and better pinpoint where change needs to occur.

University of Tampa (UT)

49. Bench Press Performance During Visual Occlusion

Fabianna Marin Gallucci, Mariana Espinal and Ashley Khouly

Mentor: Dr. Jason Kostrna

Proprioception, the sense of movement and position of one's body, is essential to exercise and weightlifting. Proprioception, like all human senses, is manipulable in certain circumstances. In particular, proprioception relies on previous experience to estimate weight; in unfamiliar circumstances, proprioception is particularly vulnerable to incorrect estimations (e.g., picking up a suitcase you expected to be heavy but was light). This inaccuracy provides an opportunity for exercisers and athletes to manipulate their proprioceptive responses to unknown weights. This possibly results in improved performance, self-efficacy, and affective responses. This study will recruit 40 novice weightlifters between the ages of 18-50 years old. Participants will complete a 10-Repitition Maximum (RM) testing procedure on their first visit to the lab. Participants will use that 10-RM during two additional experimental testing days which will compare weightlifting performance and psychological response across three randomly ordered conditions: unoccluded weight, occluded weight, and occluded with an additional five percent above their 10-RM. To further manipulate performance and psychological response, lifts will be randomly assigned to either receive social facilitation from their spotter or not. The resulting three by two repeated-measures design will test the hypotheses that an individual's bench press performance and psychological response will improve when exposed to social facilitation, especially when the weight is visually occluded.

Florida International University (FIU)

50. Art or an Illusion: How Media Portrays One's Perception Versus Reality

Jaida Haynes

Mentor: Akeemia Clements

This study examines art as an illusion in the media and how it serves a purpose for communicating with an audience. In the realm of media, this quality becomes a powerful tool for creators to create narratives, evoke emotions, and prompt introspection. This study explores the importance of art as an illusion in media, and it lies in its ability to tap into the mind. This departure from strict realism allows artists to explore, provoke thought, and create experiences that resonate deeply with viewers. The communication of ideas and emotions elude straightforward articulation while visual arts utilize techniques such as perspective, color theory, and abstraction to create captivating illusions on canvas or screen. The initial hypothesis showcases in Literature how authors use language as a medium to craft illusions, build worlds, and characters that exist beyond the confines of the page, and in Film and Digital Media, cinematography, special effects, and sound design immerse audiences in alternate realities. Qualitative Research methodology showcased the suitable understanding of the Hypodermic Needle Theory or Magic Bullet Theory to harness the power of illusion and transport individuals into realms where imagination and reality intertwine. The Preliminary Findings revealed that art as an illusion in media is to transcend the confines of reality, offering a heightened and often symbolic experience.

Bethune-Cookman University (BCU)

51. Trust in Virtual Supervision: Examining Probation Officer-Client Relationships

Isabella Marcon

Mentor: Dr. Jill Viglione

Research highlights the critical role trust plays in the development of strong relationships between probation and parole officers (POs) and their clients on outcomes, including overall satisfaction with supervision experience, communication dynamics, and engagement in treatment programs. While existing research emphasizes the influence of trust in PO-client relationships, a notable gap persists in understanding specific factors that foster or erode trust in the virtual supervision context. While Virtual supervision emerged as a promising tool for community supervision agencies during the COVID-19 pandemic, questions remain regarding the impact of its use on trust and relationship development. Using interview data with POs and clients, the current study seeks to examine the role of trust between POs and clients by examining two main research questions: 1) What role does trust play while using virtual supervision? and 2) What factors impact the development of trust while using virtual supervision? This research seeks to contribute to a more nuanced understanding of trust and relationship dynamics in the evolving landscape of community corrections post-pandemic. Findings can inform policies and procedures to optimize the design and implementation of virtual supervision programs.

University of Central Florida (UCF)

52. Straightforward Synthesis of a Redox Active Polymer of Intrinsic Microporosity

Ellen Forehand

Mentor: Dr. Austin Evans

Organic materials, such as polymers of intrinsic microporosity (PIMs), are promising for addressing gas absorption, water filtering, and clean energy storage. PIMs have permanent porosity due to the inefficient packing of their rigid fused aromatic backbones and contortion sites. This porosity can be exploited for clean energy storage due to the ability of PIMs to be dissolved and cast as films as well as solids. Utilizing redox-active PIMs, however, has proved challenging because PIM molecular design has not been widely explored. To address this gap in organic materials research, we developed a targeted synthesis of a redox-active PIM to be applied to a variety of chiral polymers from 1,1'-Bi-2-napthol (BINOL). By synthesizing and characterizing these functionalized BINOL derivatives, we access a generalized synthesis of PIMs with redox-active organic materials applications.

University of Florida (UF)

53. Passively Cooling Buildings with Barium Sulfate laminates

Devin Wright

Mentor: Dr. Amanda Newton

Densified barium sulfate nano-spheres show great promise as a cooling pigment. However, current manufacturing techniques have several areas for improvement, such as

UV stability, cost, maintenance, and ease of construction. A laminate construction mediates these limitations. This experiment tests the cooling effectiveness of a barium sulfate/polymethyl methacrylate laminate compared to current methods. Cooling buildings passively will significantly reduce cooling costs and greenhouse emissions.

Eastern Florida State College

54. Tilings of Three Dimensional Deficient Rectangles with L-Tetrominoes

Ian Bridges

Mentor: Dr. Cynthia Lester

We consider three dimensional iterations of the L-tetrominoe. We show that three dimensional rectangles missing one square, called deficient rectangles, can be tiled as long as they satisfy two conditions: minimum side length 3, and all sides are congruent to $1 \pmod 4$ or two sides that are congruent to $3 \pmod 4$ and one side is $1 \pmod 4$.

Florida State University (FSU)

55. Graph Neural Networks for the Identification of Novel Inhibitors of a Small RNA

Ibrahim Gheit

Mentors: Dr. Donald G. Phinney and Dr. Christopher L. Haga

MicroRNAs (miRNAs) play a crucial role in post-transcriptional gene regulation and have been implicated in various diseases, including cancers and lung disease. In recent years, Graph Neural Networks (GNNs) have emerged as powerful tools for analyzing graph-structured data, making them well-suited for the analysis of molecular structures. In this work, we explore the application of GNNs in ligand-based drug screening for small molecules targeting miR-21. By representing a known dataset of small molecules targeting miR-21 as graphs, GNNs can learn complex relationships between their structures and activities, enabling the prediction of potential miRNA-targeting small molecules by capturing the structural features and similarity between known miRNA-targeting compounds. The use of GNNs in miRNA-targeting drug screening holds promise for the discovery of novel therapeutic agents and provides a computational framework for efficient screening of large chemical libraries.

Florida Atlantic University (FAU)

56. Students' End of Semester Perspectives of Online Adaptive Learning Modules

Jennifer Miller

Mentor: Dr. Tamra Legron-Rodriguez

Professionals at institutions of higher learning are increasingly using adaptive learning systems due to their ability to meet the educational needs of the individual student. The move toward technology-integrated education brings a need for affordable online resources. This work explores the adaptive learning tool, Canvas Mastery Paths, selected for study for two reasons: it is already integrated into the Canvas learning management system, and it adds no additional cost to students. Canvas Mastery Paths lets instructors create customized adaptive learning paths that adjust to student performance, and allows them to provide supplemental material and additional practice based on student scores on initial knowledge checks. This system allows for an individual student's activities to be personalized based on student-specific needs. This research explores the students' perspective on adaptive learning systems, specifically four Canvas Mastery Paths learning modules that were created and delivered to students enrolled in large general chemistry courses. After completing the learning modules, students participated in a free response open-ended survey regarding their experience with the platform and activities. Responses were thematically analyzed by two coders, and a code book was created based on the responses. Survey questions included examining how students responded to incorrectly answered questions, possible impact on their learning of chemistry, and any new study habits developed because of the activities. Results will assist instructors in making the choice to pursue the use of the Canvas Mastery Paths adaptive learning system for general chemistry courses based on the students' perceptions of this effective and affordable resource.

University of Central Florida (UCF)

57. 2020 Armor: Descriptive Analysis Of Black Belt And Non-Black Belt Taekwondo Athletes

Florianne Silva

Mentors: Dr. Lindsay Toth and Dr. Charles Williams

PURPOSE: Taekwondo athletes use protective body armor when competing in sparring matches. Electronic sensor systems were adopted by the World Taekwondo Federation circa 2009 to score athletes objectively, but there is a paucity of data characterizing performance variables for black (BB) and non-black belt (NBB) athletes using electronic sensor systems. The purpose of this study is to describe 2020 Armor's performance variables strike power (PWR), stamina (STA), and reaction time (RXT) for BB and NBB athletes and determine if variables are statistically different between BB and NBB level athletes.
METHODS: Healthy BB and NBB TKD athletes (N= 23, 21 ± 5 yrs, BMI: 28.1 ± 8.4 m/kg2) were recruited from a single TKD studio. Each participant completed a PWR, STA, and RXT test using a rear-leg roundhouse kick against a chest-worn 2020 Armor electronic sparring unit affixed to a stationary body opponent bag. PWR, STA, and RXT variables were recorded from the 2020 Armor system and mobile application. Differences between BB and NBBs are presented as % difference, and independent samples t-tests were used to determine statistical differences between groups.
RESULTS: BBs generated 9.1% greater average PWR (P>.05), 5.8% greater STA (P>.05), and 12.3% faster RXT (P=.044) than NBBs.
CONCLUSIONS: The 2020 Armor unit detected differences in PWR, STA, and RXT between BBs and NBBs. Only RXT showed a significant difference per group. This information can be valuable for taekwondo instructors in tailoring individual training programs to address specific performance variables associated with sparring and the progression of taekwondo skills.

University of North Florida (UNF)

58. Evaluation of Tolerance of Milk Protein Versus Plant Protein Based Enteral Nutrition Formulas in People with Amyotrophic Lateral Sclerosis (ALS): A Retrospective Study

Shreya Patel

Mentors: Dr. Andrea Charvet and Stephanie Dobak

Amyotrophic Lateral Sclerosis (ALS) is a chronic neurodegenerative disorder classified by the progressive loss of motor neurons, leading to muscle atrophy and weakness. Individuals with ALS typically face challenges in maintaining adequate nutrition. Some patients may opt to receive enteral nutrition (EN) via a gastrostomy tube (Gtube), bypassing oral intake and barriers to swallowing. EN intolerance is reported

in 27-38% of hospitalized and critically ill patients. There are no reported data on overall EN intolerance in patients with ALS, and the current research on the relationship between the type of EN formula and GI symptoms in this population is limited. Preliminary findings from other studies in different populations suggest that plant-based formulas may offer benefits compared to milk-based formulas while alleviating specific gastrointestinal symptoms (bloating, constipation, diarrhea, or abdominal pain) associated with ALS. This study aims to analyze the tolerance of standard enteral formulas, specifically comparing plant-based and milk-based options, by assessing the incidence of various gastrointestinal symptoms through a comprehensive retrospective chart review on ALS patients meeting the inclusion criteria. Patients eligible for the study must be diagnosed with ALS, receive a plant or milk-based EN formula via Gtube, and have a follow-up appointment within six months of EN initiation. After institutional IRB approval is received following a standard protocol, data will be collected in 7 participating ALS clinics across the United States using REDCap. The outcomes aim to contribute valuable insights into selecting EN formulas for ALS patients to potentially mitigate gastrointestinal symptoms and improve quality of life.

Nova Southeastern University (NSU)

59. Memory Benefits of Being a Racial Ingroup Face and Judging Face Attractiveness

Montserrat Corcino and Benjamin Marsh

Mentor: Dr. Benjamin Marsh

Data collection is in progress
Participants studied a group of 48 faces that varied equally by race (Latino, Asian , Black and White) and level of attraction (high, average, and low). The study consisted of 36 white college-age participants (32= Female; 4= Male). Participants were randomly assigned to either rate the attractiveness of the faces right after seeing each one or to just study the faces. After they studied the faces, they were asked if they remember certain faces and how confident they feel about their decision. While participants are rating and studying faces, their gaze was recorded with an eye tracker to see what features the participants focused on when trying to remember faces.
Preliminary analyses found that White participants remember White faces better than Black and Latino group, a replication of the cross-race effect. For the Attraction Effect, we found that participants remember highly attractive faces significantly less often compared to faces low in attractiveness. . Also, participants who rated the faces right after they studied them seem to be able to remember faces better overall. In conclusion, the cross-race effect was replicated in White participants and face attraction did noticeably impact face memory, but in an unexpected way. Faces high in attractiveness were poorly remembered. The null effect in highly attractive faces may be due to the features that make a face attractive having limited variability making the group more similar.

University of Tampa (UT)

60. Receipts, Source of Phthalates?

Grace Gouws and Camryn Brown

Mentor: Dr. Erika Doctor

Bisphenol A (BPA) is a synthetic chemical that is used to produce resilient plastics. This compound was once found in beverage containers until its removal in 2012. However, it still is used in compact discs, plastic dinnerware, toys, and other household plastics. BPA is a known endocrine disruptor that can affect the reproductive systems of individuals and cause hormonal disturbance. Due to its prevalence in our everyday lives and the plethora of health concerns surrounding BPA, it should be a topic of concern for the public. A primary source of BPA that is under-researched is the use of color developers in thermal paper receipts. Thermal paper receipts are used worldwide by organizations, and consequently, individuals have high contact with them. This study was conducted to determine the presence of BPA in grocery and restaurant receipts collected. To examine the levels of BPA, the receipts were submerged in 10 mL of room-temperature water for 60 minutes. The resulting liquid was analyzed for BPA levels using high-performance liquid chromatography (HPLC) with UV detection. The concentration of BPA was determined after optimizing a calibration curve for BPA with a detection limit of 200 ng/mL. It was hypothesized that the receipts would contain a significant amount of BPA, potentially posing health risks to individuals who have frequent contact with receipts.

Lynn University (LU)

61. Kinetic Study of DNA Structures Spatially Localized on a DNA Scaffold

Katherine Taylor

Mentor: Dr. Dmitry Kolpashchikov

Spatial localization of mRNA and tRNA by the ribosome, where the hybridization of both nucleic acid molecules occurs, allows protein synthesis. The rate at which these interactions take place is crucial for the correct base pairing hybridization and to avoid aberrant translation. To investigate these hybridization kinetics, it is required to simulate this enclosed environment of nucleic acids hybridization. We designed a DNA tile consisting of DNA four-way junctions (4WJ) localized on a DNA scaffold. These 4WJs work in combination with a tethered fluorescent/quencher reporter system that produces fluorescence when the system is relaxed, and quenches fluorescence upon hybridization triggered by the addition of an oligonucleotide analyte, allowing for an easy measure of unhybridized and hybridized states of the system. This study focuses on the optimization process of this DNA tile that will eventually serve as a tool to measure hybridization rates of nucleic acid sequences located in close-proximity including those of biological importance like codon-anticodon hybridization.

University of Central Florida (UCF)

62. Architecture and Building Caretakers

Erin Beck

Mentor: Dr. Charlie Hailey

According to a University of Florida custodian, her job is to "be visible, but not all there." This statement reveals a challenge that custodians must contend with every day: that they should be engaged in their jobs, yet removed from those perceived to hold higher positions. The spaces provided for custodians, such as storage closets and break rooms, corroborate this narrative. They are often unfinished, windowless, and so small that they could be considered insignificant to the rest of a building. While these poor designs - like afterthoughts from an architect at the end of a project - demonstrate the subtle (even if unintended) stigmatization of custodial work, a closer look inside these spaces reveals a greater truth: the creative ingenuity of custodians rises above the restrictions of their built environment. How can architectural spaces address functions of building maintenance in addition to the well-being of custodial workers? To answer this question, this research project interviews ten custodial workers on the University of Florida campus and investigates three cases: the University Auditorium, School of Architecture, and Fine

Arts C. This project is divided into three sections: a review of literature on perceptions of custodians, documentation of custodial spaces in the three UF buildings, and interview data from custodians and their supervisors sharing work experiences in these spaces. While this research project reveals shortcomings in custodial space design, it also proposes alternatives for custodial space design, which may make the custodial profession more enjoyable, functional, and rightfully respected.

University of Florida (UF)

63. Changes in Mother-Infant Social Interactions Based on Food Type

Jalina Hess

Mentor: Dr. Jessica Bahorski

Benefits of breastmilk are numerous. Studies have shown differences in infants fed breastmilk versus formula, thus breastmilk is encouraged when possible. Infants who receive the largest portion of their diet from breastmilk and also receive the most physical touch are the most likely to score well on cognitive tests. However, more research is needed on whether breastmilk impacts social interactions such as physical touch between a mother and her infant. The purpose of this study was to examine differences in social interaction based on food type. Mother-infant dyads (N=21) completed study visits at infant age of 1 to 4 months. Social interaction was measured with the Infant Feeding Questionnaire and mothers reported what the infant was fed at each visit. Of the infants breastfed exclusively for the duration of the study, 56% had an increase in social interaction between 1 and 4 months compared to 43% who were fed some or all of their diet through formula (p=0.69). Additionally, social interaction increased in more infants who were exclusively breastfed (60%) or exclusively formula fed (60%) at 4 months compared to infants who received mixed feedings (17%) (p=0.4). These findings were not statistically significant likely due to the small sample size but suggest that receiving breastmilk only or a consistent food may increase social interaction in the first 4 months of life. Future research should test this correlation with a larger sample size. Additionally, maternal prolactin levels should be explored as research has suggested a correlation with social interaction.

Florida State University (FSU)

64. MTS or Highwaters: Prescribed Fire Lessons for Multiteam System Training

Kevin Llanos

Mentor: Dr. Chelsea LeNoble

Prescribed fire is an important land management tool for maintaining natural lands and mitigating wildfire by applying a controlled burn. This practice reduces hazardous natural fuels, maintains fire-dependent communities, and protects human life. Prescribed fire operations require planning and coordination across teams (e.g., prescribed burn crews, state agencies, adjacent landowners, and park staff) that share the goal of safely conducting a burn. This structure reflects a multiteam system (MTS; i.e., team of interdependent teams), which can adjust coordination and communication processes given the circumstances and respond to complex challenges. Due to the volatile nature of fire, prescribed fire operations are subject to factors that can change abruptly, posing critical safety and well-being challenges. Thus, instances of catastrophic failures or incidents during prescribed fire operations have been adopted as training lessons to increase prescribed fire safety and effectiveness. Despite the recognized importance of team resilience in prescribed fire practice, the extant scientific literature has focused on fire science while omitting team and MTS considerations. To address this gap, we analyze existing wildfire and prescribed fire incident documentation and detailed narratives that outline the prevalent dangers faced by prescribed fire teams in Florida. Through this archival and qualitative approach, we aim to answer the following research questions: What challenges do fire teams encounter during prescribed fire operations, and to what extent are MTSs implicated in training lessons? This study applies industrial-organizational psychology to support the resilience of occupations critical for societal well-being. Findings will be used to offer MTS training recommendations.

University of Central Florida (UCF)

65. Predicting Suicide Risk Among Police Officers

Kaitlynn Lee and Jada Brown

Mentor: Dr. Daniel Hollar

In 2020, the former Attorney General of the United States, Bill Barr, reported that in the previous year "more officers died by suicide than in the line of duty". This study examines the prediction of suicide risk among police officers and explores the role of fitness-for-duty (FFD) data in identifying officers at risk. The hypothesis posits that financial problems, alcohol abuse, and family problems reported in FFD evaluations are predictive of suicide risk, particularly when accounting for an officer's trauma history. Data was collected from 250 FFD evaluations conducted by a third-party agency at a large metropolitan police department in the Midwest. The analysis of the data confirmed the utility of FFD evaluations in predicting suicide risk among police officers, thereby enabling identification and support for officers in need. The study also reveals alcohol abuse and a history of homicidal threat as significant predictors of suicide risk, which adds new knowledge to existing literature. The findings contribute to a better understanding of mental health issues within the police community and highlight the importance of creating safe spaces for officers to receive adequate mental health care. The paper concludes with a discussion on the study's findings, limitations, generalizability, and potential solutions for reducing suicide risk among police officers.

Bethune-Cookman University (BCU)

66. Optimization and Characterization of Superconducting Niobium Nitride Thin Films

Hudson Horne

Mentor: Dr. Daniel Santavicca

Sputtering is a technique for producing thin films of material which uses plasma to remove material from a source under vacuum, which coats an exposed substrate. In reactive sputtering, this source material reacts with a gas and the resulting compound forms a film on the substrate. Variations of this process include DC sputtering, which excites a plasma using a constant voltage, and high-power impulse magnetron sputtering (HiPIMS), which uses a pulsed voltage. We use a Lesker sputter system with a niobium source and nitrogen gas to produce niobium nitride films, which are superconducting. For both DC and HiPIMS processes, we find the nitrogen concentration corresponding to the highest superconducting critical temperature of the film and study the variation of the deposition rate as the nitrogen concentration changes. Additionally, we characterize the electrical and mechanical properties of the resulting films using a variety of tools including scanning electron microscopy (SEM), X-ray diffraction analysis (XRD), and atomic force microscopy (AFM). The goal is to produce ultra-thin films with relatively high superconducting critical temperatures for nanowire device applications.

University of North Florida (UNF)

67. Explainability and Introspection in Deep Reinforcement Learning

Gabriel Lucchesi

Mentor: Dr. Sumit Kumar Jha

As the research field of Artificial Intelligence expands, the level of abstraction held by Machine Learning models becomes increasingly complex and harder to navigate. Like human consciousness, an ensemble of thinking neurons usually don't convey their reasoning in interpretable formats without the tools and the instructions to do so. As humanity developed, language arose as the number one bridge between thought and interpretation, allowing humans to suddenly develop the ability to socially communicate reasoning and logic. With machines and agents, this doesn't have to be any different. Present-day models of artificial intelligence rely solely on the concern of outputting optimal values from a multitude of inherently different scenarios given a set of experiences or expected outcomes (and loss functions thereof) that it was trained on. This makes the task of interpreting and fine-tuning models rather troublesome given the abstractions derived from hidden layers of information in Deep Learning. In the context of optimizing for model transparency, this research utilizes algorithms of Integrated Gradients on top of scenarios inherited from Deep Reinforcement Learning from OpenAI Gymnasiums to expand on how learning attributes could be grasped from training pipelines in Reinforcement Learning, communicating to trainers what parts of the state-space input the agent pays attention to the most when performing its Markov-guided decision-making. Diving into the reasons behind action inference should provide information that was initially hidden at first look, but that may be pivotal in improving the robustness and transparency of control systems in fields of robotics, avionics, aeronautics and more.

Florida International University (FIU)

68. CWISE J105512.11+544328.3: A Nearby Y Dwarf Spectroscopically Confirmed with Keck/NIRES

Grady Robbins

Mentor: Dr. Aaron Meisner

Y dwarfs, the coolest known spectral class of brown dwarfs, overlap in mass and temperature with giant exoplanets, providing unique laboratories for studying low-temperature atmospheres. However, only a fraction of Y dwarf candidates have been spectroscopically confirmed. We present Keck/NIRES near-infrared spectroscopy of the nearby (d ≈ 6-8 pc) brown dwarf CWISE J105512.11+544328.3. Although its near-infrared spectrum aligns best with the Y0 standard in the J-band, no standard matches well across the full YJHK wavelength range. The CWISE J105512.11+544328.3 NH3-H = 0.427 ± 0.0012 and CH4-J = 0.0385 ± 0.0007 absorption indices and absolute Spitzer [4.5] magnitude of 15.18 ± 0.22 are also indicative of an early Y dwarf rather than a late T dwarf. CWISE J105512.11+544328.3 additionally exhibits the bluest Spitzer [3.6]-[4.5] color among all spectroscopically confirmed Y dwarfs. Despite this anomalously blue Spitzer color given its low luminosity, CWISE J105512.11+544328.3 does not show other clear kinematic or spectral indications of low metallicity. Atmospheric model comparisons yield a log(g) ≤ 4.5 and $Teff ≈ 500 ± 150K for this source. We classify CWISE J105512.11+544328.3 as a Y0 (pec) dwarf, adding to the remarkable diversity of the Y-type population. JWST spectroscopy would be crucial to understanding the origin of this Y dwarf's unusual preference for low-gravity models and blue 3-5μm color.

University of Florida (UF)

69. Mysticism in Medieval Society: Stories and Their Influence

Lexi Schwartzberg and Gabriella Gomes

Mentor: Dr. Philip Handyside

The Middle Ages was a time when mysticism often overtook reality. Creatures such as witches, dragons, and sciapods were thought to be real, and people took precautions against them. While tales of these creatures entertain us today, their presence in the minds of the medieval society in which they developed had dangerous consequences. The myth of witches allowed for the persecution of people who defied the social order and committed innocent acts that were rebranded as heresy. The myth of dragons was used to alienate supposed enemies of the Christian religion. These myths were so influential that their images have come to pervade modern day popular culture, where they have been depicted as both good and evil figures and have inspired many well-known characters. This study considers the way in which these myths developed, particularly during the Middle Ages, and how they have come to influence the world of today, while taking care to understand the power such tales can have.

University of Central Florida (UCF)

70. Cancel Cancel Culture?

Kerri Cohn

Mentors: Eric Levy and Monica Escaleras

In today's digital age, celebrities and influencers hold immense influence through their massive social media platforms. However, does the average American agree that with great power comes great responsibility? This power holds a public debate on accountability and puts pressure on celebrities to do the right thing. This survey explored how Americans view celebrity conduct online and their attitudes towards their behavior. My initial hypothesis was that the public, especially younger demographics, would hold a critical view of celebrity behavior on social media platforms. To test my hypothesis, I created a 16-question survey and collected data using Amazon M-Turk. I gathered data from 189 respondents aged 18+ with respondents representing diverse demographics in terms of age, gender, political afflation, education, and income level, and then analyzed it through IBM's SPSS. In contradiction to my hypothesis results showed that Americans of all age groups are quite fond of celebrities and believe they are using social media responsibly. With very little generational differences, the public appears relatively accepting of celebrities on social media. This challenges the assumption that celebrities have an ethical responsibility online. Further research could clarify the factors shaping these opinions and reasons across age groups, despite celebrities' intense social impact.

Florida Atlantic University (FAU)

71. Probing the Electronic Structure of Manganese-Protoporphyrin Proteins Using Different Spectroscopic and Imaging Techniques

Brendon Le

Mentor: Dr. Mary Grace I. Galinato

Heme proteins are systems that have various functions that include oxygen transport, electron transfer and biochemical catalysis. In this study, porphyrin proteins in solution and silica gel matrices were generated as possible catalysts for sulfoxidation reactions. We aim to develop artificial complexes that consist of manganese (Mn III) protoporphyrin

IX in human serum albumin [Mn III Por (HSA)]. A series of nitrogen(N)-donor ligands such as imidazole and amine derivatives will be incorporated into the [MnIIIPor (HSA)] complex to generate an interaction between the Mn center and the nitrogen from the ligands, which assists in the formation of an intermediate. Different spectroscopic techniques are used to evaluate its electronic structure. Using Raman imaging and spectroscopy, vibrational peaks in the 200-500 cm-1 region are observed, which may allude to the Mn-N(donor) bonding interaction upon incorporation of the ligand. UV-vis spectroscopy shows slight changes in the bands corresponding to the MnIIIPor peaks upon addition of the N-donor ligand, indicative of a change in the immediate surroundings of the porphyrin. A laser scanning microscope image of the complex in sol-gels demonstrates an uneven topology and packing of the protein into the matrix. Finally, using high-performance liquid chromatography (HPLC), initial investigation of the reaction mixture generated by our catalyst and sulfur substrate demonstrates an oxidized sulfur product. More work is currently being undertaken to optimize the separation of the compounds in this reaction mixture.

Jacksonville University (JU)

72. Examining the Influence of Climate Change on Wet and Dry Tropical Forests of Hawaii through Concentrations of Carbon-12 and Carbon-13 Stable Isotopes

Katharine Thomas

Mentors: Dr. Stephanie Pau and Dr. Shannon Bayliss

Climate change affects all aspects of the global environment including the amount of water available to plants in tropical forests, particularly those located in the dry and wet tropical forests of Hawai'i. Captured and examined over time, the stable carbon isotopes in plant litter, carbon-12 and carbon-13, can act as tracers for the unique water-use efficiency of plants in given climate conditions. Water-use efficiency of plants relates to entire ecosystem processes such as net carbon accumulation through photosynthesis. These observations may provide a clearer look into the response of tropical forests to climate change. From 7-10 years of leaf litter collections from the wet forest at Laupahoehoe, we sorted the species Acacia Koa ("Koa") and Metrosideros polymorpha ("Ohi'a lehua"), while from the dry forest at Palamanui, we sorted the species Dodonaea viscosa ("A'ali'i"), Psydrax odorata ("Alahe'e"), and Diospyros sandwicensis ("Lama"). After sorting by species, we ground the samples into a homogenous fine-grained powder and dried them to ensure all extra water weight was dissipated. A mass spectrometer was used to measure the carbon stable isotope concentrations. The records of these isotopic ratios allow us to track the plant's water-use efficiency over time and how water-use efficiency fluctuates with various climate conditions that the plants were experiencing seasonally, including temperature and precipitation. In time, we expect species adapted to dry conditions, from the dry forest, to have higher water use efficiencies regardless of climate fluctuations over the allotted time period.

Florida State University (FSU)

73. Untitled

Isabella Macias

Mentor: Dr. Rana Ezzeddine

Since the Big Bang, Lithium (Li) has been depleted in the Universe via the nucleosynthesis process in stars; however, an enhancement of Li has been observed in a small fraction of the Milky Way Galaxy stars, whose origin is still a matter of debate. Old metal-poor stars, which can uniquely probe the early chemical enrichment events of the Universe, have not been well studied in terms of their Li enrichment. I present results from my work performing a detailed observational analysis of a sample of old stars to investigate the correlation of the enhancement of Li in their atmosphere to their other observational properties. I used spectroscopic analysis algorithms, such as Spectroscopy Made Harder (SMH), to determine the chemical abundances of Lithium, Nickel, Sodium, and Zinc found in a large sample of metal-poor stars. The preliminary findings suggest elemental correlations between the different elements, which could indicate that internal mixing inside stars might play a vital role in Lithium excess. Additionally, I searched for indications of mass-loss events or the presence of a circumstellar disk around the stars for signs of external enrichment correlations with Li enrichment in stars. The anticipated outcomes of this research project will confirm or refute the dominant Li production site(s) in the Universe from either internal (mixing) or external processes (accretion or planetary engulfment). Therefore, this research considers both Li formation channels and models the relationships between the interesting stellar signatures and their exterior contamination.

University of Florida (UF)

74. Application of Vocal Biomarkers in the Study of Bilingualism and Language Learning

Maria Gonzalez

Mentor: Dr. Nelson Roque

In Florida, an estimated 30.3% of individuals over five years old speak a language other than English, a statistic significantly surpassing the national average of 20%. Despite the interest in bilingualism, current research methods often need more depth to comprehend the intricate motivations behind language acquisition fully. This study ventures into the realm of vocal biomarkers, an emerging frontier poised to unravel the complexities of language acquisition and motivation. Vocal biomarkers, or the signature patterns in speech, hold multifaceted promise. Beyond early detection of psychopathology and neurodegeneration, along with applications in the medical field, vocal biomarkers may hold potential in cognitive research by furthering our understanding of language learning.

Employing an integrated approach encompassing surveys, vocal assessments, and a modified Bilingual Language Profile test, our study aims to attain a nuanced understanding of language acquisition, including a recording task that looks at vocal jitter. Preliminary analyses hint at the potential of these biomarkers to illuminate subtle differences in language dominance, which holds value in order to gain insights into language acquisition mechanisms and foresee profound long-term educational implications. This research lays the groundwork for more effective educational interventions, potentially reshaping language learning paradigms.

University of Central Florida (UCF)

75. Pass The Mic: How Social Media Distinct Colorism in the Female Rap Industry

Nei-Lani Saville-Russ

Mentor: Ms. Akeemia Clements

This study examines Colorism in the Female Rap industry and it's one of those topics that is not talked about but has majorly impacted the media. Colorism in Female Rap does not only affect the artist, but it also affects the fans and sales across the United States. Colorism in the industry makes the job of the artist more difficult to succeed and they're often treated poorly due to their skin tone and not having the sex

appeal that the industry wants for Female Rappers. Hip Hop Pioneers have expressed how they believe light-skinned women are "softer" compared to dark-skinned women, which will appeal more to the audience. This study explores how Colorism in Female Rap has been deeply rooted in the African American culture, which eventually bleeds into the tools used to express themselves such as Music, Art, and Social Media. The initial hypothesis is that the industry pushes more for light-skinned women than dark-skinned women to have a career as a rapper. Qualitative Research methodology was used to lead to a more suitable understanding of the Spiral of Silence Theory and Cognitive Dissonance Theory to reveal the impact of Colorism in the Female Rap Industry. The Preliminary findings of this study will use research such as Social Media, Rap Lyrics, Videos, and Podcasts to reveal the trend of Colorism in Female Rap.

Bethune-Cookman University (BCU)

76. The Characterization of Strontium Ferrite for Use as a Resonator In Microwave Device Applications

Jessi Skaggs

Mentor: Dr. Daniel Santavicca

The scientific motivation of this research is to characterize strontium ferrite ceramic magnets in order to examine if strontium ferrite is a promising material to utilize as a resonator in microwave device applications. To assess relevant properties of the strontium ferrite magnets, x-ray diffraction analysis (XRD), scanning electron microscopy (SEM), energy-dispersive x-ray spectroscopy (EDS), and dielectric characterization were performed on the strontium ferrite samples. The use of strontium ferrite resonators is then assessed for its impact on the tolerance of the microwave devices to low temperatures.

University of North Florida (UNF)

77. Identifying Mechanisms of Antioxidant Treatment on the Warburg Effect

Sofia Ines Cuello

Mentor: Dr. Kimberly Dobrinski

This study aims to induce apoptosis through increased oxidative stress within drug resistant cancer cells as caused by a respiratory shift from Warburg to OXPHOS due to treatment with the antioxidant shikonin. Breast cancer's high mortality, driven by drug resistance, makes it a critical research focus. Drug-resistant cancers often use the Warburg effect, favoring anaerobic respiration. Shifting to aerobic respiration (OXPHOS) may induce oxidative stress, as they lack compensatory mechanisms. Shikonin induces mitochondrial dysfunction and apoptosis via ROS overproduction, potentially linked to the proposed respiratory shift. Employing three assays—CyQUANT (cell viability), lipid peroxidase (oxidative stress), and an oxygen probe (oxygen consumption)—the study encompassed growth, treatment, functional assays, and analysis. MDA-MB-231 (drug-resistant) and MCF7 (non-drug-resistant) cell lines were treated with shikonin at concentrations of 16μM, 20μM, and 24μM. CyQUANT revealed decreasing viability in MDA-MB-231 cells with increasing shikonin dosage, with surprising parallels in MCF7 cells with greater apoptotic dose-dependent effects. Despite this, shikonin consistently yielded anticipated outcomes for MDA-MB-231 cells in functional assays, affirming oxidative stress via lipid peroxidase and increased oxygen consumption indicative of a shift to OXPHOS. In summary, shikonin effectively induced cell death in both MDA-MB-231 and MCF7 cells, challenging conventional antioxidant use for cancer. Ongoing research includes lipid peroxidase assay for MCF7 cells and statistical data analysis. Future studies aim to understand why MCF7 cells respond to shikonin, further explore pathways in both cell lines, and validate the respiratory shift. Shikonin holds promise as a cancer treatment, potentially complementing existing therapies.

University of Tampa (UT)

78. Using the Bayesian Statistical Framework for Testing Paleomagnetic Reconstructions

JJ Ruse

Mentor: Dr. Joseph G. Meert

The theory of plate tectonics states that continents are in constant motion such that the geography of the Earth has changed over time. Paleogeography can be examined in deep-time (>600 million years ago) using a combination of paleomagnetism and geochronology. To decipher past geography, we need to know where the continents were located and when they occupied that location. There are errors associated with each measurement and are described using Fisherian statistics. The most common is called alpha-95, which describes an angular cone of 95% confidence about the mean direction. To reconstruct past geometries of continents, paleomagnetists examine similar age rocks from one or more continents. If those rocks yield a similar latitude, then the continents could be rotated together and examined to test whether the geological links were reasonable. More robust statistical methods are being developed for comparison which consider errors in age and position. Bayesian statistics allows us to test for overlap as a continuous probability from 0% (not similar) to 100% (identical). This project focuses on using Bayesian probabilities to test 'goodness of fit' and a variety of proposed paleogeographies from 1000-1800 million years ago using these new methods along with other new tools being developed.

University of Florida (UF)

79. Internet Gaming Disorder & Gamer Types: Uncovering the Stats

Mathea Beltran

Mentor: Dr. Daniel McConnell

Internet Gaming Disorder is the continuous engagement with video games, that could lead to negative impacts on the daily lives of individuals. As suggested by the American Psychiatric Association (APA), IGD is an addiction disorder, that has been undergoing further study to better understand how much of an impact there exists in an individual's life. The present study sought to investigate the relationships between two IGD scales and understand gamer type (none gamers, casual gamers, and intense gamers; based on self-reported time) within the the context of the disorder. A sample of 95 undergraduate participants was collected from a large southwestern university consisting of majority females (66.3%) and males (31.6%) with a mean age of 20.19 (SD = 3.33). The present study was conducted online and was self-paced, the online survey used two internet gaming disorder (IGD) scales, self-reported gaming history, demographics, and a hikikomori scale. A correlation was run on the two IGD scales indicating a strong positive linear relationship ($r(93) = .70$, $p < .001$). A multivariate analysis of variance (MANOVA) was run on the gamer types and the two IGD scales to understand relationships. The MANOVA indicated that there were significant differences between gamer types, where intense gamers ranked higher in IGD evaluations compared to casual and none. However, none of the groups reached the threshold of the cut-offs for IGD. This may be due to the

sample collected. Further work should investigate IGD's role in digital media consumption and addiction as a greater whole.

University of Central Florida (UCF)

80. Exploring the Uncharted Brain: Single Cell Analysis of Circuit Deficits in Fragile X Syndrome

Melisa Sencer

Mentor: Dr. Yuan Wang

Fragile X Syndrome (FXS) is characterized by profound sensory issues which worsen cognitive and social problems in patients. These sensory issues extend to the auditory system and can include symptoms such as hypersensitivity, particularly in everyday noise environments. The Superior Olive Complex (SOC) is a major auditory processor and comprises multiple auditory nuclei. Yet, our understanding of the intrinsic connectivity of the nuclei in this complex is poorly known. To overcome this confound, an understanding of the connectome at the single neuron level is required. Extracellular injections fail to provide morphological information necessary to deduce cell populations, axonal projections, and axon terminal endings. Using an intracellular dye-filling technique established in the Wang Lab at FSU's College of Medicine, I compare the connectivity of singular neurons in the brainstem nuclei called the MNTB region. My preliminary data has recently revealed a previously unknown projection to MNTB in wildtype mice, validating the high sensitivity of my approach. Through this investigation, valuable insights into the connectivity and organization of the MNTB/VNTB region, its axonal targets, and its potential implications in auditory processing under both healthy and pathological (FXS) conditions can be obtained. After Intracellular filling I use antibody staining, and fluorescent imaging to reproduce images of MNTB neurons in mice models. This project not only aims to classify and map the neurons in the MNTB region but also to optimize the protocol of intracellular filling that provides useful information with notoriously sub-par success rates.

Florida State University (FSU)

81. The Relationship Between Love and Family Relationships

Taysia Palmer

Mentor: Dr. Mu-Tor Flood

The proposed study will investigate the relationship between love and family relationships. There is a significant lack of research between love and family relationships. The study proposes two research questions: Does love significantly predict family relationships in college students at an HBCU? Do male and female college students at an HBCU have significantly different levels of love? The study will use a quantitative research methodology and correlational research design. The sample will include 100 students at a southeastern HBCU. A correlation and independent samples T-test will be conducted. It is expected that in research question one love will be found to be significantly related to family relationships. In research question two the expected findings are that male and female college students will be found to be significantly different in their levels of love.

Bethune-Cookman University (BCU)

82. How the El Sistema Inspired Programs, Miami Music Project and the Youth Orchestra of Los Angeles, Directly Impact the Underserved Youth of Miami and LA

Juan Florez

Mentor: Dr. Janna Lower

This research is in the form of a collective case study focused on the Miami Music Project (MMP) and the Youth Orchestra of Los Angeles (YOLA). This study explores the various functions and goals of these El Sistema-inspired programs, and how they directly serve and impact under-represented communities. It also highlights the impact on the youth's future and what these experiences tangibly and indiscriminately provide for their futures, be it beneficial or detrimental. This will also briefly touch on how MMP and YOLA's approach to training young musicians subverts the idea of instrumental trainingtypically being perceived as an activity only for those with few social and financial restrictions. Through virtual, individual interviews with various people that were either current students or alumni of these programs, recent graduates of college age, or adults in the field, their responses were recorded. This allowed for a holistic view of how these programs serve their students, thus resulting in answers that are representative of a larger population. Results showed commonalities between responses that trended towards highly positive results from being students in MMP/YOLA. In conclusion, this study clearly demonstrates that these programs have left positive, tangible impacts on their current and former students. Keywords: El Sistema, Underrepresented Youth, Music Education

University of Florida (UF)

83. Effects of Two Substrates on the Growth and Development of an Endangered Cactus

Luke McCall

Mentor: Dr. Anthony Rossi

Consolea corallicola is a critically endangered cactus endemic to the Florida Keys. It survives in only two small populations in the wild, one on Little Torch and the other on Swan Key. The primary contributor to this cactus's rapid disappearance in the wild is the invasive cactus specialist moth, Cactoblastis cactorum. This experiment was designed to determine the ideal substrate for C. corallicola. Two substrates were tested: pure sand and a 50:50 ratio of peat and sand. This simulates C. corallicola's native habitat, which has areas with denser tree coverage and therefore more organic matter from leaf drop, and other areas that are more open with less leaf drop and therefore less organic matter. At the onset of the experiment, the cacti were set up in a randomized block according to substrate and putative genotype. Over a period of 8 months, measurements of height and areole count were taken. At the conclusion of the experiment, it was determined that the 50:50 ratio of peat and sand was the ideal substrate. This is consistent with C. corallicola's native growth preferences, as the cactus is not xeric, and therefore needs more water and organic matter in its substrate.

University of North Florida (UNF)

84. Development of a Diagnostic Tool to Detect Branched Ubiquitin Chains

William Forrest and Isabella Holt

Mentor: Dr. Michael French

Proteins are dynamic molecules that carry out many critical functions within cells and organisms. Just as every other aspect of organismal function needs to be regulated and

balanced, proteins also need forms of regulation. One form of protein regulation is through the ubiquitin pathway. Damaged, misfolded, and otherwise dispensable proteins are broken down (or degraded) by the conjugation of a small protein known as ubiquitin, which serves as a tag to initiate the degradation of the target protein. Ubiquitin is attached to these proteins to form diverse chains that differ in terms of their chemical linkages, lengths and conformations. Determining the ways in which chain linkage and structure are tied to function is a major area of research in the field. It was recently discovered that ubiquitin chains, which were once thought to be exclusively linear, can also form branched structures. While the structures of linear ubiquitin chains are generally well understood, our understanding of the specific architectures of branched ubiquitin chains has been limited by a lack of convenient methods to study them. In this study, a deubiquitinating enzyme called UCH37, which has recently been shown to cleave branched ubiquitin chains, was used to investigate the presence of branched ubiquitin chains in vitro. We report here that point mutants of UCH37 known to inhibit its debranching activity can be used as an effective biochemical tool to probe the higher-order structures of branched ubiquitin chains attached to substrates.

University of Tampa (UT)

85. Assessing Preventive Care Utilization for Cardiovascular Disease Amongst US Latinos

Melanie Paredes

Mentor: Dr. Susanny Beltran

Accounting for nearly 19% of the United States population in 2020, Latinos and Hispanics represent the second largest racial/ethnic group in the United States, totalling roughly 62.1 million people[1,2]. This population is one of the fastest growing ethnic groups in the United States, accounting for a 23% population expansion from 2010 to 2020, and contributing to 51.1% of total growth in the U.S. population in this decade.[2]. Alarmingly, current literature has highlighted significant disparities in chronic disease incidence, disease severity, and disease mortality among US Latinos/Hispanics [1,3]. Cardiovascular disease prevalence is noted of particular concern for U.S. Latinos and Hispanics, with roughly 52.3% of adult US Hispanic males and 42.7% of adult US Hispanic females reporting being diagnosed with cardiovascular disease between 2015-2018 [3]. Utilizing data from National Health and Nutrition Examination Survey (NHANES), a nationally representative U.S. sample, this study aims to quantify healthcare engagement through preventive care utilization for cardiovascular disease and associated risk factors amongst U.S. Latino/Hispanic adults from 2017-March 2020. Additionally, this study aims to investigate the association and significance of various sociodemographic characteristics and sociocultural factors with CVD preventive service utilization. To address the aforementioned research problems, this study will analyze and investigate key variables related to socio-demographic characteristics, CVD prevention services, and incidence of CVD and associated risk factors amongst the indicated Latino/Hispanic participants utilizing various regression models.

University of Central Florida (UCF)

86. An Investigation of the Relationship between Income Levels and Vital Statuses among Asian, Black, and White Triple-Negative Breast Cancer Patients

Esther Hoang Anh Pham

Mentor: Dr. Maya Byfield

Triple-negative breast cancer (TNBC) is characterized by a low expression of the estrogen receptor (ER), progesterone receptor (PR), and human epidermal growth factor receptor 2 (HER2). It accounts for about 10-15% of all breast cancers. Prior research has discussed that Black breast cancer patients have a higher chance of developing TNBC cells and a higher death rate in comparison to their White counterparts. Further studies were suggested to determine what could be behind such correlation, which became the guiding purpose of this research to investigate the effect patients' income levels have on their vital statuses. In addition to Black and White populations, the Asian population was added as an extra component. Due to the expensive cost of hospital visits and treatments, it was hypothesized that as the income level decreases, the percentage of death increases. Utilizing the Surveillance, Epidemiology, and End Results (SEER) database, 44,715 records were obtained and analyzed. The data demonstrated that, while Asians had fewer deaths in all incomes, Blacks had the highest death percentages. Black patients had no significant difference at low income (<$50K), suggesting that poverty may not be the cause of their increased death rate. Therefore, the hypothesis was not supported. Other factors, such as a population's culture and mindset, were discussed.

Seminole State College

87. Education, Awareness, and Confidence Levels of Anesthesia Providers to Evaluate Temporomandibular Joint in Patients Undergoing Orotracheal Intubation

Kelly Turro

Mentors: Austin Volovar, Yasser Santana, Dr. David Capote, Dr. Yasmine Campbell, Dr. Jorge Valdes and Dr. Inae Gadotti

Orotracheal intubation is considered a risk factor for the development or exacerbation of disorders related to the temporomandibular joint (TMJ). Although studies show that intubation can influence the onset/worsening of temporomandibular disorders (TMD), the literature is still limited. Proper TMJ assessment is required before and after non-emergency orotracheal intubation to avoid or minimize TMJ complications. The unawareness of the anesthesia providers with TMJ problems after intubation may contribute to a delayed TMD diagnosis and treatment. The purpose of this cross-sectional study is to analyze the confidence, awareness, and education of TMJ assessment of anesthesia providers in the United States when performing non-emergency orotracheal intubation. This study was approved by the Institutional Research Board and data is currently being collected. An online survey was created using Qualtrics software. The survey includes 21 questions related to demographics, work experience, self-perceived knowledge and adequacy of entry-level education, awareness of TMJ risks, and current confidence levels on evaluating TMJ. The survey will be distributed via social media and using recruitment posters. Descriptive statistics, cross tabulation analysis and logistic regression will be used for analysis. We hypothesize a limited assessment, awareness, and confidence levels among the participants. This interdisciplinary study will provide relevant information regarding the potential need for further TMJ evaluation by

anesthesia providers to reduce TMJ issues associated with intubation. It will create awareness about TMJ assessment with intubation and increase collaborations between disciplines including anesthetists, anesthesiologists, physical therapists, and dentists in the recognition and prevention of TMD associated with orotracheal intubation.

Florida International University (FIU)

88. Feelings of Entrapment: Better Understanding Suicidal Ideation in Sexual Minority Populations

Patrick Tootle, Makayla Evans, Robert Rice, Jay Collar, Max Ordenes, Min Eun Jeon, Thomas Joiner and Anika Sigel

Mentor: Dr. Thomas Joiner

Empirical work indicates that there is a higher rate of suicidal ideation (SI) amongst sexual minorities (SM) than there is amongst their heterosexual peers. Heterosexist (i.e., anti-SM) discrimination has been associated with SI, but the complete nature of their relationship needs further investigation. Research has linked difficult SM experiences with feelings of entrapment, as well as symptoms of trauma, leading us to feel their relevance in the relationship between heterosexist discrimination and SI were worth investigating. An indirect effects model was ran using an entirely SM sample (n= 202) of racially diverse participants (people of color = 55.9%), investigating how the relationship between heterosexist discrimination and SI may be indirectly related via trauma symptoms and self-reported feelings of entrapment. Three models were run to account for overlap between entrapment and PSTD symptoms, with the final fitting well (CFI = 0.938, TLI = 0.907, RMSEA = 0.104). Results for the final model showed that entrapment significantly and fully accounted for the relationship between heterosexist discrimination and SI (b = 0.500, SE = 0.126, p = 0.000), while PTSD symptoms did not (b = 0.113, SE = 0.005, p = 0.131). These findings suggest that future research targeting feelings of entrapment may notably benefit suicide prevention efforts in sexual minorities.

Florida State University (FSU)

89. Probing Hhydration Changes of the Responsive Polymer Poly(N-isopropyl acrylamide) Across the Demixing Transition with Fourier-Transform Infrared Spectroscopy

Nicolas Harms

Mentor: Dr. Alfons Schulte

Thermo-responsive polymers are of interest for a wide range of applications such as drug delivery and tissue engineering in biomedical systems. They undergo a reversible coil-to-globule transition in water at the lower critical solution temperature (LCST) and aggregate into bigger globules. Crucial for the chain collapse are rearrangements of structured water around hydrophilic and hydrophobic moieties. The objectives of this research are to investigate the mechanisms associated with hydration changes in a prototype responsive polymer Poly(N-isopropylacrylamide) (PNIPAM), across the LCST transition using Fourier-transform infrared (FTIR) absorption spectroscopy at variable temperature. Perdeuteration (i.e. replacing hydrogen with deuterium) of the polymer enables alteration of the polymer water interaction. In the infrared spectra four C-D bands are discernible due to stretching vibrations of the alkyl groups. These are analogous to the C-H bands in hydrogenated PNIPAM, however they are shifted to lower frequencies by a factor of 1.4 due to the isotope effect. With increasing temperature we observe abrupt red-shifts of the peak frequencies of these bands at the LCST transition. The frequency shifts may be attributed to dehydration of the polymer chains at their coil-to-globule transition.

University of Central Florida (UCF)

90. Investigating Soil Bacterial Isolates From The Gainesville Area For Inhibitory Activities Against Rice Blast Disease

Lainey Kemmerer

Mentor: Dr. Jessie Fernandez

Rice blast disease, caused by the fungus Magnaporthe oryzae, annually destroys between 10-30% of rice crops harvested worldwide. To combat this destructive pathogen, our research focuses on investigating the use of biological control agents as a mitigation strategy for this disease. We initiated our investigation by testing twenty-four different soil isolates from the Gainesville region through a 1:1 antagonistic assay. Two additional bacterial samples (Bacillus subtilis and Pseudomonas chlororaphis strain EA105) were added as positive controls. We found that five of our isolates showed notable inhibitory properties when co-plated with M. oryzae. Following these results, we initiated the volatility assay. This test aimed to assess the means of inhibition that our isolates used. For the assay, 5 Âµl of bacterial suspension was plated and grown overnight. The following day, 5 mm fungal cores were plated and the bacterial plate from the previous day was connected to the fungal plate using parafilm. This allowed for gas exchange between the bacteria and fungi, while also preventing direct contact between the two during growth. After 5 days, the diameter of the fungal growth was measured on control and experimental plates, enabling us to calculate the percentage of inhibition. We found that four of our isolates along with EA105 and Bacillus subtilis, all showed statistically significant inhibition of M. oryzae. In the future, our goal is to identify and characterize the volatile compounds produced by these bacterial isolates. This will help us understand the inhibition mechanism employed to reduce M. oryzae growth.

University of Florida (UF)

91. Using Pressure Sensors and Finite Element Analysis to Simulate Pressure Distribution in Biomedical Applications

MuhammadMahdi NabiZadeh

Mentor: Dr. Alexandra Schonning

Finite Element Analysis (FEA) is a numerical analysis method used to solve complex problems by simplifying them though discretization. FEA uses computer-aided engineering software tools to solve complex engineering problems. In biomedical engineering, FEA can be used in simulating how the human body responds to various loads. For the problem at hand, FEA is used to analyze the behavior of the foot subjected to loads determined experimentally. The loads are captured using a Tekscan HRF Scan mat, a pressure sensor mat, as subjects stand on it. The recorded pressure distribution serves as the input for the FEA model. The collected pressure distributions are imported into Microsoft Excel, where the data is manipulated into a format that can be imported as a pressure load in the finite element model. The computer-aided design model of the foot was obtained through a website library called GrabCAD. The CAD model is meshed into a FE model so that it can be used to determine outputs such as stresses and strains in the foot. Simens NX Advanced Simulation is used in performing the finite element analysis for this work. The methodology of pressure data collection, foot modeling and analysis, and its medical industry implications will be presented.

University of North Florida (UNF)

92. Halifax River Oyster Project

Christina Gabriel

Mentors: Shawna Brooks and Antoinette Destefano

Over 85% of our oyster reefs have been lost globally in the past 130 years due to poor water quality, overharvesting, and disease as a result of human activities (Beck et al., 2011). In the Halifax River, Florida, where the study site is located, during the past 20 years much of the oyster reefs have been eliminated due to boat wakes and pollution, only some still clinging to the sea walls. Restoration of oyster reefs could help withstand erosion and impact from waves such as from hurricane Ian and Nicole. These hurricanes battered Volusia County where the Halifax River runs and water reached Interstate 1 causing many homes to flood due to the river flooding. Over the course of summer 2023, 175 wild eastern oysters were collected, measured and sexed. Each week, water quality testing was conducted. Two crab traps and two oyster mats with oyster shells zip tied to them were suspended from a dock at the Port Orange Causeway. An average of 9 spat were spawned from each oyster shell. The water quality testing results were within the suitable range for oyster survival. The wild oysters were mostly female and within the same shell measurements as previous studies.

Bethune-Cookman University (BCU)

93. The Effects of Targeted Memory Reactivation on the Consolidation of Episodic Memories

Paige DeForest

Mentors: Dr. Carmen Varela and Dr. Annie da Costa Souza

Target memory reactivation (TMR) is an innovative experimental approach that researchers can employ to enhance memory consolidation, which facilitates the conversion of short-term memories into long-term memories. Specifically, this study focuses on episodic memories, which encompass the retention of events and experiences. In an attempt to enhance memory consolidation, a brief burst of white noise was used to stimulate the cortico-hippocampal-cortical loop, a neural pathway that has been previously correlated with memory consolidation. This loop comprises two oscillatory patterns of interest: slow oscillations (SOs) and sharp-wave ripples (SWRs). Using Long-Evans rats as model subjects, we investigated the effects of precisely targeting auditory stimulation to specific phases of SOs. The findings revealed that, under certain conditions, TMR can significantly improve memory consolidation. Our results hold promise for contributing to a deeper understanding of memory consolidation processes and potentially offer a novel approach to ameliorating memory-related disorders.

Florida Atlantic University (FAU)

94. Submaximal Exercise With Blood Flow Restriction Induces Similar Changes in Neuromuscular Function As Maximal Exercise

Niriham Shah, Sean Lubiak, Anuj Prajapati, Nihar Patel, Paolo Rivera, Christopher Proppe and Ethan Hill

Mentor: Dr. Ethan Hill

Purpose: The purpose of this investigation was to determine the acute effects of treadmill running with and without blood flow restriction (BFR) on neuromuscular function. Methods: Ten women (21.9 ± 1 years, 162 ± 6.8 cm, 56.4 ± 6.9 kg) underwent four, three-minute treadmill running bouts interspaced with five minutes of rest. Prior to the running bouts, a maximal aerobic capacity test was performed to determine peak running velocity for the submaximal and maximal velocity running bouts at 70%, 80%, 90%, and 100% of peak running velocity. BFR was performed bilaterally and only applied during the submaximal running bouts (i.e., 70%, 80%, 90%). Neuromuscular function was evaluated using a surface electromyographic (sEMG) sensor placed on the vastus lateralis (VL) muscle of the right leg to determine muscle excitation and action potential conduction velocity (APCV). A 4 x [Condition (70%, 80%, 90%, 100%)] x 3 [Time (every 60 seconds)] repeated measures ANOVA was used to analyze muscle excitation and APCV. Results: There were no significant ($p=0.505$; $p=0.610$) interactions or main effects for Condition ($p=0.151$; $p=0.097$), but there was a main effect of Time for muscle excitation, but not APCV ($p=0.001$; $p=0.028$). Specifically, muscle excitation increased from minutes one (60.7 ± 25.5 μV) to two (64.9 ± 27.4 μV) and three (66.9 ± 28 μV). Conclusion: The present findings indicated that applying BFR during submaximal running elicited similar increases in motor unit recruitment and/or firing rate as maximal running. Thus, submaximal running with BFR may be an alternative to maximal intensity exercise.

University of Central Florida (UCF)

95. Synthesis of a Biogenic Aldehyde, 3,4 Dihydroxyphenyl-Acetaldehyde (DOPAL), a Toxic Dopamine Metabolite In Vivo: Implications for Parkinson's Disease Pathogenesis

Savannah Page, Louise Sideras and John McLean

Mentor: Dr. Ralph Salvatore

Parkinson's Disease (PD) is one of the most common neurodegenerative disorders that affects roughly 2% of individuals over the age of 65. Pathologically the disease occurs by the loss of dopaminergic nerve cells located in the substantia nigra. These cells are responsible for the production of dopamine. With the loss of this brain region, an individual is succumbed to the classical signs of PD, that being bradykinesia, tremors, and postural rigidity. The cause of PD is still relatively unknown; however, a hypothesis is believed that catechol metabolites play a sort of "stepping block" in the neurodegenerative process of PD. DOPAL has been directly linked to neurotoxicity and the PD disease state. In an early, reported synthesis, DOPAL was isolated in four steps, three chromatographic separations, and proceeded with an overall yield of about 4%. One of the routes used in this research project to synthesize DOPAL uses Epinephrine/Adrenaline as a starting compound. The synthesized DOPAL showed the decomposition with air and the results were obtained using NMR and Western Blotting. The present research includes the use of the protecting group (THP) followed by the Witting reaction. The THP protecting group is used in order to provide stability to the molecule so reduction to the aldehyde may be pursued. The overall yield is expected to be higher than our past results. In order to characterize DOPAL and all steps in the reaction, IR, NMR and Western Blotting analysis were carried out to elucidate the structure of the intermediates and DOPAL.

Southeastern University

96. Words Change Their Meanings: Conceptualizing Political Action through Greek Antiquity

Izaiah Rines

Mentor: Dr. Michael Goyette

When studying ancient political theory, many think first to ancient Greece and the humble beginnings of democracy. Many look to authors, historians, and philosophers to answer questions about the meaning of citizenship. However, the seeds of democracy are in the early works of

Homer. Sowing these seeds is the concept of ἀρετή (English transliteration & pronunciation: arete, ar-eh-tey). This idea, translating to virtue, excellence, and/or morality, evolved into Athenian democracy over time following the events of the Peloponnesian War. In this paper, I analyze the works of Homer, Sophocles, Thucydides, Socrates & Plato, and Aristotle to draw connections between virtue, informed citizenship, and democracy. I found that initially, homeric arete was applied primarily in combat settings, indicating both brute force and cleverness. Later, the playwright Sophocles challenges this idea, placing a heavier focus on the element of virtue in terms of respect, piety, and obligation to family over rulers. Then, in Thucydides' account of the Peloponnesian War, he recounts the manner in which the concept of arete deteriorates and warps. After the war, philosophers began to theorize how to rebuild Athens in an effective way, eventually discussing ideas of direct representation and the values of a good leader and citizen. Leading the charge is Socrates and his scribe Plato. Finally, I arrive at Aristotle, a student of Plato, who takes a new route in defining the citizen and political rights within a democracy. Furthermore, by looking to antiquity, we are more capable of understanding the state of modern democracy.

Eckerd College

97. Sawfish on the Amazonian Coast: Presence and Local Knowledge

Mika Charvet

Mentors: Dr. Patricia Charvet and Dr. Vicente Faria

Sawfish are among the most threatened elasmobranchs, with all five species being Critically Endangered. The Amazonian Coast is one of the last strongholds for two species in the Atlantic Ocean. Historically, the Largetooth Sawfish (Pristis pristis) and Smalltooth Sawfish (Pristis pectinata) have been recorded in this region. Interviews with fishers along with riparian and coastal habitants evidenced that both species are still present in Guyana, Suriname, French Guiana, and Brazil (mainly the states of AmapÃ¡ and ParÃ¡). Reports from all these locations indicated that sawfish were common a few decades ago and are still occasionally captured, showing the continued presence of these rays. The many different common names used for sawfish among these areas were also noted, resulting from the range of languages. In northernmost Brazil, the common name "espadarte" is used for sawfish, while in other parts of the country this name is used for swordfish and sawfish are instead called "peixe-serra." In Guyana, sawfish are referred to as "combfish" (more common) or "sawfish." In French Guiana, they are called "poisson-scie," and in Suriname "zaagvis." These variations can create difficulties in communication, monitoring, and divulging information. The next steps for this project include completing eDNA analysis to reconfirm sawfish extant presence and training enforcement officers to recognize sawfish parts in illegal trade. Additionally, we will work with the public to instill a sense of regional pride and value in conserving sawfish and increase awareness of the importance of sawfish and how to safely release them during incidental captures.

University of Florida (UF)

98. The Oral Microbiome's Influence on Obesity and Metabolic Health

Sammi Rather

Mentor: Dr. Mintoo Patel

The dramatic incline of obesity as a life-threatening disease has been of close observance for health professionals worldwide. Aside from its physically alienating and deformative consequences, the internal effects of obesity are adverse and can be fatal. The precedent for many life-threatening diseases like hypertension, type II diabetes, cardiovascular disease, and stroke is set by the scale. With recent developments in metagenomic methods, it has become evident that the oral and gut microbiome have transformative and systemic effects on the body. The microbiome itself hosts millions of bacteria including the phyla Firmicutes and Bacteroidetes that have roles of maintaining internal homeostasis. When the bacterial ratio becomes skewed or uneven, the effects may be seen in obesity-related risks, and this has raised great concern. A diet rich in simple sugars and fats are often associated with obesity and create an environment conducive to the growth of various harmful bacteria such as Streptococcus mutans, Porphyromonas gingivalis, Prevotella and Fusobacterium leading to dysbiosis and disruption of the natural metabolic cycle. In this project, we characterized microbiomes from tongue-coating biofilm samples collected from four healthy young individuals using whole genome sequencing and metagenomic analysis. The presence of harmful bacteria may be predictive of dysbiosis, and a healthy diet may be warranted as a preventative measure. Strategies to restore the oral microbiome will be pivotal in modulating the gut microbiome and reversing obesity.

South Florida State College

99. Pulse Perspectives: A Cross-Sectional Analysis of Cardiovascular Outcomes and Disparities in Florida Residents

Olivia Dionne, Maria Almonte, Zainab Quadri and Tatum Scanlon

Mentor: Dr. Michael Rovito

This study aims to examine the prevalence of adverse cardiovascular outcomes in hospitals across various levels of urbanization experienced by patients. A review of relevant literature, or lack thereof, exemplifies that there is a need for this research to be conducted. A cross-sectional study design will be employed on patients diagnosed with different cardiovascular arrythmias between the ages of 50-85 who have been residents in specifically defined counties within Florida over the last 10 years. Responses from the study will be categorized as either occurring in a rural or urban area. An original questionnaire was created for the purpose of this study and will be used to collect data for statistical analysis. A series of t-tests, logistic regressions, and spatial analyses will be used to determine any correlations between adverse cardiovascular outcomes and the residency classification (rural or urban) of the participants. The findings aim to contribute significantly to the existing knowledge gap, informing targeted interventions and healthcare strategies for diverse residential populations.

University of Central Florida (UCF)

100. Conversations with My Comfort Character: Fictional Mentors in the 21st Century

Kassandra Tramel

Mentor: Dr. Warren Jones II

The concept of having a fictional or historical figure as a mentor has existed since at least antiquity, when Alexander the Great is said to have considered Homer's Achilles as a strong influence in his life. As exemplified in Dante's Inferno, writing a narrative where one speaks with these figures as mentors can supplement or replace a more typical mentorship. Using narratives to place oneself in the mindset of one's chosen mentor appears to be the core source of these benefits. With the advent of modern AI tools, these

programs can generate realistic dialogues with fictional characters in seconds. This technological advancement raises a relevant question: does the ease and immediacy of AI-generated conversations affect the positive impacts traditionally associated with having a fictional mentor? Narrative therapy suggests that constructing stories and engaging with them is core to personal development. Traditional methods of engaging with fictional mentors require active imagination and introspection, fostering a deep personal connection with both the original fictional context and the new context of mentorship. However, AI programs can speed up this process and draw on thousands of points of data at once. Using the lenses of narrative therapy and bibliotherapy, this presentation seeks to examine the ways that AI-mediation can impact the effectiveness of fictional mentors such as Iroh from Avatar: The Last Airbender or Magnus Burnsides from The Adventure Zone podcast.

Eastern Florida State College

101. The Impact of ESI on Reaction Time

Vanesa Smielak

Mentor: Dr. Aaron Mattfeld

Attention and memory are closely related, however the role that memory training plays in the interaction between attention and memory is not well understood. Episodic specificity induction (ESI), a memory training, is said to help individuals vividly recall past events, improving memory accuracy. Results from past ESI studies have highlighted its potential for application in individuals with overgeneralized memory, such as patients with anxiety. To explore attention concerning memory accuracy, it is necessary to assess the impact of ESI on reaction time variability — a behavioral correlate of sustained attention. Previous studies have associated less variable reaction times with sustained attention. Participants (n=147) underwent ESI which consisted of watching a brief video and recalling details of the surroundings, people, and actions in the video. After ESI (or control impressions), participants were shown pictures for which they made negative/neutral judgments. After a short delay, participants were given a memory test where they were asked to differentiate between the images they had seen before (targets), images they had not seen (foils), and similar images (lures). Using the collected data, a secondary analysis has been conducted examining the influence of ESI on reaction time variability during the encoding portion in the context of memory accuracy. We hypothesize that following ESI, people will exhibit sustained attention (i.e., less variable RT) during the encoding of the images and will exhibit higher accuracy in recalling the same images. This would suggest that ESI leads to better memory performance partly through sustained attention to the task.

Florida International University (FIU)

102. An Evaluation of Existing Research Regarding the Role of Gender on Perceived Credibility

Pedro Armona and Samuel Mallay

Mentor: Dr. Kelsey Larsen

When someone is delivering information to an audience, the person's credibility (known as source credibility) is essential in getting their audience to openly receive the information. Multiple aspects of a person can influence their perceived credibility, from clothing to facial expressions. This study sought to review existing literature produced on whether gender could influence source credibility. Several studies were examined that involved a male and female (in most of the studies they were media figures) separately providing information on a subject to an audience, and the participants were then asked questions on their perception of the source credibility. While the characteristics and the results of the studies were not all the same across the board, significant conclusions can be drawn. Many of the studies had their participants read articles from the media figures, rather than give participants the opportunity to see the person they were receiving information. This indicates that future research should, for example, utilize videos of journalists as part of their methodology. Additionally, there were multiple studies that observed significant differences in perceptions of gender on source credibility in some situations, but not others, which indicates that further examination of the theory behind gender stereotypes is necessary. Finally, there is insufficient research that examines the role of gender on source credibility with information on matters of national security. Such research could help inform on how to restore trust in government officials, particularly as major events of recent years have damaged the public's trust in government.

University of Central Florida (UCF)

103. Innovative Rehabilitation Through Haptic Engineering

Patrick Flanagan and Kevin Greene

Mentors: Dr. AmirHossein MajidiRad and Dr. Jeff Wight

BACKGROUND: Haptic technology in rehabilitation uses touch and force feedback to improve the training process. In a virtual environment, patients will have the ability to sense resistance, aiding motor skill development. Haptic devices have revolutionized rehabilitation methods by enabling electronic data collection to monitor recovery progress and design precision exams. This technology holds great promise for upper limb rehabilitation, addressing a significant gap in research on precision assessment in motor recovery. METHODS: A real-time 3D platform (Unity) was employed to create an interactive digital environment for patient engagement. Various objects were modeled, each assigned surface features and physical properties such as density, surface roughness, and damping. In this initial study, a straight line, a maze-shaped path, and circular trajectories were defined, and computations were implemented to correlate physical characteristics with real-world values. A haptic device (Touch, 3D Systems, USA) was then used to follow the stated paths. For the implementation of precision exams, an error score was established, determined by the deviations of the patient's path in comparison to the designated baseline path. Seventeen healthy participants were directed to trace a circular path (D=6cm) by moving their wrists while holding the haptic pen. RESULTS: Participants had a wide range of error scores (7.0mm to 65.8mm). The overall error score for the circular path was (2.55±0.17mm). The subsequent phase involves engaging a real patient population, assessing hand precision both before the initiation of therapy and after complete hand recovery. This includes shoulder, elbow, and wrist rehabilitation.

University of North Florida (UNF)

104. Exploring the Influence of Language Readability on Sentiment Analysis

Olivia Bronstein

Mentor: Dr. Damon L. Woodard

Sentiment analysis (SA) is a field within Natural Language Processing that measures attitudes expressed through a body of text, such as whether positive or negative views are conveyed. SA has important applications in many fields â€“ from the financial sector, where traders use SA to inform stock predictions, to a business context, in which companies

may evaluate sentiment of consumer reviews to assess products. Misclassifications of sentiment in these disciplines could lead traders to misinterpret the market's view or cause companies to capture consumer perspectives of products inaccurately. Therefore, it is crucial to understand the reasons behind misclassifications observed by prevalent sentiment classifiers. This research explores the construct of language readability as a means of explaining the differences between correct and incorrect sentiment classifications. Readability measures provide insights into the complexity of the text and can help determine the grade-level of the expected audience. Training both a machine-learning classifier, Naive Baye, and state-of-the-art BERT classifier on multiple SA datasets, the research revealed that while the machine-learning model demonstrated statistically significant differences in readability between correctly and incorrectly classified texts, BERT did not. This indicates that advanced deep learning models are robust to complexities present in language. These findings reveal that model architecture can affect the efficacy of readability metrics in explaining differences between inaccurate and accurate classifications. While it is possible that readability metrics can be used to improve simple machine-learning models for SA, other approaches may need to be explored for complex architectures.

University of Florida (UF)

105. American Airpower: Historical Narratives, Museum Aircraft, and World War II in Asia

Mary Brandt

Mentor: Dr. Leander Seah

In 1984, the National Air and Space Museum announced its impending restoration and display of the Enola Gay, the B-29 Superfortress that dropped the atomic bomb on Hiroshima. This was the beginning of the well-known public controversy about which narrative to assign to this historic aircraft. Because no one could agree on which narrative to present, the display of the restored Enola Gay opened with no controversial narrative. The question of historical narrative has been debated globally. Beyond the analysis of the Enola Gay controversy, there is no research about public history narratives of American airpower in Asia as studied through museum aircraft. So, how and why have certain historical narratives been prioritized in U.S. museums, particularly aviation museums and those revolving around American airpower during World War II in Asia? Aviation museums' common purpose is to serve and educate the public through the display of aircraft as their primary educational tool. I highlight the lesser-known narratives of World War II, as museums and academic narratives adopt occasionally Western-centric, even American-centric perspectives. As evidenced by the case studies of American airpower in Asia during World War II, museums do not prioritize historical objectivity and nuance due to space, time, and funding constraints. Museums deal with the difficult balancing act of providing adequate historical context and attracting visitors. The choice of historical narrative is a part of the collective national memory of World War II, and the aircraft serve as a powerful reminder of the war.

Stetson University

106. Catch My Drift? Effects of Herbicide Drift on Morning Glory Plants and Arthropod Communities

Robin Pitilon

Mentor: Dr. Regina Baucom

Agriculture is a critical component of food security and human socioeconomic development. Agricultural crop production is often optimized by using chemical herbicides to prevent weed growth, as weeds are known to outcompete crops for limited resources. One such herbicide, dicamba, is a synthetic growth hormone that functions by dysregulating plant growth. However, dicamba can revolatilize post-application, drift, and affect non-target plants. Dicamba drift into surrounding natural vegetation may consequently affect plant resources available to wildlife such as arthropods, which play a significant role in moving nutrients within food webs. This research utilized Ipomoea purpurea as a model to investigate the effects of dicamba drift on plant growth and the cascading effects on arthropod communities. Research was conducted in Ann Arbor, Michigan, on an agricultural research plot with 10 experimental blocks. Each block contained 40 plants that were grown from seed and divided into 2 treatments: half received a treatment to simulate dicamba drift, and half received a control treatment. Prior to treatments, plant life history data were collected. Following treatment, data were collected regarding dicamba drift damage and arthropod community data. Arthropod community data collection involved a combination of active visual surveys and pitfall trapping arthropods. Results indicate that plants treated with dicamba drift had lower growth rates and lower arthropod abundance, suggesting that dicamba drift may impact plant resources and, in turn, support fewer arthropods. This new insight into the effects of dicamba drift on plant and arthropod communities could inform future herbicide regulations or chemical formulations.

University of Central Florida (UCF)

107. The Effects of PAK1 Deletion on Cardiomyocyte Contraction and Ca2+ Release in Neonatal Mouse Ventricular Myocytes

Priyanka Perumalraja

Mentor: Dr. Christopher Solis

PAK1 is a kinase known for influencing the structure and motility of cells. In adult mouse cardiomyocytes, the removal of PAK1 results in decreased calcium ion (Ca2+) release and contraction rates. This research focuses on determining whether PAK1 deletion in neonatal cardiomyocytes influences Ca2+ release and sarcomere contraction rates. To test whether PAK1 deletion influences sarcomere contraction and Ca2+ release rates at the myocyte level specifically, neonatal mice cardiomyocyte cultures were used to compare wild type (WT; without PAK1 deletion) and knockout (KO; with PAK1 deletion) mouse strain. Contraction was tracked using fluorescently labeled α-actinin-YFP infected into cardiomyocyte cultures. Ca2+ release was tracked using Ca2+ indicator Fluo-4 AM fluorescence. Contraction and relaxation time in the PAK1 KO was significantly higher than the WT. Conversely, sarcomere shortening was significantly lower in PAK1 KO than the WT. Contracted and relaxed sarcomere lengths were also significantly shorter in the KO than WT. The removal of PAK1 in the KO samples led to decreased Ca2+ release. The deletion of PAK1 significantly influences the contractile kinetics and Ca2+ release of neonatal mice cardiomyocytes. This suggests that PAK1 deletion shows early signs of depressed contraction and Ca2+ release in neonatal cardiomyocytes.

Florida State University (FSU)

108. Investigations towards the Design of a Self-Healing, Flexible Sensor Based on a Recyclable PDMS Based Polymer

Forrest Dohner

Mentors: Dr. Jenny Vu and Dr. Foram Madiyar

Self-healing polymeric coatings have gained much attention in recent years for applications that range from coatings on aircraft and spacecraft, electronic skins, and medical devices. For the latter applications, mechanical toughness and flexibility are key for material implementation. Herein, we report the synthesis and mechanical properties of a novel polydimethylsiloxane (PDMS) based material with intrinsic self-healing properties at room temperature. The mechanism of intrinsic self-healing is attributed to urea moieties that can exhibit both strong and weak hydrogen bonding between polymer chains and allow for the restoration of small holes in under twenty-four hours. This combination of strong and weak H-bonding allows for the molecular mobility required to carry out material crack and damage repair. Demonstrating excellent stretchability, stretching to over 2000% of its original length before failure, this self-healing coating has strong potential for applications in soft robotics. Additionally, the material exhibits shape memory; when a smaller stretch-induced stress is applied, the material will rapidly return to the original shape. Broader applications for these PDMS-based polymers are abundant and, although at current preliminary levels, stand to benefit scores of industrial sectors.

Embry-Riddle Aeronautical University (ERAU)

109. Predicting the Presence of Alzheimer's Disease Through Handwriting Utilizing Data Mining Techniques

Sadie Griffin, Michaela Bird and Kenniece Harris

Mentor: Dr. Indika Kahanda

Alzheimer's disease is a progressive neurodegenerative disease. 1 in 9 adults ages 65+ are diagnosed with Alzheimer's disease, making it one of the top ten causes of death in the United States. Previous research has found that an alteration in handwriting is linked to detecting Alzheimer's disease. Therefore, this work explores the feasibility of predicting whether an individual has Alzheimer's disease using handwriting data. Specifically, we formulate this problem as a supervised binary classification task. We used a previously published gold-standard dataset with 174 instances and 452 numerical attributes collected from 25 drawing and writing tasks, in which each instance is labeled as Patient or Healthy. We developed and evaluated multiple machine learning classifiers such as Support Vector Machines, Random Forests, Neural Nets, and Logistic Regression using 80/20 hold-out validation. Our best classifiers, Random Forests, and Support Vector Machines, demonstrated an accuracy of 91% and a recall of 88%, with the top five indicators of Alzheimer's Disease found to be (a) mean tremor, (b) movement along the y-axis, (c) average jerk of in-air movements, (d) total time spent performing in-air movements, and (e) total time spent performing the entire task. These promising results suggest that this data-driven technique could be used to develop a low-cost and affordable app for early detection of individuals showing signs of Alzheimer's disease. This study has implications for healthcare practitioners, genetically predisposed individuals, and those currently undiagnosed but displaying symptoms.

University of North Florida (UNF)

110. Applying Artificial Intelligence to Neuropathological Assessment in a Mouse Model of Huntington Disease

Samuel Moldenahuer

Mentors: Dr. Amber Southwell and Dr. Yuanyun Xie

As our populations' life expectancy increases, neurodegenerative diseases, such as Huntington disease (HD) become more prevalent. Neurodegeneration leads to regional brain atrophy, typically prior to symptom onset. As medical treatments designed to combat these effects advance, their effects on atrophy are quantified in animal models to test validity. This is important because treatments designed to combat neuropathology are more likely to modify the disease itself, per contra to treatments designed to mask or treat symptoms. The current method of quantifying brain region size, and thereby atrophy, is called stereology, which estimates the volume of individual regions from 2D brain sections. This method involves manually tracing cross sections of a brain region of interest, followed by the application of the Cavalieri principle to calculate the volume. The pertinent caveats of this approach are lack of efficiency, resulting from the labor-intensive manual tracing process, and potential inaccuracies that arise from individual differences in perception of regional boundaries within the brain, requiring a single investigator to evaluate all brains for a particular study. To improve on these limitations of stereological volumetric assessment, we are creating advancements in artificial intelligence (AI) to replace human tracing. Historical volumetric data on HD model mice will be compared to the results of our AI program to evaluate success. If successful, this will increase efficiency of preclinical evaluation of neuropathology, allowing for a greater number of experimental therapies to be tested, facilitating drug discovery for intractable neurodegenerative diseases.

University of Central Florida (UCF)

111. Echoes of Silence: An Analysis of American Attitudes Towards Firearms

Zack Brand

Mentor: Professor Eric Levy

In recent times, there have been a wide array of major events involving gun violence in the United States, which has resulted in many calls for a change in the national and state gun laws. I want to find out how many Americans and what demographics of Americans support the status quo and how many believe we need a change to the nation's gun laws. In October of 2023, I had written a 15-question survey to figure out "American Attitudes Towards Firearms." These questions were cross-tabulated using SPSS software. This was done by surveying 191 people above the age of 18 from the United States to find out the public's opinions about gun laws and organizations that support them. The respondents to the survey were given opinion-based questions regarding the politics surrounding firearms in the United States, while the other questions focused on demographic inquiries. This is one of the most divisive questions grappling Americans currently and for generations, with gun ownership on the rise it is important to understand how Americans view the current situation. It was found that Americans who are more affluent and suburban are more likely to support firearm-related institutions, and that women and men both have a favorable view, contrary to news coverage in recent years of the subject. This will help formulate a good understanding of how Americans of varying backgrounds view the status quo on the country's laws.

Florida Atlantic University (FAU)

112. In Vitro Antibacterial Activity of Piper auritum Extracts

Daniela Ramos

Mentors: Dr. Maria Pina and Dr. Dora Pilar Maul

Because multidrug-resistant bacteria have become a global concern to public health, scientists are constantly in the search for new antibiotics. Natural products derived from plants are still one of the major sources of new antimicrobial agents. They include extracts, essential oils, and pure secondary metabolites. Mexican Pepper leaf (Piper auritum) is a herbaceous plant species native to Mexico. Several studies indicate that it possesses antibacterial, antioxidant, and antifungal properties. Our study aimed to determine the potential antibacterial activity of Mexican Pepper leaf extracts against four bacterial species by performing agar diffusion assays. Plant extracts were prepared using three solvents: dichloromethane, ethyl acetate, and absolute ethanol at 0.1 g of leaf/ml solvent. These were tested against non-pathogenic bacterial strains of Escherichia coli, as well as against Staphylococcus aureus, Pseudomonas aeruginosa and Bacillus megaterium plated on trypticase soy agar. Aliquots of 5 ul were pipetted onto the agar plates and allowed to dry until a final volume of 50 ul was reached. We found that the Piper auritum extracts did not act as antimicrobial agents against any of the bacterial species tested at the concentrations used in our study. Further studies with higher concentration of extracts, as well as new solvents and purified essential oil will be tested. This project was supported by the USDA NIFA Hispanic Serving Institutions Higher Education Grants Program 2022-77040-37619.

St. Thomas University (STU)

113. Polymer-Cerium Oxide Nanocomposites for Tissue Regeneration

Shreya Pawar

Mentor: Dr. Sudipta Seal

Orthopedic illnesses, such as osteoporosis and osteopenia, are characterized by bone tissue degeneration. One major cause of bone tissue degeneration is the high generation of reactive oxygen species (ROS), associated with many pathologies. ROS generation promotes osteoclast activity, while inhibiting osteoblast activity. Chronic ROS accumulation interferes with the endogenous antioxidant enzymes, superoxide dismutase (SOD) and catalase (CAT) that facilitate ROS removal. Recent studies show that polymer-cerium oxide nanocomposites (pCNP) have effective ROS scavenging abilities to mitigate bone degeneration due to Ce3+ & Ce4+ redox states, SOD-mimetic, and CAT-mimetic properties of pCNPs. Accordingly, we synthesized pCNPs using 6 sacrificial templates (i.e., silica, agarose, glucose, polyvinyl alcohol, polyvinylpyrrolidone, and cetrimonium bromide) to determine the optimal conformation that facilitates bone tissue regeneration. pCNPs were synthesized via a hydrothermal method, to promote cation hydrolysis and oxide crystallization, thereby maximizing particle surface area and therapeutic redox properties. Characterization studies indicated successful creation of pCNPs with optimal Ce3+/Ce4+ redox ratio, surface area, particle size, and stability were obtained. SOD and CAT enzyme-mimetic activity assays confirmed pCNPs' abilities to interact with ROS: facilitating bone tissue regeneration. Cell viability assays showed optimal biocompatibility with human mesenchymal stem cells at 10 µg/mL. ALP and ARS assays showed that pCNPs can promote mesenchymal stem cells to differentiate into osteoblasts, thus promoting bone-forming activities. Agarose and glucose pCNPs showed the best results in cell viability, ALP, and ARS assays. Comprehensive in vitro studies show pCNP's potential to mitigate bone tissue degeneration, scavenge ROS, and restore bone tissue healing in orthopedic pathogeneses.

University of Central Florida (UCF)

114. Evaluating the Bactericidal and Bacteriostatic Efficacy of Ayurvedic and Antibiotic Treatments Against S. pyogenes

Priya Tomerlin and Skylar Mac Calla

Mentor: Dr. Monika Oli

According to the CDC, an average of 226.1 million units of antibiotics are prescribed per year, one of the most common being Amoxicillin, in response to infections such as Strep throat caused by bacteria like Streptococcus pyogenes. The over-prescription of antibiotics is known to be one of the key contributors to the growing issue of antimicrobial resistance. Research is currently underway in the field of microbiology to determine ways to combat antimicrobial resistance, some of which investigating the proactive use of alternative and traditional medicine therapies (such as Ayurveda) to potentially minimize the overreliance on antibiotics. In this study, the bactericidal and bacteriostatic efficacy of both Ayurvedic and antibiotic treatments were evaluated against S. pyogenes. To evaluate the bactericidal efficacy of various treatments, two antibiotic and three Ayurvedic/traditional, we conducted a Kirby-Bauer Disk Diffusion Susceptibility test. We then conducted a growth curve analysis to determine the bacteriostatic potential of each treatment. We found from a growth curve analysis of Septilin, an Ayurvedic treatment, data that suggests it is bacteriostatic in nature. This finding suggests the need for further study regarding the use of Septilin as a prophylactic therapy.

University of Florida (UF)

115. The Use of Costume Design beyond Practicality

Shelly Lindemann

Mentor: Dr. Maureen McCluskey

Beyond the scope of providing the context of a production's setting, costume design is also used as a tool to perpetuate various themes regarding the interaction between a character and the plot, or between characters themselves. Researching and applying the use of aspects like color palette, fabric, form, texture, among many others are elements of design allows the audience to interpret and conclude the condition of a character on a conscious or subconscious level. Such use of design was a key component in the recent UNF production of Hamlet, where themes of color palate were used as a visible way to identify ties of family as well as emotional connection. The character Ophelia, her brother Laertes, as well as their father Polonius all were costumed in a blue color palette, stating their family connection as well as their strong familial bond. In contrast to this is the character Hamlet, who unlike Ophelia and her family wore a colors palate of red despite the rest of his family members being dressed in their own color palettes. This variation demonstrates his estrangement from the rest of the characters, as well visualizing the breakdown of his own family ties in contrast to the unified elements of Ophelia's family. While the elements of Hamlet 's costuming served the practical measure of identifying time period and location with the use of historically accurate fashion, it is also used as a visual plot device, demonstrating the narrative utility of costume in a theatrical setting.

University of North Florida (UNF)

116. Undergraduate Students' Opinions and Attitudes Towards Abortion

Morgan Gregg and Alexia Mort

Mentor: Dr. Chastity Blankenship

The research conducted is an examination of the various opinions and attitudes of undergraduate students as it relates to abortion and recent legislation changes. Abortion and any legislation surrounding it will always be relevant in American society. For example, the recent rave about Roe v. Wade. This experiment delves deeper into how gender, the desire to have children, and college student status affect people's attitudes toward abortion. This study focuses on variables that are not typically considered as it pertains to abortion. The researchers want to "put a spin" on the default variables when examining abortion, like religion and political affiliation. The study will also consider how conflict theory may affect societal norms and how legislation affects different groups of people. The researchers wanted to investigate whether: males and females will report equal levels of attitudes toward abortion, those more likely to be pro-choice do not want children, the majority of students will report having a pro-choice stance, and the majority of students will report not being supportive of legislation. There are both demographic and abortion statement questions used. The researchers utilize both a Likert scale and an "abortion scale" that they created to measure the results. Multiple chi square tests and a multiple regression test are ran to analyze the data. Researchers are able to easily tie in available and applicable literature to their findings for the audience to better understand the larger scope and purpose of the study.

Florida Southern College (FSC)

117. E-cadherin Expression as a Predictor of Epithelial to Mesenchymal Transition in Early Onset Colorectal Cancer

Anika Bhandare

Mentor: Dr. Mintoo Patel

Colorectal cancer (CRC) is the third leading cause of cancer-related deaths in both men and women, and it's the second most common cause of cancer deaths when numbers for men and women are combined according to the American Cancer Society. This is concerning because it is also the most treatable cancer if caught in early stages. When cancer has spread outside the colon or rectum, survival rates are significantly low but if found at an early stage before it has spread, the 5-year relative survival rate is about 90%. Despite routine colonoscopy screenings only about 4 out of 10 colorectal cancers are found at this early stage. Even so there are 10% early-stage CRC with unfavorable outcome. Recent trend of rise in early onset CRC adds significantly to this public health challenge as this involves the younger age group that is not yet recommended for the colonoscopy screenings which start at 45 years age. The epithelial to mesenchymal transition (EMT) has emerged as a crucial event in cancer progression, particularly in early stages. This project aims to investigate the role of E-cadherin as a biomarker for EMT in early onset CRC. E-cadherin is transmembrane glycoprotein expressed in epithelial cells of the gut lining where tumors arise and functions in maintaining cell-cell adhesion. Loss of E-cadherin is associated with EMT process in CRC. Identification of EMT in CRC will aid in early detection of metastatic potential of tumor holding promising implications for prognosis and therapeutic interventions.

South Florida State College (SFSC)

118. Comparison of Gender-fluidity Acceptance Between Latine and non-Latine College Students

Stephania Mondragon

Mentor: Dr. Michael Loree

This research explores gender fluidity acceptance among Hispanic and majority populations at the University of Central Florida (UCF). It addresses the unsafe environment faced by Genderqueer Latine youth due to societal norms. The study draws on symbolic interactionist theory, emphasizing how culture shapes attitudes toward gender expression. Cultural concepts like Marianismo, Machismo, and Familismo in Hispanic communities significantly influence gender norms. The project aims to compare attitudes on gender fluidity between Hispanic and overall populations at UCF. Data collection involves a convenience sample of Sociology course participants, assessing their race/ethnicity, gender identity, familial involvement, and attitudes toward gender fluidity. Hypotheses predict lower acceptance of gender fluidity among Hispanics due to cultural norms. Univariate analysis shows diverse demographics, and bivariate analysis indicates potential correlations between race/ethnicity and attitudes. Hispanic and Black individuals tend to show more conservative views on gender fluidity, while White respondents lean towards progressive attitudes. Familismo's impact is inconclusive. The study acknowledges limitations, such as sample representativeness and potential bias in participant selection. In-depth exploration of religion's role, especially in relation to Marianismo, is suggested for future research. Analyzing historical media could enhance understanding of conservative religious influences on gender-fluid identities. Overall, this study contributes valuable insights into cultural influences on gender attitudes within a university setting.

University of Central Florida (UCF)

119. Uncharacterized Gene, C17orf58, is Overexpressed in Peripheral T Cell Lymphomas and is Critical for Proliferation of Other Hematological Malignancies

Reem Abdelghany

Mentor: Dr. Rene Opavsky

Lymphomas, cancers originating from lymphocytes, are primarily driven by oncogenic mutations. A subtype of lymphomas, Nodal Peripheral T-cell Lymphomas "not otherwise specified" (PTCL-NOS) are the most common type of T-cell lymphoma (TCL), accounting for 1 in 3 cases, and being notably resistant to conventional chemotherapy. Understanding the genes essential for the growth of these lymphomas is required in developing therapeutic options for these aggressive cancers. Using RNAseq data on PTCL-NOS, we identified 400 genes that were overexpressed genes compared with normal samples. After omitting genes considered essential to cells, we conducted shRNA knockdown on them in T8ML-1, a PTCL-NOS cell line, revealing potential target genes which killed the cells, including TRIP13, C17ORF58, and others. When down regulating these genes in a normal fibroblast cell line (HEK 293T), it was found that C17ORF58 didn't impact cell proliferation. On the other hand, when C17ORF58 was downregulated in other T-cell lymphoma and leukemia cell lines (Hut78 and Jurkat, respectively), apoptosis occurred. Further analysis of public RNAseq data has shown that C17ORF58 is also overexpressed in many other T and B-cell lymphomas and leukemias, and tissue expression data indicates the gene is generally overexpressed in reproductive, muscle, and cardiac tissues. Further investigations into its

typical role in normal cells are currently underway. With its downregulation not affecting normal cells and killing malignant cells, as well as its novelty, C17ORF58 has proven to be a promising gene for further study and eventual therapeutic targets.

University of Florida (UF)

120. Evaluating Biological Variation Among Coastal and Inland Sites in Japan Dating From The Middle To Final Jōmon

Rosalyn Wadsworth

Mentor: Dr. Geoffrey Thomas

I have undertaken a meta-analysis of Japanese populations dating from the Middle Jōmon to the Final Jōmon Period (4000 B.P-2300 B.P) to establish if biological variation among hunter-gatherers located at coastal and inland sites is conspicuous in the skeletal data. Previous studies have evaluated these groups based on large geographical regions such as eastern Japan, referring to the northern half of Central Honshu to Hokkaido, and western Japan, which refers to the southern half of Honshu to Kyushu. However, these studies neglected to consider the variety of subsistence practices within these large geographical regions and grouped inland sites with coastal sites. I decided to differentiate between coastal and inland sites based on proximity to their coast. I utilized biometric data and non-metric observations (including the presence of caries, lesions of enamel hypoplasia, periostitis, stature, and deciduous tooth measurements) from academic sources, such as research journals and dissertations to explore whether general health factors and specific characteristics, such as stature, are statistically significant between coastal and inland sites. The infection rate at inland sites could not be determined and therefore conclusions could not be drawn on the variations of infection rate among coastal and inland populations. Overall, the inland population had a greater prevalence of enamel hypoplasia than coastal populations, but coastal populations had a greater prevalence of caries. These trends are likely correlated with subsistence practices related to these groups.

Florida State University (FSU)

121. Health Disparities in Post-Partum Pain Management: A Systematic Literature Review

Sylvia Chidera Obiagwu

Mentor: Dr. Kelly Allred

Pain management is an important aspect of postpartum care, aiming to provide optimal comfort and well-being for women during the recovery period following childbirth. However, disparities in pain management persist, with specific populations experiencing inadequate pain management and unequal access to appropriate care. Studies show that Black and Hispanic women are less likely to receive pain medications, in comparison to their White counterparts, despite reporting higher postpartum pain scores. In this thesis a systematic literature review will be conducted to explore the racial/ethnic differences in post-partum pain experiences, assessment, diagnosis, and treatment.

University of Central Florida (UCF)

122. Upregulation of SPAK and OSR1 Kinases in Glioblastoma Enhances Cell Migration, Proliferation, and Sensitivity to Chemotherapy

Yetzali Claudio Medina

Mentor: Dr. Paula Schiapparelli

Glioblastoma multiforme (GBM) is the most aggressive primary brain tumor in adults, with a median overall survival of 15 months. GBM has high recurrence rates due to being a diffuse tumor and its ability to acquire resistance to temozolomide (TMZ) chemotherapy. Stress-sensing kinases SPAK and OSR1 are homologous S/T kinases known to regulate cell homeostasis and survival by activating MAPKs among other targets. To understand the roles of SPAK/OSR1 in GBM, we aimed to: 1) determine the expression of SPAK/OSR1 in tumor cells derived from different tumor locations (core vs invasive margin); 2) study the role of SPAK/OSR1 in the expression of inflammation and migration-related genes; 3) determine if TMZ altered the activation of SPAK/OSR1 and if SPAK/OSR1 inhibition modified sensitivity to TMZ. Using GBM patient-derived cell lines we performed RT-qPCRs, western blotting, and proliferation assays to test the effects of SPAK/OSR1 knockdown (KD) and their response to TMZ. In match-patient samples, SPAK expression is significantly increased in cells from the margin of GBM tumors. Upregulation of SPAK in the margin of the tumor may contribute to high infiltration and disease recurrence. SPAK/OSR1 KD reduced expression of cytokines and extracellular matrix proteases, molecules released as a response to inflammation in the tumor microenvironment and used to promote tumor growth/migration. This finding supports that SPAK/OSR1 plays a role in GBM cell malignancy by activating inflammation and migration pathways. Finally, we found that TMZ treatment increased SPAK/OSR1 phosphorylation in a time-dependent manner and that SPAK/OSR1 KD increased sensitivity to TMZ.

University of North Florida (UNF)

123. Sustainable Growth Blanket: Testing Plant Growth with Soil Bacteria on Fiber Sheets

Leen Abu Ammour

Mentor: Dr. Ashley Spring

Nutrient depletion of soil occurs with poorly managed agricultural areas leaving the remaining land useless for growing; however, nutrient reintegration via beneficial bacterial may revive large plots of land for agriculture or restoration. This study investigates the impact of dissolvable and non-dissolvable fiber sheets on bacterial reintegration into soil, focusing on tomato plant growth and soil restoration. The hypothesis posits that tomato plants treated with bacteria via dissolving sheets will show significantly faster growth than those treated with non-dissolving sheets and direct soil application. Corn husks, rice paper, and seaweed were employed as non-dissolvable and dissolvable sheets carrying a bacterial solution applied to nutrient-depleted soil and planted with tomato seeds. Results revealed dissolved sheets had significantly greater plant growth than non-dissolvable. These findings underscore the potential of dissolvable fiber sheets as a promising method for efficient bacterial reintegration and improved plant development.

Eastern Florida State College

124. Dysfluency is Less Likely to Occur in Bilingual Children

Sarah Hemani

Mentor: Dr. Sharon DiFino

According to ASHA, approximately 5% of children ages 3-17 years stutter, including bilingual children, and 1% of the adult population. The prevalence of dysfluency requires further research. Adults and children with dysfluency are able to convey their thoughts but have difficulty with the flow of their speech. Individuals who experience dysfluency generally encounter repetition of sounds, syllables, or words; prolongation of sounds; and interruptions in speech. In order to address dysfluency in bilinguals, literature needs to be collected to get a consensus on parent attitudes for supporting both languages. Furthermore, this will support the necessary approaches for speech language pathologists to help promote bilingualism. Children in this literature review study are defined as being under 18 years of age. The databases used are PubMed and Linguistics and Language Behavior Abstracts (LLBA). The research methods of this literature review include an overview of research articles investigating potential gains or consequences of bilingualism with regard to dysfluency along with parent attitudes. The discussion of this literature review includes an analysis of why parents generally perceive their dysfluent children as not needing to be bilingual (conceptual vocabulary, etc.) as well as how current attitudes can be adjusted with speech-language pathologist advocacy. Being bilingual includes benefits such as seeing "more activity in certain regions when engaging a second language" and "can help delay the onset of diseases such as Alzheimer's and Dementia by as much as five years" (Nacamulli). Thus, having bilingual children should be a goal of parents and speech-pathologists across the board.

University of Florida (UF)

125. Types of Instagram Use and Social Anxiety

Jessa Ward, Hailey Coronado, Sebastian Encalada, Samuel Scaccia, Mary Merris and Kyo Slaughter

Mentor: Dr. Benjamin Graydon

Researchers have previously explored the connections between active and passive usage on Instagram in relation to their effects on mental health (Kohler et al., 2021; Parsons et al., 2021). The goal of the present study was to find the relationship between passive and active Instagram use and social anxiety among Daytona State College students. The researchers assessed the self-reported social anxiety levels of 97 students at Daytona State College using an online survey of seven Likert scale statements the researchers modified from the Liebowitz Social Anxiety Scale (Liebowitz, 1987). The data collected from the study produced mixed results that indicate passive users self-report higher social anxiety levels than active users for some survey questions, while active users self-report higher social anxiety levels than passive users for other survey questions. The mixed results observed in the researchers' sample both confirm (Parsons et al., 2021; Escobar-Viera et al., 2018) and challenge (Scott et al, 2023; Verduyn et al., 2021) previous research suggesting that passive social media use is related to higher social anxiety. These findings indicate that future researchers should further investigate the social anxiety levels of active and passive users in different social situations and in larger active and passive user sample sizes.

Daytona State College

126. Common Arm Position Signal Acquisition System

Trevor Overton

Mentor: Dr. Mohsen Rakhshan

Surface electromyography (sEMG) is the leading method of non-invasive control of prosthetic hands. The sEMG signals are recorded in a short time window while machine learning algorithms classify different hand gestures of the prosthesis. Often, high accuracy can be achieved with these algorithms during the training session and when the participant's forearm is held in a specific position. However, accuracy is known to deteriorate during activities of daily living (ADL). One major reason is due to variation of sEMG signals caused by upper arm positioning, as most algorithms do not consider this information. Therefore, we are building a system that, through positioning of participants' arms at various locations, enables us to study how sEMG signals are varying as a function of arms' position. The system is composed of sixteen different zones spanning both horizontally and vertically, each containing a sensor to detect hand proximity and lights to signal the participant to perform a gesture. We will use inertial measurement units (IMUs) to record kinematics of the participant's arm while recording sEMG of the forearm. Additionally, data will be collected across subjects and days to increase applicability outside the lab. We will use the principal component analysis and Kalman filtering to find dynamics underlying sEMG signals that are common even when the position of the forearm changes. Successful implementation of our project will provide high accuracy operation of sEMG-controlled prosthetic devices during ADL and reduce abandonment of devices due to unreliable control schemes.

University of Central Florida (UCF)

127. Exoskeleton Response During Infant Physiological Knee Kinematics

Breanna Macumber

Mentors: Dr. Victor Huayamave and Tamara Chambers

Spina bifida is a type of neural tube defect that affects the nervous system and can lead to problems such as total leg paralysis. Treatment requires physical therapy and rehabilitation. Robotic exoskeletons have been used for rehabilitation to train muscle movement and assist in injury recovery; however, current models focus on the adult populations and not on the infant population. The proposed framework aims to couple a musculoskeletal infant model with a robotic exoskeleton using vacuum-powered artificial muscles to provide rehabilitation to infants affected by spina bifida. The study that drove the input values for the robotic exoskeleton used motion capture technology to collect data from the spontaneous kicking movement of a 2.4-month-old infant lying supine. OpenSim was used to develop the musculoskeletal model and Inverse kinematics was used to estimate hip joint angles. A total of 4 kicks (A, B, C, D) were selected and the selection was based on range, transient response, and stable response. The robotic exoskeleton used a Vacuum-Powered Artificial Muscle (VPAM) works with vacuum pressure. When air is removed the muscle contracts and when air is added, the muscle relaxes. Bench testing was performed using a 6-month-old infant mannequin. The previously developed exoskeleton worked well with controlled ranges of motion and frequencies. However, the random kicking motion in this study contained high frequency kicks and was not able to accurately replicate all the investigated kicks. This study has the potential to advance the infant rehabilitation field.

University of South Florida (USF)

128. The Covid Connection to Ischemic Strokes

Jarrod Wheelus

Mentor: Dr. Mintoo Pate

Ischemic strokes are the most common type of stroke worldwide, and a notable correlation between a COVID-19 diagnosis and the prevalence of ischemic strokes has been observed recently. It's been found that as COVID-19 spreads throughout the body, it may lead to infection of the artery wall tissue, giving rise to increased concentrations of atherosclerotic plaques, severely increasing the risk of a blockage in the arterial system. Awareness of this connection can help further treat and prevent potential stroke victims in advance and inform medical professionals in their future conduct when interacting with COVID-19 patients. We analyzed the oral microbiome from four healthy individuals and while our initial sample is small, other studies have further corroborated these findings. In a follow-up literature review, we analyzed the results of previous studies while synthesizing them with our data to interrogate a connection between COVID-19 and ischemic strokes. The results show that COVID-19 is a notable independent risk factor for ischemic strokes. We believe that those diagnosed with COVID-19, especially those with other risk factors or co-morbidities that may leave them susceptible to ischemic strokes, take preventative measures and monitoring to ensure they remain in good health.

South Florida State College (SFSC)

129. Quantifying the Patterns of CGRP Innervation in the Atria and Ventricles of Male and Female Mice

Sofia Villanueva, Lauren Robbins, Olivia Alintoff, Sarah Jenkins and Danielle Cruz

Mentor: Dr. Jon Maner Jose Martinez

Cooperation is crucial for human success. Consequently, people tend to be highly cooperative by nature. However, people can also be selfish and prioritize their own self-interest. Over time, such selfishness may harm group coordination and society more broadly. How can people reap the benefits of cooperation while avoiding the adverse consequences of selfishness? In the proposed project we will examine how participants behave in a third-party punishment task using a naturalistic group design. We will also collect individual differences in personality traits such as dominance and prestige orientation, political orientation, sibling order, and the big-5 to understand how these may contribute to the likelihood of certain participants punishing (or not punishing) wrongdoers in the group.

Florida State University (FSU)

130. Optimizing the Formation of Metal Porphyrin Protein Intermediates as Possible Catalysts for Desulfurization Reactions

Ethan MacIsaac and Ashlee Harwood

Mentor: Dr. Mary Grace I. Galinato

Desulfurization is a well-established practice in the processing of crude oil. In this study, we explore oxidative desulfurization (ODS) reactions using artificially generated enzyme catalysts. These catalysts consist of a metal protoporphyrin IX (M-PPIX) structure using iron (FeIII-PPIX) and manganese (MnIII-PPIX). Additionally, these porphyrins will be bound with different N-donor ligands (Imidazole (Im), 1-Methylimidazole (1MeIm) and 4-Methylimidazole (4MeIm)) inside a protein matrix of human serum albumin (HSA), to create [HSA-MIIIPPIX-N(ligand)]. Each catalyst is tested on its ability to oxidize dibenzothiophene (DBT), a sulfur-containing compound that models the molecules that are present in crude oil. Hydrogen peroxide (H2O2) and meta-chloroperoxybenzoic acid (mCPBA) have been chosen as potential oxidants. UV-vis spectroscopy is used to identify the presence of the catalyst intermediate during the oxidation of [HSA-MIIIPPIX-N(ligand)]. Currently, testing shows the successful generation of both metal protoporphyrins and their bonding with N-donor ligands. Shifting in the UV-vis spectra confirms the successful synthesis of [HSA-FeIIIPPIX-N(4MeIm)], but the stability of [HSA-FeIIIPPIX-(4MeIm)] is short-lived in the presence of H2O2. UV-Vis of [HSA-MnIIIPPIX-(Im)] exposed to mCPBA indicates the formation of a [HSA-Mn=O(PPIX)-(Im)] intermediate. Further experimentation will provide additional insight into the ideal design for producing an enzyme that can effectively catalyze the oxidative desulfurization of DBT. Doing so would open the way for an environmentally friendly means of extracting sulfur from crude oil.

Jacksonville University (JU)

131. Does Aesthetic Plastic Surgery Heighten the Likelihood of Nervous System Complications?

Alyssa Kiel

Mentor: Amy Bohan

There is a significant occurrence of nerve damage correlative to cases in patients who had received aesthetic plastic surgeries. This was highly prevalent in women who had received abdominoplasties (tummy tucks), breast augmentations (breast implants), and redistribution of fat to areas of their body (liposuction) to attain a more "desired" body shape. In the articles I had reviewed that addressed these occurrences, there was a commonality of lower motor functioning and an inhibited ability to feel sensations (nerve blocks) in feet, hands, and below the waists in individuals who had undergone these procedures. There was a larger quantity of patients who modified their appearance with plastic surgery, focusing on body contouring and fat grafting, with a higher propensity of these ailments presenting themselves in women who had undergone these surgeries to eliminate unwanted excess fat attached to their body post weight loss. I aimed to identify and highlight the similarities in symptoms presenting in women who had received the same (or similar) procedure(s) done. My goal was to identify these commonalities (from other published literature) in a written literary review of my own to propose a hypothesis of cosmetic plastic surgery heightening the likelihood of nervous system complications occurring in women.

New College of Florida (NCF)

132. Addiction and Patient Care: A Novel Instrument to Assess Attitudes and their Change Across Treatment Among Impaired Professionals

Simran Lamba

Mentor: Dr. Ben Lewis

BACKGROUND: Workplace impairment among healthcare professionals (HCPs) is associated with potentially life-threatening consequences. Improved insight regarding addiction-associated risks to workplace performance are crucial in the context of substance use disorder (SUD) treatment. The current project presents preliminary data collected using the Patient Care Impact Questionnaire (PCI), a novel measure directed to capturing such insight. METHODS: A novel, 8-question measure was constructed based on input from addiction medicine physicians/researchers. For each

item, patients respond on a scale (1-10), endorsing the degree to which professional duties/patient care was affected by their substance use. Data was collected from HCPs (N=45) receiving SUD treatment at intake, after 30 days of treatment, and discharge. Sum scores were collected (greater scores indicating greater endorsement of detriment to patient care/ professional responsibility). Longitudinal mixed models captured score changes over time. RESULTS: Significant change in self-reports regarding impact to patient care was observed. At entry, HCPs reported relatively low impacts (mean = 28.2/80). Endorsements increased substantially in the first month of treatment (mean scores 42.9/80, p<.001) and again by treatment discharge (mean = 49.9/80, p<.001). CONCLUSION: Quantification of these attitudes and assessment of their change over time is novel. The substantive changes detected suggest the utility of this new assessment tool for capturing insight regarding work-related impacts of substance use among healthcare professionals. Use of this tool in treatment may facilitate HCP recovery and ultimately protect the well-being of both HCP and their patients.

University of Florida (UF)

133. MicroRNAs and Their Significance in the Field of Anesthesiology

Victoria Drews

Mentor: Amy Bohan

MicroRNAs (miRNAs) are single-stranded non-coding RNA molecules playing a critical role in regulating gene expression at various cellular levels. In the context of anesthesiology, miRNAs have been identified as key players in influencing cellular responses to anesthetic agents, impacting diverse processes such as cancer regulation and neurotoxicity. Recent research, as highlighted by Tabnak et al. (2021), reveals that anesthetics, including propofol and local anesthetics, can inhibit cancers by modulating miRNAs. The effects of volatile anesthetics, however, demonstrate a dual nature, with potential to either inhibit or promote cancer depending on the specific anesthetic and type of cancer. Notably, miRNAs play a pivotal role in these regulatory mechanisms, particularly in the AKT and Wnt/β-catenin pathways. Anesthetics also extend their influence on long non-coding RNAs (lncRNAs) and circular RNAs (circRNAs) in cancer. Correspondingly, Goto et al. (2014) investigates the impact of general anesthesia, specifically sevoflurane and propofol, on miRNA expression in the rat hippocampus. The study reveals distinct effects of sevoflurane and propofol on miRNA expression, highlighting the significance of the choice of anesthetic in molecular processes at the genomic level. In conclusion, miRNAs emerge as key molecular players in the intricate landscape of anesthesiology, influencing cancer regulation, neurotoxicity, and broader cellular processes. As we delve into the regulatory roles of miRNAs, further research is warranted to decipher the exact mechanisms and implications of miRNAs in the context of anesthetic interventions. This growing knowledge holds promise for refining anesthesia strategies and advancing our understanding of cellular responses to these essential medical interventions.

University of South Florida (USF)

134. Nutrivigilance: Current State and Regulatory Challenges in the US and Europe

Vijay Luthra

Mentor: Dr. Hale Toklu

This poster presentation provides an overview of nutrivigilance, the systematic monitoring of adverse effects associated with dietary supplements and nutraceuticals. It explores the regulatory landscape in the United States (US) and Europe, shedding light on the challenges and opportunities in ensuring the safety and efficacy of these products. Nutrivigilance has become increasingly important due to the growing popularity of dietary supplements and functional foods, which claim various health benefits. However, the lack of stringent regulations in the US allows manufacturers to market these products without prior FDA approval, relying on post-market enforcement. This poses challenges in monitoring their safety and effectiveness. Although the FDA has taken steps to improve nutrivigilance, limited knowledge remains about these products' true impact. In Europe, the situation is complex, with variations in nutrivigilance practices among different countries. While some nations have established their own surveillance systems, the European Union lacks a unified approach, leading to potential issues with the free movement of goods and differences in evaluation standards. This poster also highlights the importance of consumer reporting and awareness in nutrivigilance, emphasizing the need for collaboration among regulatory authorities, healthcare providers, academic institutions, and policymakers. Ultimately, nutrivigilance plays a crucial role in protecting public health, and this presentation explores the current status and the path forward for effective monitoring and regulation of dietary supplements and nutraceuticals.

University of Central Florida (UCF)

135. Social Media Detox and DSC Students' Self-Reported Stress Levels

Mary Hogarth, Moira Hughes, Olivia Rodriguez, Aidyn Carey, Mario Griggs, Violette Gray and Valeria Gonzalez

Mentors: Dr. Jessica Kester, Dr. Amy Osmon and Dr. Jeffrey Zahnen

Social media is a pervasive social phenomenon, and it is increasingly necessary to examine its impact on the psychological health of its users. Studies have examined social media's impact on students' self-perceived stress levels and mental health (Leppink et al., 2016; Zaffar et al., 2015; Riehm et al., 2019). This study aims to further social media research by examining the potential relationships between perceived stress levels and social media detox among college students. The researchers aimed to evaluate college students because they are known to be the most prolific social media users (Knight-McCord et al., 2016). Using a modified version of the Perceived Stress Scale (Cohen et al., 1983), the researchers assessed the self-reported stress levels of the participants. The study presented findings with statistically significant evidence that strongly suggested a relationship between "social media detox" and stress. The results indicated that those who participated in a digital detox recently had higher self-reported stress levels. The researchers believe these results may suggest that individuals under more stress are more likely to participate in a social media detox. Future researchers could expand the study beyond DSC students to assess a more diverse population.

Daytona State College

136. Light-Responsive α-Fe2O3 Micromotors for Targeted Cell Therapy

Taiwo Sogbesan

Mentor: Dr. Jamel Ali

In the realm of biomedical applications, there has been a surge of interest in micro-scale devices responsive to stimuli over the last decade. While these tiny devices hold immense potential for transforming targeted therapeutic delivery, their practical in vivo applications face many challenges including limited material biocompatibility and the absence

of effective control strategies. Persistent hurdles include limited material biocompatibility for device construction and the absence of effective wireless control strategies. To overcome these challenges, this study includes hematite (Î±-Fe2O3)-based active particles with magnetic responsiveness, biodegradability, biocompatibility, and fabrication simplicity. The core hypothesis driving our research posits that the utilization of biocompatible hematite-based micromotors, activated through UV light and magnetic fields, can endow micromotors with the ability to autonomously navigate cellular fluids and effectively propel themselves within cellular environments. To test this hypothesis, hematite microparticles with diverse anisotropic characteristics were synthesized. The motility of these motors was characterized under both fuel-driven and fuel-independent stimuli. Biocompatibility assessments using a fibroblast cell line, NIH3T3, demonstrated cell viability exceeding 70%, with preserved cellular morphology under external stimulation. However, in the presence of activated particles, a notable reduction in viability was observed in a triple-negative breast cancer cell line, MDA-MB-231. Our findings highlight that these hematite-based micromotors exhibit not only biocompatibility but also the potential to target cancer cells, positioning them as promising therapeutic microenvironmental agents in cancer therapy.

Florida State University (FSU)

137. Voice Controlled Generative Artificial Intelligence IOT

Omarhiyon Malcolm

Mentor: Dr. Bernard Parenteau

Voice-controlled generative artificial intelligence IoT refers to the integration of voice recognition technology with generative AI algorithms and Internet of Things (IoT) devices. This technology allows users to interact with their smart devices using natural language commands, enabling a more intuitive and seamless user experience. In this study, a system has been developed that takes the voice of the user with the microphone tool and converts it to text, then sends a query via the APIs of ChatGPT and Google Bard systems and converts the incoming text response back to voice. In this manner, speech-to-text, Generative Artificial Intelligence, and text-to speech systems have been successfully integrated.

St. Thomas University (STU)

138. Annotation of RNA Helicase Genes in Diaphorina citri

Maricela Bucio

Mentor: Dr. Tom D'Elia

Citrus greening disease, or Huanglongbing (HLB), is caused by the bacterium Candidatus Liberibacter asiaticus (CLas). It is vectored by the Asian citrus psyllid (ACP), Diaphorina citri Kuwayama. When infected with HLB, the leaves of the infected plants will develop a blotchy mottle appearance. Any fruits present will become small, lopsided, poorly colored, and contain aborted seeds. HLB is reported to be the most devastating citrus disease worldwide. Citrus production in Florida has drastically decreased throughout the years. As of right now, there is no current method to cure plants infected with HLB. This project looks at the genome of the vector to identify and characterize genes that could help researchers develop strategies to mitigate the spread of citrus greening. Here, we focus on the RNA helicase superfamily 2 (SF2), which are characterized by the presence of the DEAD motif. RNA helicases are highly conserved enzymes that play a role in RNA metabolism by using adenosine triphosphate to bind to RNA structures and ribonucleoprotein complexes. A total of 18 putative helicases were identified in the D. citri genome. Phylogenetic analysis was performed to confirm the classification as RNA helicases in the SF2 superfamily. Additional analysis of domains indicated the presence of the characteristic N and C helicase superfamily domains in 15 of the amino acid sequences, aiding the classification of these as dead-box ATP dependent RNA helicases. These characterized RNA helicases may help with the develop therapeutic treatments to help fight citrus greening.

Indian River State College

139. Audiovisual Modulation of the Basal Ganglia in Parkinson's Disease Patients with Deep Brain Stimulation

Vedant Garg

Mentors: Dr. Joshua Wong and Dr. Coralie de Hemptinne

Cognitive impairment in Parkinson's Disease (PD) is a common non-motor symptom that can drastically impact quality of life. To date, effective treatment options for cognitive impairment in PD have been lacking. Thus, there is an urgent need to develop therapeutic interventions to address this growing population. In animal models of Alzheimer's disease (AD), audiovisual sensory stimulation has been shown to entrain multiple brain regions, attenuate beta amyloid pathology, and improve cognitive performance. However, the impact of audiovisual stimulation on cognition and its role in modulating the basal ganglia in PD remains largely unexplored. We conducted a pilot study to characterize the degree of cortico-subcortical modulation from audiovisual sensory stimulation in patients with PD who received deep brain stimulation (DBS) of the globus pallidus internus (GPi). Patients underwent testing of auditory and visual stimuli at 5Hz, 10Hz, and 20Hz. Cortical electrophysiology was measured using the g.GAMMAcap2 electroencephalogram (EEG) cap. Subcortical basal ganglia electrophysiology (local field potentials, LFP) was measured using the Medtronic Percept Brainsense system. 7 PD patients with DBS were recruited for this study. Spectrogram analysis indicates that certain patients demonstrate a degree of modulation of the basal ganglia in response to audiovisual stimulation. Future studies such as using magnetoencephalography (MEG) for high-resolution spatiotemporal electrophysiologic characterization of the whole brain response to audiovisual stimuli are needed to elucidate the underlying network changes and their potential relationship to known cognitive networks.

University of Florida (UF)

140. Exploring the Invisible: Dark Matter

Jailynn James

Mentor: Dr . Renee Gordon

This research project explores the complex mechanisms involved in observing dark matter, an enigmatic substance that constitutes a significant portion of the universe. The elusive nature of dark matter necessitates innovative detection methods, and our investigation is dedicated to elucidating various indirect approaches for perceiving its presence. The study delves into gravitational lensing, a phenomenon wherein the gravitational field of massive objects distorts the path of light, enabling the identification of otherwise invisible dark matter. Through a meticulous analysis of the light bending from distant celestial objects, our goal is to create a comprehensive map detailing the distribution of dark matter within specific regions of the cosmos. Furthermore, the project delves into indirect detection techniques, including high-energy cosmic-ray observations and the examination of galactic rotation

curves. These methods offer complementary insights into the gravitational effects exerted by dark matter, facilitating its identification and characterization. By combining theoretical frameworks with observational data, this study aims to contribute to the ongoing discourse on dark matter, unraveling its spatial distribution and shedding light on its fundamental properties. The implications extend beyond astrophysics, providing valuable insights into the foundational constituents shaping the cosmic fabric.

Tallahassee Community College

141. Taekwondo as a Transformative Treatment Plan for Mental Disabilities and Disorders

William Breska

Mentor: Dr. W. Steven Saunder

The application and study of combat sports and martial arts can be found throughout human history. From the development of wrestling in Greece over the course of millennia to the 1950s and the development of taekwondo in Korea, martial arts are a cornerstone of human development and history. What this work proposes is that martial arts can become an effective form of treatment for those struggling with mental disorders and disabilities. The study conducted will involve 20 school-aged children (7-12 years of age), of mixed gender, with a diagnosed mental disorder or illness, and will have no martial arts experience. Two groups will be created, a control group of ten and a second group of ten that will actively participate in the classes; assignment to each group will be randomized. At the start of the research, a questionnaire will be given to the students to fill out, each week they will fill out the same questionnaire until the conclusion of the study (those in the control group will be asked to do this as well). Additionally, an introductory questionnaire will be given to the guardian/parent, and one given after the program. The conclusion of the study will culminate in a belt testing ceremony for the children involved in the courses; an evaluation of skill and promotion to the next belt ranking. The data collected will be analyzed to determine if there is a higher positive correlation between those participating in the taekwondo classes and those in the control group.

University of Central Florida (UCF)

142. The Influence of Art Music on Modern Composer Alan Menken

Melissa Molano

Mentor: Dr. Shannon Lockwood

Alan Menken is a living film composer whose music is recognized by people of all ages throughout the world. In his writing for films and musicals, he takes into account many important factors, especially the accuracy of the music for the time period and location of the story being told. One noticeable example of this is in his music for the animated film Beauty and the Beast, where Classical and Romantic era influence can clearly be heard in the title song. Influence from pieces such as Frederic Chopin's Ballades pour Piano can be heard in the unique modulation technique that brings the music into a new key for the final verse by repurposing the tonic chord as the leading tone chord in another key. Influence from Romantic composer Johannes Brahms can be seen through the use of consistent motives, such as a subtle half-step interval being the base of his Clavierstücke. Menken uses this technique in the bridge that leads into the final verse of the song "Beauty and the Beast." These are examples of how he used music of the past to influence his composing and thus create extremely effective storytelling in his music that will be listened to for years to come.

Jacksonville University (JU)

143. Leveraging Syntactic Dependencies in Disambiguation: The Case of African American English

Wilermine Previlon

Mentors: Dr. Sarah Moeller and Dr. Kevin Tang

This research delves into the treatment of African American English (AAE) within the domain of natural language processing (NLP). Existing efforts aimed at mitigating bias against AAE in NLP systems typically concentrate on lexical distinctions. When confronted with the distinctive structures inherent in AAE, the prevalent approach involves the elimination or neutralization of these linguistic differences. This study takes a different approach by leveraging insights into the unique linguistic structures of AAE to enhance the automated disambiguation of habitual and non-habitual uses of the verb "be" in transcribed AAE speech. While both meanings are present in AAE, instances of habitual "be" are relatively scarce in the limited available AAE data. Generally, the inclusion of additional syntactic information enhances the semantic disambiguation of habitual language use. Employing an ensemble of classical machine learning models, incorporating representations of the distinctive part-of-speech and dependency patterns associated with habitual "be," we demonstrate a substantial improvement in identifying habitual uses of "be" compared to a basic baseline model relying on n-grams. This improvement, reaching up to 74 F1 points, underscores the potential impact of embracing, rather than eradicating, the structural idiosyncrasies of African American English within NLP frameworks.

University of Florida (UF)

144. Childhood Trauma, Stress, Gender, and Depression's Impact on Suicidal Behavior

Emily Mezni

Mentor: Dr. Raymonde Neal

Suicide is one of the leading causes of death in young adults. Continuous prevention and intervention efforts throughout the world have been made to reduce suicide risk in this population. Two of the biggest known risk factors for suicide is childhood trauma, a traumatic event or events that occur during youth, and depression. Researching the impact childhood trauma and depression make in conjunction with other factors will help to increase knowledge of suicidal behavior. In this study, recent stress and gender will be factored with childhood trauma and depression severity to predict suicidal ideation and attempt. Recent stress is useful to see recent life events that may be negatively affecting one's mood. Gender has shown differences that are displayed not just in the prevalence of suicidal ideation and attempt, but also in childhood trauma, depression, and stress. Young adults will make up the demographic of this study to better understand the relationship of multiple risk factors to suicidal ideation and attempts within this age group. Young adults experience stress in many ways, through transitioning to adulthood, studying, and working towards long-term career goals. The aim of this research will be to understand and address how childhood trauma, recent stress, gender, and depression severity impacts suicidal ideation and attempts. Two hypotheses will be tested in the study: (1) Childhood trauma, recent stress, gender, and depression severity predicts recent suicidal ideation. (2) Childhood trauma, recent stress, gender, and depression severity predicts suicide attempts.

University of Central Florida (UCF)

Poster Session IV — Abstracts

1. Collaborative Hybridization of Peppers (Capsicum baccatum) to Produce Polyresistant Cultivars

Palmer Short

Mentors: Dr. Chase Mason and Dr. Keivan Bahmani

Florida consistently produces the top three yields of bell peppers (Capsicum annuum) out of the entire nation; however, peppers (Capsicum spp.) are also susceptible to pests and diseases. The UCF Plant Breeding Initiative, a student-led crop improvement program, aims to increase peppers' genetic resistance against these factors to support future breeding efforts and more sustainable production. We hope to achieve this by selectively breeding new cultivars of Capsicum annuum and Capsicum baccatum. A cultivar is a plant variety that has been selectively bred for specific properties. The PBI's previous research has produced a diversity panel that shows the natural genetic resistances of 92 USDA breeding varieties and commercial heirlooms spanning four species of peppers. We then bred the varieties containing the highest resistance against pests/diseases with each other, consolidating the genes into one stronger cultivar with 7+ resistance alleles (R alleles). We are now performing marker-assisted selection (MAS) on the most recent generation to identify the hybrids with the most R alleles for further gene stacking and to introduce resistance to new varieties. Results of allele segregation in F2 Capsicum baccatum are presented. Since 2021, the PBI has trained over 30 students in basic plant breeding skills. Students are exposed to group-based research and encouraged to explore research questions outside of the R-gene projects. By producing highly pest- and pathogen-resistant pepper varieties, we can protect yields while reducing the need for pesticides, contribute to more sustainable pepper production, and provide consumers with an alternative option to GMOs.

University of Central Florida (UCF)

2. Designing a Recombinant Protein-Based Sensory Vesicle System

Adriana LaVopa

Mentor: Dr. Yeongseon Jang

In the quest to understand the fundamental building blocks of life, artificial cells offer a unique platform for experimentation. Recent studies have demonstrated methods for creating artificial cells, known as protein vesicles, which employ proteins as the main structural component of their membranes. Protein vesicles demonstrate considerable potential in synthetic biology, particularly in their ability to emulate one of the essential functions of natural cells: the ability to sense and react to changing environmental conditions, which can be achieved through proteins at cell membranes. Thus, protein vesicles offer a straightforward way to imbue artificial cells with sensory abilities analogous to those of natural cells. This project utilizes a proof-of-concept for the creation of protein vesicles that selectively interact in the presence of a specific small molecule. FRB and FKBP are sensory proteins that exhibit little mutual interaction in isolation; however, they form a complex in the presence of rapamycin, a small molecule endowed with immunosuppressant, antifungal, and antibacterial properties. In this work, sensory vesicles were created using modular recombinant fusion proteins, which leverage the self-assembly capabilities of a leucine zipper to provide the structure of vesicle membranes. Vesicles were observed via epifluorescence microscopy over time and under varying rapamycin concentrations. Following data collection, one-way ANOVA and post-hoc analyses were conducted to verify the efficacy of the sensory platform. By exploring the potential of sensing in artificial cells, this project contributes to the design of protein vesicles for eventual use in wide-reaching applications in cell therapy, functional materials, and drug delivery.

University of Florida (UF)

3. Investigation of the Structure and Function of LARP-6 Protein Through Interactions with RNA

Ana Rodriguez

Mentor: Mr. Nolan Blackford

LARP-6 is an RNA binding protein that is responsible for the regulation of type I collagen. LARP-6 can regulate collagen production through post-transcriptional regulation by binding to the mRNA before translation takes place. In Fibrotic diseases, a buildup of collagen is observed in the body. Here we used recombinant protein expression to produce LARP-6. We joined together the DNA code of t-RNA and the DNA code of LARP-6 in a plasmid and using PCR we expressed many copies to study its interaction with the mRNA. This research used different techniques such as Nuclear Magnetic Resonance and Cryogenic electron microscopy to observe how LARP-6 and RNA bind together. Understanding how LARP-6 and RNA bind together to control collagen production can help us understand how to prevent the buildup of collagen in people with fibrotic diseases.

Florida State University (FSU)

4. The Relationship Between Infidelity and Family Relations

Amir Moore

Mentor: Dr. Mu-Tor Flood

The proposed study will investigate the relationship between infidelity and family relations. There is a significant lack of research between infidelity and family relations. The study proposes two research questions: Does infidelity significantly predict family relations in college students at an HBCU? Do male and female college students at an HBCU have significantly different levels of infidelity? The study will use a quantitative research methodology and correlational research design. The sample will include 100 students at a southeastern HBCU. A correlation and independent samples T-test will be conducted. It is expected that in research question one infidelity will be found to be significantly related to family relations. In research question two the expected findings are that male and female college students will be found to be significantly different in their levels of infidelity.

Bethune-Cookman University (BCU)

5. It's Not Me, It's You: The Rise of Therapy Speak and It's Role in Perpetuating Generational Trauma in Grimm and Charmed

Amanda Krack

Mentor: Dr. Warren Jones

Fantasy narratives such as Grimm, Matilda, Charmed, and Ghost Whisperer, mimic aspects of the contemporary usage of therapy-speak as a way to justify continuing toxic behavior and finding a false sense of control in labeling their issues, mostly seen trending in our youth's current crusade against generational trauma. By connecting the work of Bessel van der Kolk to that of Esther Perel, their views on therapy-speak, originally known as psychobabble, discusses how psychobabble is a detriment in the process of healing trauma and serves as a scapegoat for associated actions and manipulation of related situations. This reliance on scientism is also displayed in Grimm, allowing the TV series to be used as a form of bibliotherapy for its viewers who relate to the need for rationalization of problems. Matilda, in addition to Grimm, are examples of found families. Initiators compelled to break toxic ties while trying to escape generational trauma are estranged and forced to seek new connections, forging new chosen families (research shows 25% of American families are estranged). People who use the fallacy of psychobabble overlook the root causes of generational trauma (a cyclical trifecta of narcissism, fascism, and the patriarchy) and how to heal from it, such as observed from the narratives Ghost Whisperer and Charmed, or aspects of Grimm and Matilda. Vilification of others has become a cultural normative in modern America, indicating an issue of national scale, and we have yet to discover if international counterparts have solutions to this limited mindset.

Eastern Florida State College

6. Synthesis and Assembly Dynamics of Tryptophan-Valine Block Copolymers: Towards Amphiphilic Micelle Formation

Sonya Babski

Mentor: Dr. Daniel A. Savin

Block copolymers are materials containing two distinct polymer chains that are covalently linked. When placed in a solvent that is selective for one of the blocks, the polymers self-assemble into structures such as micelles and vesicles. Although assemblies form, there is a dynamic exchange of polymers that are assembled and free. In this project, we are exploring the synthesis of amphiphilic copolymers containing peptide blocks whereby the formation of micelles in aqueous media has applications as drug delivery vehicles. The process involves the synthesis of N-carboxyanhydride (NCA) monomers of the amino acids tryptophan and valine, which are chosen for their hydrophobic properties. This is followed by the polymerization of these monomers to create a block copolymer using a hydrophilic polyethylene oxide (PEO-NH2) macroinitiator. Using various spectroscopic and analytical methods such as NMR and MALDI, the structural properties of the resulting monomers and polymers can be determined. Moving forward, we plan to examine the self-assembly behavior of these polymers to form micelles. Post-polymerization modification (PPM) incorporating spin labels into the hydrophobic peptide block can be utilized to characterize the local mobility and polarity, which is related to the water accessibility in the core of these micelles. In future studies, the potential of these micelles as effective drug delivery systems would be investigated through their capacity to encapsulate and deliver therapeutic agents and their responsiveness to environmental factors.

University of Florida (UF)

7. Dark Triad, Self-Image, and Media Use

Alfredo Hurtado and Mazz Succarotte

Mentors: Dr. Martha Hubertz and Dr. Karen Mottarella

Individuals tend to seek out media that stimulates their specific psychological, cognitive, and emotional needs This is supported by the uses-and-gratifications theory (Katz et al. 1973, Rosengren 1974, Rubin 2009) and the selective exposure theory (Knobloch-Westerwick 2015, Zillmann & Bryant 1985). This study will examine individuals' social media habits and genre preferences in relation to self-esteem, empathy, and the Dark Triad of psychopathy, narcissism and Machiavellianism. Genre preference is captured by asking participants their movie, documentary, TV series, podcast, music, book, and video game preferences. Participants will complete the Dark Triad Scale, the Rosenberg Self-Esteem Scale (1965), and the Interpersonal Reactivity Index (Davis, 1980) that measures emotional empathy and cognitive empathy. This study incorporates two collaborative complementary data sets to explore how personality variables correlate with specific genre habits and preferences.

University of Central Florida (UCF)

8. Consciousness Unbound: Beyond Physicalist Constraints

Aidan Burham

Mentor: Dr. Jonathan Matheson

This project endeavors to unravel the enigma of consciousness. In particular, it will address whether consciousness can admit of physical explanations. To do so, we will examine David Chalmers' central argument in 'Facing up to the Problem of Consciousness.' Chalmers, in his work, employs the concept of philosophical zombies to illustrate the limitations of physicalist explanations. This research endeavors to deepen discussions about consciousness by dissecting how Chalmers utilizes these theoretical constructs. To conduct a comprehensive assessment of Chalmers' argument, this involves dissecting its premises, evaluating strengths and weaknesses, and exploring its implications for our comprehension of consciousness. Through this examination, this research will delve into the complexities of Chalmers' proposal, considering various objections and counterpoints to render a thorough analysis. The overall focus of the project lies on investigating how Chalmers' argument challenges the prevailing notion of consciousness as purely physical. This research demonstrates that Chalmers' argument, highlighted through the concept of philosophical zombies, fundamentally challenges the adequacy of physicalist explanations for consciousness, unveiling that consciousness's elusive nature extends beyond the physical realm.

University of North Florida (UNF)

9. Identifying Macrochelid Mites of Tampa Bay and Determining Their Relationship With Drosophila spp. Hosts Using Scanning Electron Microscopy (SEM)

Anngelyk M. La Luz Maldonado

Mentor: Dr. Emily Durkin

In nature, many organisms develop symbiotic relationships, such as mutualism, and parasitism, with other organisms. Mite species are commonly involved in symbioses but are understudied, likely due to their small size. Macrocheles spp. mites attach to flies for transportation. However, whether the mites damage the fly while attached is unknown. The purpose of this research was to culture and identify Macrochelid mites in Tampa Bay and find evidence for whether they are harming fly hosts using scanning electron microscopy (SEM). Mites were collected from the wild and four populations were generated in the Durkin Lab. Mites from two of the populations were exposed to fly hosts. Those that attached were used for SEM imaging. Through trial and error, I determined the best SEM protocol for imaging using a Jeol JSM-6010 LA analytical SEM. While imaging, we found that fly and mite appendages were obstructing the view of the mite's mouthparts. Thus, whether Macrocheles spp. mites damage fly hosts remains unknown. We plan to continue modifying SEM protocols for better images and try other methods, such as bio-staining fly hosts, to determine the exact nature of the relationship between these mites and fly hosts.

University of Tampa (UT)

10. Diet to Death: Implications of Diet Related Imbalances in Oral Microbiome on Liver Health

Anthony Walden, Ely Hernandez and Dalton Johnson

Mentors: Dr. Mintoo Patel and Professor Jason Fitzgerald

The liver is a vital organ responsible for metabolism, detoxification, digestion, storage, and overall maintenance of bodily functions, making its health crucial for overall well-being. Diet plays an important role in liver health, with alcohol and sugary and processed food as known contributors to liver conditions such as fatty liver. Recent studies highlight a relationship between oral microbiome and liver diseases such as fatty liver and liver cirrhosis. Imbalance in the oral microbiome, often caused by dietary factors such as sugary foods, can lead to oral infections with systemic effects that can potentially affect the liver. For this project, we characterized oral microbiome, specifically the tongue coating microbiome from four healthy young individuals to study the eubiotic oral microbiome. Understanding this interplay might offer insights into preventative measures or treatments for liver diseases based on oral health management.

South Florida State College (SFSC)

11. Tailored Temptations: Your Take on Personalized Advertising

Adin Garbowit

Mentors: Dr. Eric Levy and Dr. Monica Escaleras

According to a survey done by Think with Google, 90% of marketers believe that “personalized marketing”, marketing using personal data to target ads towards consumers, will lead to superior profitability. With marketers having such an optimistic attitude towards personalized advertising, it is important to understand what the perspective of consumers is towards this type of marketing. To get a sample of the perspective, a 14 question survey was designed to gauge what the feelings of consumers over the age of 18 in the United States are towards the use of personal data for advertisements. Participants responded to the survey through Amazon Mechanical Turk; there were a total of 196 responses. Because personalized advertising is a newer development, it was hypothesized that respondents in older age demographics would tend to be more distrustful of personalized advertising and people with higher levels of education would be similarly distrustful as they would be more uncomfortable with the use of their personal information. Respondents’ thoughts on personalized advertising with their demographic info in SPSS. The findings of the survey reflected the hypotheses. Respondents fifty and older described being uncomfortable with the use of data for personalized advertising and respondents with a post-grad or higher wanted to see less personalized ads. These demographics of consumers in particular seem to be less receptive to targeted advertising. A stronger understanding of who is more likely to be comfortable with personalized advertising can help marketers better understand consumers and who to tailor personalized advertising towards.

Florida Atlantic University (FAU)

12. Improving Quality of Life in Women with Polycystic Ovary Syndrome: A Randomized Control Trial

Anna Coffman, Meriam Naguib and Lauren Llerena

Mentor: Dr. Keith Brazendale

Introduction/Background: According to the World Health Organization, an estimated 8-13% of reproductive-aged women are affected by PCOS and up to 70% of affected women remain undiagnosed. PCOS can lead to emotional, mental, and physical changes in the woman's body, and although there are no known cures to treat the hormonal disorder, there are multiple treatments to help relieve symptoms. This study aims to explore the efficacy of PCOS treatments Metformin, vitamin D with calcium, and Myo-Inositol on the quality of life for women diagnosed with PCOS.Methods: A double-blind randomized control trial will be conducted on a randomly selected sample of 240 women ages 18-28 diagnosed with PCOS in Central Florida. Utilizing inclusion/exclusion criteria, the women will be randomized to one of the three treatments or a placebo: Metformin, vitamin D with calcium, and Myo-Inositol (n=60 per group). Over 18 months participants will be given a once daily dosage of 2000mg Myoinositol, a weekly dosage of 1000mg Calcium and a weekly dosage of 50,000 IU vitamin D, or 500mg twice daily of Metformin. Quality of life will be measured using The PCOS Quality of Life Scale (PCOSQOL), as well as an initial blood sample and glucose performance test. The questionnaire, blood sample, and glucose test will be taken from each individual before and after treatment. Future Implications: This research hopes to show additional treatment options to help alleviate symptoms of PCOS. While not a cure, this study can help advance knowledge for future studies by developing more natural cures.

University of Central Florida (UCF)

13. Combinational Targeting Therapy Inhibiting MEK, BCL-XL, and EGFR Pathways in Pancreatic Cancer

Alexandra Crespin

Mentors: Dr. Song Han and Dr. Steven Hughes

Background: In pancreatic cancer, over 90% of cases involve KRAS mutations, however, directly targeting KRAS has been challenging. Alternative pathways, such as MEK and BCL-XL,

have shown promise in other cancers. Pancreatic cancer is also shown to have abnormal HER/EGFR activity. We hypothesized that a triplicate regimen targeting MEK, BCL-XL, and EGFR/HER would be effective for pancreatic cancer. Methods: Trametinib (MEK inhibitor), Afatinib (pan-EGFR/HER inhibitor), and Navitoclax (BCL-XL inhibitor); or DT2216 (a BCL-XL/BCL-1 proteolysis targeting chimera, PROTAC) were explored using various combinatorial strategies. These drug combinations were tested using four primary human pancreatic cancer cell lines using live cell imaging (Incucyte), and an in-vivo murine model. Group comparisons were analyzed using one-way ANOVAs, and p-values <0.05 were considered significant. Results: No single-agent treatments were effective. MEK inhibition plus anti-BCL-XL (Trametinib + Navitoclax or Trametinib + DT2216) demonstrated efficacy in one of the four cell lines. We noted synergistic effects on reduced cell growth and increased cell death when EGFR/HER inhibition was included by the administration of Afatinib. The triplet combination resulted in synergistic effects in three of four cell lines with Navitoclax and four of four cell lines with DT2216 ($q<0.05$). This effect was confirmed with DT2216 inhibition of BCL-XL in an in-vivo murine model. Conclusion: A combinatory strategy targeting MEK, BCL-XL, and pan-EGFR/HER receptor kinase shows significant synergistic effects in pancreatic cancer. Clinical trials that assess the efficacy and safety of this strategy for patients with KRAS-mutant pancreatic cancer are warranted.

University of Florida (UF)

14. The Long-Term Effects of Simulated Spaceflight on the Internal Jugular Vein

Caitlin Parvizi

Mentor: Dr. Anand Sunny Narayanan

Astronauts' exposure to the unique spaceflight environment induces physiological adaptations, including affecting cardiovascular function. These adaptations occur due to microgravity and space radiation exposure. For example, the internal jugular vein (IJV), a major conduit for cerebral venous outflow, is involved with maintaining and regulating brain blood supply. Recent observations from spaceflight missions suggest the IJV is susceptible to spaceflight-induced adaptations. To investigate the mechanisms and specific effects of microgravity and radiation on the IJV, we conducted a study examining the long-term effects of single and combined simulated deep-space radiation and microgravity exposure on rats. Our study aimed to assess changes in IJV structure and function, as well as biochemical pathway alterations (e.g., endothelial nitric oxide synthase [eNOS] expression, oxidative stress) potentially caused by simulated spaceflight exposure. IJV samples were collected and processed for immunofluorescence protein analysis using cryostat sectioning. The findings from this study will contribute to our overall understanding of cardiovascular adaptations associated with spaceflight that are occurring with our astronauts, as well as provide insight for future countermeasure development to improve crew health outcomes during long-duration space missions.

Florida State University (FSU)

15. Deep Leaning-Based Automated Road Crack Detection and Classification

Collin Easley

Mentors: Dr. Md Baharul Islam, Dr. Ali Ozdagli and Dr. Mike Uduebor

The vulnerability of road infrastructure to natural disasters like hurricanes, floods, and storms poses significant risks, causing rapid deterioration and disruptions. Detecting and classifying road cracks are vital for ensuring safe transportation networks, profoundly impacting societal and economic well-being. Our primary goal is to equip civil engineering with advanced tools and insights into environmental challenges, specifically addressing the critical issue of crack detection and classification. Accurate categorization of various crack types is crucial for structural assessment and maintenance. Conventional methods often fall short, necessitating sophisticated image recognition techniques. Our proposed solution involves a deep learning-based approach for road crack detection and classification. Initially, a Convolutional Neural Network (CNN) model was trained on a small dataset of 400 images, achieving a 90% accuracy range when scaled up to 32,000 images, showcasing its scalability and adaptability. Incorporating data from unmanned aerial vehicles (UAVs) enhances real-world applicability. Utilizing UAV-captured data at a 30-meter altitude, a specialized CNN model was developed, achieving an average accuracy of 77% across five crack classes—Alligator, Longitudinal, Oblique, Pothole, and Transverse—with peaks reaching 95%. Integrating insights from both models enables a more comprehensive real-time crack detection and classification approach. This research significantly advances proactive infrastructure management in civil engineering, striving for improved accuracy and efficiency in crack classification. The successful integration of UAV data presents promising tools for targeted maintenance efforts, reinforcing critical infrastructure resilience and sustainability.

Florida Gulf Coast University (FGCU)

16. Characterizing HA Degradation in 3D Tumor Models

Victoria Consalvo

Mentor: Dr. Blanka Sharma

Cancer immunotherapies are at the forefront of research, with natural killer cell (NK) immunotherapy emerging as a promising resource. NK cells possess the ability to eliminate infected and cancerous cells independently of tumor antigens, making them a compelling candidate for cellular immunotherapy. However, the commonly employed 2D in vitro models lack the complexity of the 3D tumor microenvironment, which includes crucial factors like hyaluronic acid (HA) affecting tumor growth and therapeutic responses. To bridge this gap, the Shama Laboratory has developed 3D poly(ethylene) glycol (PEG)-based hydrogels incorporating HA to investigate its impact on NK cell function. Since low molecular weight HA can promote tumor progression, understanding its role is crucial for effective cancer therapy. Therefore, this study addresses the challenge of quantifying HA, a non-antigenic and traditionally unstainable compound, in 3D models. To visualize and quantify HA, fluorescein O-methacrylate (FOM) is chemically conjugated to HA, and confocal microscopy is employed to measure fluorescence in HA-containing hydrogels, contrasting it with HA-free hydrogels to validate FOM specificity. Additionally, examination of the supernatant will reveal evidence of FOM degradation or diffusion. Once HA presence and a reliable quantification method are established, the study progresses to integrate lung cancer cells into the system, creating 3D tumor models that enable tracking HA degradation over time. The outcomes of this research hold substantial implications for understanding the interplay between HA degradation and NK cell migration within tumor models. This knowledge contributes to advancing cancer immunotherapies, potentially unveiling novel options for cancer treatment.

University of Florida (UF)

17. Study of the Structure and Evolutionary History of the Milky Way

Ashley Meglino

Mentor: Dr. Jonathan Bird

This research project was in the field of Galactic archeology, which is the area of astrophysics that examines stars in the Milky Way in order to study the history and evolution of the Galaxy. There have recently been significant advancements in spectroscopic surveys and astrometry, thus providing a greater understanding of the chemical abundances and dynamics of stars. With that, the goal of this research project was to study the age-resolved physical structure and chemical abundance trends in the Galaxy's disk. Using python, we took stellar data from the APOGEE spectroscopic survey and from Gaia and started by creating two plots displaying the structure of the disk. The first plot showed the inside-out and upside-down formation trends that many other previous studies have also found. The second plot contained evidence of the Gaia-Sausage-Enceladus (GSE) merger that happened in the Galaxy's past. To further study this GSE merger, we created a heatmap of the current chemical abundance distribution of stars in the disk. The idea was to determine whether this distribution fits in a single-infall or two-infall chemical evolution model, which each provide different theories of how the Galaxy evolved chemically over time. We determined that the data fit the single-infall model. Therefore, we concluded from the research that evidence of the GSE merger can be seen in the age-resolved physical structure of the Galaxy and that the present-day chemical abundances can be explained without significant impact from the GSE merger.

University of North Florida (UNF)

18. Applying Blood Flow Restriction Does Not Affect Systemic Oxygen Demands

Anuj Prajapati, Sean Lubiak, Nihar Patel, Niriham Shah, Christopher E. Proppe, Paola M. Rivera and Ethan C. Hill

Mentor: Dr. Ethan Hill

Purpose: The purpose of the investigation was to examine systemic changes in oxygen consumption at different running velocities with and without blood flow restriction (BFR). Methods: Twelve aerobically trained men (21.5 ± 1.9 years, 176.4 ± 8 cm, 82.9 ± 13.1 kg, 50.1 ± 8.4 ml/kg/min) completed four discrete treadmill running bouts with five-minute intervals of active rest. Prior to the running bouts, a maximal aerobic capacity test was performed to determine peak running velocity for the submaximal and maximal velocity running bouts at 70%, 80%, 90% and 100% of peak running velocity. BFR was performed bilaterally and applied only during the submaximal (i.e., 70%, 80%, 90%) running bouts. Oxygen consumption was measured utilizing a Parvo gas exchange system using a 4 [Intensity (70%, 80%, 90%, 100%)] x 3 [Time (every 60 seconds)] repeated measures ANOVA. Results: There was a significant (p=0.015) interaction for oxygen consumption. Specifically, oxygen consumption increased across minute one (25.0 - 30.8 ml/kg/min) to two (35.9 - 44.3 ml/kg/min) and three (37.3 - 46.2 ml/kg/min). Furthermore, oxygen consumption was exercise-intensity dependent at minutes two and three [100% (44.3 - 46.2 ml/kg/min) > 90% (41.7 - 45 ml/kg/min) > 80% (38 - 39.7 ml/kg/min) > 70% (35.9 - 37.3 ml/kg/min)]. Conclusion: Oxygen demand is exercise-intensity dependent, and it is not affected by localized applications of BFR. Thus, applying BFR may be useful to induce localized changes within the exercising muscle without affecting the body's oxygen demand during exercise.

University of Central Florida (UCF)

19. Dinosaurs!: Children's Science Interest Driven by Gender and Age

Desiree Gray

Mentor: Dr. Jennifer Blessing

Research has long since explored the relationship between science-related conversations with parents and children's engagement in conversations about science (Leinhardt et al., 2002; Blessing, 2003; Blessing & Crowley, 2003; Palmquist & Crowley, 2007). However, previous studies have primarily focused on engagement at museum exhibits. This study was designed to collect self-reported family activities following a museum visit, aiming to better evaluate how effectively families sustain engagement after a museum visit. We designed a very large-scale data collection; one hypothesis we investigated is that science interest after a museum visit is driven by both gender and age. We recruited families with a child between 4 - 9 years old after they visited a new dinosaur exhibit at a local children's museum. During interviews, children were asked about their interest in dinosaurs and were allowed to select one of two dinosaur toys. One week after the interview at the museum, families were emailed a link to a survey about post-visit activities related to dinosaurs and science. To date, we have data for 150 children. To test the hypothesis, regression analyses are underway to explore age and gender differences concerning children's reports of how much they like science and dinosaurs, and how much children ask for more dinosaur engagement (i.e., toys, museums, videos, etc.). Results may indicate the value of examining reports regarding the extent of a family's discussion about a museum visit after it has taken place.

University of Tampa (UT)

20. Music Mayhem: The Effects of Song Lyrics and the Behavioral Role it Plays on Gen Z

D'Aja Lordeus

Mentor: Akeemia Clements

This study examines the complex relationship that exists in today's digitally connected society between song lyrics and the behavior of Generation Z (Gen Z).This study explores the claim that song lyrics have a major effect on the views of Generation Z, focusing on explicit content, cultural influence, and potential mental health repercussions. The initial hypothesis evaluates song lyrics that have a significant impact on the behavior of Generation Z. Literature, lyrical content, Apple Music, Spotify, YouTube, and other music streaming platforms including professional views, psychological perspectives, and scientific data plays a key factor. Qualitative Research methodology reveals that the interplay between Media Dependency Theory and Classical Rhetorical Theory classifies that Gen Z willingly listens to depressing music, which reflects a unique perspective on feelings and vulnerability. The therapeutic benefits of music are acknowledged, despite worries about explicit content, and particularly true when it comes to improving mental well-being through relaxation and emotional release. The Preliminary Findings support the hypothesis that song lyrics have a significant impact on the behavior of Generation Z and highlight the need for more research into the specific influences of music on attitudes and personal reactions. The report acknowledges the benefits of music while fueling continuing conversations among Generation Z regarding media literacy and appropriate content consumption.

Bethune-Cookman University (BCU)

21. Role of Obesity, Race and Poor Socioeconomic Status on Traumatic Brain Injury Severity in Children

Justin Wilburn

Mentors: Dr. Lori Gurien, Dr. Md Jobayer Hossain and Dr. Babu Balagoplal

Background: Traumatic brain injury (TBI) is a leading cause of disability and death in pediatric traumas. This study, based on data from a single pediatric trauma center, aimed to estimate TBI prevalence in children and explore the impact of obesity, race, and poor socioeconomic status (PSES) on TBI severity. Methods: A retrospective data analysis from January 2017 - June 2023 was performed at a Level 1 trauma center. Body weight, height, injury severity score (ISS), Glasgow coma scale (GCS), abbreviated injury score (AIS), hospital stay length, vital signs, and blood chemistry data were extracted and included in the analysis. BMI and BMI-percentile were calculated. SES was considered using zip code data. TBI severity was categorized as mild, moderate, or severe. Statistical analysis involved t-tests, ANOVA, and Spearman correlations, with significance at $p \leq 0.05$. Results: Among 1063 children with TBI, 14.1% were mild, 64.3% moderate, and 21.6% severe (AIS). In the 692 with complete data, 33.7% had OB (BMI-percentile ≥95). BMI correlated with age, systolic, and diastolic blood pressure ($p<0.01$), and weakly with AIS. PSES was linked to higher TBI severity based on GCS and ISS ($p<0.05$). Black children experienced higher TBI severity than white children based on GCS ($p=0.01$). Conclusion: The current data suggest that PSES and racial minority status may influence TBI severity in children. However, the role of obesity is less clear. Further research in diverse, larger cohorts is essential to understand the interplay of racial disparities, PSES, and obesity in TBI prevention among children.

Jacksonville University (JU)

22. Do Students Feel They Belong? Measuring Student Sense of Belonging in General Chemistry

Camila Senespleda

Mentor: Dr. Tamra Legron-Rodriguez

A sense of belonging is an individual's feeling of equality and support within a community. People who have a sense that their contributions and questions are valued have a greater tendency to continue seeking help and persist. The positive reinforcement associated with an inclusive environment encourages individuals to want to grow. Studies have historically neglected the effect of students' sense of belonging when analyzing impacts on student success. This ongoing study measures the link between students' sense of belonging in chemistry courses across various demographics. A sense of belonging survey instrument containing seven, six-point Likert scale questions, was administered at the beginning of the semester and at the end of the semester to multiple general chemistry courses at a large, public, Hispanic-Serving Institution. Beginning-of-semester-semester and end-of-semester survey responses will be compared to see how student belonging changes over time. Additionally, the belonging scores will be compared for different demographic groups to determine if demographics influence students' sense of belonging. Examining students' belonging in general chemistry courses has the potential to illuminate core issues for institutions to address and build a stronger foundation for equality, inclusion, and student success.

University of Central Florida (UCF)

23. Evaluation of a Transgenic TDP-43 Model of ALS; Complications and Tribulations

Amanda Lopez

Mentor: Dr. David Borchelt

Amyotrophic lateral sclerosis (ALS) is a neurodegenerative disease characterized by a loss of motor neurons that leads to paralysis and death. A mutant form of TAR DNA-binding protein 43 (TDP-43) is well-recognized as a key player in the development of familial ALS. This study sought to evaluate the effectiveness of a transgenic TDP-43-A315T mouse model of ALS for drug testing. The TDP-43 model has been described as developing gastrointestinal (GI) problems that affect life span. Here we evaluated the effectiveness of gel-based diets in mitigating the GI symptoms. Transgenic and nontransgenic mice were fed a gel-based diet known as NutraGel. Although the medicated food extended life expectancy of TDP-43 mice, about 50% of the animals still developed gastrointestinal issues that required euthanasia. The rest of the animals, which developed ALS-like symptoms such as hindlimb paralysis and a strange gait, tended to live longer. To confirm whether the mice with ALS-like symptoms had motor neuron degeneration, choline acetyltransferase (ChAT) immunostaining of spinal cord tissue will be used to identify and count motor neurons. Results will be evaluated to determine if there is a significant difference between the number of motor neurons in TDP-43 mice and controls. If there is a significant degeneration of motor neurons, we can conclude that while this model of ALS is usable, it is not ideal because some mice develop gastrointestinal issues that lead to symptoms requiring euthanasia before ALS-like symptoms appear.

University of Florida (UF)

24. Chinese Piracy in the Late 18th and Early 19th Centuries and its Contribution to the Fall of the Qing Empire

Benjamin Smith

Mentor: Dr. Charles Closmann

In the decades before the First Opium War, Qing China faced many internal and external crises. One of the least studied of these crises is that of pirate risings. Although pirates have always existed in the Asian world, between 1790 and 1810, pirate groups organized themselves into a cohesive confederation that openly opposed Qing authorities. These pirates represented a significant threat to the stability of China in the early 19th century. Not only did they cause severe damage to the Qing navy, but they had a major negative impact on the Jiaqing's outlook on his mandate. This paper will explore both how these pirate risings contributed to the fall of the Qing dynasty and why they were so successful in this. It makes the argument that China's defeat in the First Opium war can be partially blamed on the pirate threat that they had faced and their reforms (or lack thereof) after suppressing these pirates. This paper offers a unique look at the rarely studied topic of Asian piracy which is so often overlooked compared to piracy in the Caribbean and the Mediterranean. It shows a unique form of piracy less culture driven and more opportunistic and desperation driven than that of the West.

University of North Florida (UNF)

25. Toward Data Pattern Mining for Regional-scale 3D Building Information

Ariana Galindo

Mentor: Dr. Jinwoo Jang

Large-scale OSM building data are important to advancing urban planning strategies, architectural design, and environmental impact assessments. A data-driven understanding of our built environment can improve urban development, risk management, and resource allocation. However, to truly benefit from big urban building data, extracting meaningful patterns from regional-scale datasets is critical to summarize building information for city planners and operators. This research aims to mine the spatial distribution of buildings with similar building information. The objectives of this research include 1) enhancing the completeness of building representations and 2) identifying latent patterns within the regional-scale dataset while contributing to the field of spatial data analysis. This research addresses the challenges due to fragmented polygons and multi-layers of the data. The necessity for cohesive and accurate building representations is particularly pronounced in domains where spatial information is pivotal for decision-making. Our methodology included a multi-step process, initiating with the merging of intersecting polygons and defining new attributes. These additional attributes resulted in a comprehensive representation of buildings. Subsequently, k-means clustering was applied to find hidden spatial patterns of building data based on our improved building attributes. The clustering analysis results unveiled distinct patterns within the dataset, shedding light on inherent structures and variations. Visual representations through geospatial mapping offered a clear and intuitive presentation of identified patterns. Specific clusters and trends are found and provide valuable insights for further interpretation and application.

Florida Atlantic University (FAU)

26. From Passion to Action: Fast Fashion's Hidden Costs and Rethinking Fashion's Future Through Sustainability

Dylan Patel-Qadir

Mentor: Dr. Terry Coonan

This research investigates the impact of fast fashion on the environment and human rights within the clothing industry. Fast fashion businesses such as Shien, Zara, and Fashionova contribute to 20% of the global wastewater and 10% in carbon emissions due to their high-volume, low-cost production methods, leading to textile waste and methane emissions in landfills. The lack of transparency from these brands leaves doubt about whether a company is implementing sustainable and environmentally friendly processes in its supply chain. Additionally, it is challenging to ensure fair labor practices including working conditions, substandard minimum wage, and excessive working hours. These malpractices infringe directly upon human rights by jeopardizing the well-being of the earth, and more specifically communities residing near contaminated areas. The exponential growth of the fast fashion market, largely driven by consumer demand of cheaper clothes by low production cost, or induced demand, allows these practices to continue. The primary aim of this research lies in the content, which is the educational dissemination itself. By utilizing a mixed research methodology of expert interviews, a consumer survey, and a progressive timeline, the study aims to develop a comprehensive guide for consumers, alike to Eleanor Roosevelt's Universal Declaration of Human Rights. I envision showcasing my research as a magazine, both physical and virtual. I believe that presenting my research this way can encouraging a wider audience to embrace sustainable fashion practices through a great read.

Florida State University (FSU)

27. Examining the Effects of Route of Exposure in a Physiologically Based Pharmacokinetic (PBPK) Model of Chloroform in Rodents

Daniel Alfonso-Travieso

Mentors: Dr. Nicholas Luke and Dr. Karen Yokley

Physiological-Based Pharmacokinetic (PBPK) models use ordinary differential equations to model the concentration of toxicants in an organism over time. This project aims to develop a multi-route PBPK model to predict the impact of different routes of exposure to chloroform—namely oral, dermal, intravenous, and inhalation—on concentration over time. Two simulations were conducted. A base model, where exposure was instantaneous, and a multi-route model using a more realistic time-release exposure. The base model showed that a dermal dose led to the highest concentration in most tissue compartments over time. The multi-route model showed intravenous and oral exposure were the most efficient, leading to higher concentrations in the organ and tissue compartments over time. Dermal and inhalation exposures led to a slower distribution of chloroform through the compartments. The multi-route model was further investigated by comparing simulated results to a published data set from an experiment on rats. Ultimately, the models accurately captured the pharmacokinetics of chloroform in both rats and mice, suggesting that PBPK modeling is an appropriate strategy for further research into the effects of chloroform.

University of Central Florida (UCF)

28. Inflammation on Endothelial Molecule Glycosylation and Function in Pulmonary Hypertension

Andrea Maraone

Mentors: Dr. Kevin Brown Chandler and Valeria Nazaire

Pulmonary hypertension (PH), or the development of high blood pressure within lung vasculature, can cause heart damage. A key contributor to PH is inflammation. Vascular endothelial cells line the inner surface of blood vessels, where they regulate the exchange of substances and fluid between the bloodstream and tissue and can also facilitate the adhesion and trafficking of inflammatory immune cells. The expression of specific glycan (sugar) structures on endothelial adhesion molecules, including vascular cell adhesion molecule 1 (VCAM-1), increases the adhesion of immune cells to endothelial cells. We hypothesize that N-linked glycans on VCAM-1 contribute to the development and progression of PH. To study the role of VCAM-1 N-glycans in PH, we will (a) develop a nano-liquid chromatography tandem mass spectrometry (nLC-MS/MS) workflow to analyze recombinant VCAM-1 glycopeptides, (b) assess the role of inflammatory cytokines (TNF alpha and IL-6) in modulating VCAM-1 glycosylation and function in human pulmonary arterial endothelial cells, and (c) isolate VCAM-1 from control and cytokine treated cells to document site-specific changes in VCAM-1 glycosylation in response to exposure to inflammatory cytokines. Our findings will contribute valuable insight into the role of N-glycosylation in PH. In the future, these findings could pave the way for novel therapeutic strategies to treat PH.

Florida International University (FIU)

29. Using Ratings in Evaluative Affective Space as a Metric of Individual Differences

Angie Cordova

Mentor: Dr. Andreas Keil

Introduction: Affective ratings are a robust index of emotional dispositions towards media such as pictures, sounds, or movies. Prior research suggests that there are strong effects of sex as well as emotion psychopathology status, i.e. depression and anxiety status, as well as symptoms of related disorders. The question arises regarding the usefulness of dimensional ratings as a marker of the emotional state of a given observer. Methods: The present study uses 60 original images from the International Affective Picture Set (IAPS), and 60 AI-generated matching emotional pictures, including pleasant (20), neutral (20), and unpleasant (20), for a total of 120 images. These are rated by 60 young and healthy observers, to span an affective space for each observer that was quantified as the correlation between valence (displeasure) and arousal (intensity). The resulting correlations were examined for retest reliability, sex differences, and their correlation with self-reported emotion psychopathology symptoms. Results: Results showed that retest reliability was 0.8, illustrating a strong correlation. There were also strong effects of sex and gender, with women showing evidence of greater aversive affect compared to men. However, there were no correlations between the affective space features and the self-reported symptoms. Discussion: Further investigation must be completed, with a larger sample size and psychophysiological methods of measuring emotional dispositions, such as electroencephalogram (EEG), for stronger analysis.

University of Florida (UF)

30. Exploring a New Technique for Photo Enlarger Use in Creating Dark Room Prints

Carole Stringfield

Mentor: Christopher Trice

Background: Historically, photo enlargers in the dark room have been used in the printing of photos, generally by exposing light through a negative onto photo paper. Photograms are made by placing objects on the photo paper directly and flashing light onto them for an extended period. This research project was aimed at finding a new way to create prints through utilizing the photo enlarger in the dark room. Method: The participant utilized a slide making method to produce slides with organic material and liquid to create the object to be captured on the photo paper. The slides were comprised of two plexiglass sheets (11" x 17") and the organic material was either shaved thinly or spread onto the slide. The slide was then placed on the film stage and the condensed lens lowered onto it. Result: This resulted in significantly different photo production than through negative use or object placement upon the photo paper. It provided a microscopic-like view of the slide contents and the ability for the user to manipulate the image prior to exposure allowing for easier manipulation of the composition. In large manipulations, it created a sense of depth withing the photograph that wouldn't be achieved through traditional methods. Conclusion: This technique could be used in future applications for the creation of art and incorporating materials where a more microscopic-like and abstract view is desired. This also could be used in future artistic preparations utilizing mixed media, different organic materials, and even film negatives.

University of North Florida (UNF)

31. The Relationship Between Evening Screen Time Use and Objectively Measured Sleep Outcomes in U.S. College Students

Donya Sedaghat

Mentor: Dr. Keith Brazendale

High amounts of nightly screen time has been thought to negatively affect sleep outcomes (sleep duration, quality, and latency). There is a lack of evidence exploring if this pattern exists in U.S. college students. The purpose of this study is to investigate the relationship between evening screen time use and objectively measured sleep outcomes in U.S. college students. College students (N = 29) junior or senior standing in a Health Sciences major were recruited to participate in this cross-sectional study. Participants wore accelerometers on their non-dominant wrist for 24hr/day for 7 days to capture sleep (duration, efficiency, awakenings, timing). Participants also completed a survey regarding their screen time habits and evening usage. 29 college students (86% female, ~21.5 years old, 38% White, 35% Overweight/Obese) provided valid accelerometer data. The accelerometer recorded 180 observations of nighttime sleep total. Average nighttime sleep duration was 433.8 minutes with an average of 22.3 awakenings. The mean sleep efficiency was 87.3%. The average self-reported daily screen time of participants was 419.1 minutes, and in the evening after 10:00pm was 112.2 minutes. Preliminary evidence suggests that a negative relationship between evening screen time use and objectively measured sleep outcomes may exist for U.S. college students. This study provides reliable, objective data of college-student sleep that may inform future public health interventions in this population.

University of Central Florida (UCF)

32. Environmental Impact Assessment of Paint Equipment Washout in Terrestrial and Aquatic Ecosystems

Elizabeth Eskildsen and Dallas Eskildsen

Mentor: Dr. Ashley Spring

Paint disposal techniques, including equipment washout, may negatively impact terrestrial and aquatic ecosystems. The hypothesis of this phase of the study posits that the presence of latex paint at increasing concentrations of none (control), low, medium, and high concentrations will result in decreased activity and survival levels among earthworms (Lumbricus terrestris) and fiddler crabs (Uca pugnax). The research also highlighted the environmental risks associated with titanium dioxide, especially in nanoparticle form, found in paints and primer-sealers. The findings underscored the need for ongoing research into the long-term and chronic impacts of these substances on aquatic environments and organisms.

Eastern Florida State College

33. Ecotoxicological Assessment of Fish Species

Keanna Forbes

Mentor: Mrs. Antoinette Destefano

Our collaborative research project between Bethune-Cookman University, and the Oceanic Research and Conservation Association (ORCA) addresses the critical issue of identifying toxins in marine life, particularly fish, and their potential impact on consumers. In recent years, concerns about seafood safety have grown due to the complex interactions between environmental pollutants and aquatic organisms. Our study aims to bridge this knowledge gap by employing advanced analytical techniques to detect and

characterize toxins present in fish populations along coastal regions. By examining the bioaccumulation of contaminants in marine species, we seek to understand the potential risks posed to human consumers. The project employs technology to analyze samples and identify specific toxins, providing valuable insights into the dynamics of marine ecosystems and their implications for public health. Understanding the pathways through which these toxins enter the food chain is crucial for implementing effective regulatory measures and safeguarding both marine biodiversity and human well-being. Our research contributes to a broader understanding of the intricate relationships between environmental health and human consumption habits. The findings will not only benefit local communities dependent on seafood but also inform global initiatives aimed at sustainable fisheries management and the reduction of environmental contaminants. As we unravel the complexities of marine toxicology, our project underscores the importance of interdisciplinary collaborations in addressing pressing environmental and public health challenges.

Bethune-Cookman University (BCU)

34. SNP Genotyping for Pharmacogenomics and Evaluating Natural Products for Anti-Cancer Activity

Amelia Rygh

Mentor: Dr. Alexis Tapanes-Castillo

The long-term goal of our project is to integrate pharmacogenomics with cancer biology research. Pharmacogenomics is the study of how a person's genes influence their response to medications. Single nucleotide polymorphisms (SNPs), differences at a single DNA base, result in genomic variation. While many SNPs have no impact on development or health, some do have clinical ramifications. CYP2C19 gene is a member of the cytochrome P450 family. It metabolizes frequently prescribed drugs used to treat ulcers, depression, and cardiovascular disorders. Our research project aimed to optimize standard operating protocols for SNP Taqman Polymerase Chain Reaction (PCR) Assays. Control samples were successfully genotyped. In addition, we worked on a separate project related to pharmacognosy, the study of drugs or medicine produced from natural sources. We investigated the effects of Mexican pepperleaf and alpha-pyrone, a member of a class of compounds found in the Brazilian peppertree, on cancer cell growth and motility. Invasive BT549 triple negative breast cancer cells were used as an in vitro model. Extracts were prepared from the leaves of Mexican pepperleaf using 90% ethanol-10% hexane as a solvent. Data from pilot experiments suggest Mexican pepperleaf extracts decreased breast cancer cell motility. A preliminary dose response curve generated for alpha-pyrone cytotoxicity estimated an IC50 value of approximately 3 ug/uL.

St. Thomas University (STU)

35. Prevalence of Screening and Assessment Tools in Agencies Serving Justice-Involved Individuals

Ella Schmidt

Mentors: Dr. Jill Viglione, Dr. Jennifer Johnson and Dr. Faye S. Taxman

Mental health and substance use needs are prevalent among individuals involved in the criminal justice system. A crucial first step in linking individuals to the appropriate treatment is proper screening and assessment. In fact, comprehensive psychiatric assessments and use of screening and assessment results to guide treatment assignment are two key evidence-based practices for improving mental health outcomes among individuals involved in the justice system. To better understand the screening and assessment practices of agencies that work with justice-involved individuals, this study sought to examine which tools were being implemented across the country. As part of the larger I.M. Justice and Behavioral Health study, we conducted surveys with administrators in mental health, substance use, jails, and probation agencies in counties across the United States. Using the survey data, this project examines three primary research questions: 1) How prevalent are various screening and assessment tools across different agencies serving justice-involved individuals?, 2) Which screening and assessment tools do agencies report using most frequently?, and 3) Do agencies conduct their own screening and assessments or rely on information provided by other agencies? Findings can inform strategies to improve screening and assessment processes for justice-involved individuals.

University of Central Florida (UCF)

36. Using Mechanical Strength as a Indicator of Taphonomic Bias

Brennen Sexton

Mentors: Dr. Michal Kowalewski and Dr. Sahale Casebolt

Palaeoecological analyses require high paleontological fidelity - a faithful archive of ancient source biota in resulting fossil assemblages. However, since species vary in size and skeletal durability, biases can be expected due to preferential preservation of certain species and size classes. To evaluate potential biases that may result from differences in size and thickness of mollusk shells, we used samples of surficial shell accumulations from seagrass habitats of the Gulf coast of Florida. Bivalve mollusks were selected across 30 species that varied in their abundance. A standing crushing device with a flat head was used to create relative force data, measured in Newtons as a relative marker for how easy it is to destroy a shell. Even amongst specimens of the same species, there is considerable variability in shell strength. Environmental factors like encrustation (both chemical and biological) and prior breakage (fractures and/or drill holes) all caused variations in the shell strength of each valve. As expected, the strongest correlation exists between shell thickness and relative sturdiness, with other morphological features (length, width, and height) having no significant relation to the valve's relative sturdiness. However, there was no significant relation between abundance of a given species and mechanical strength of its skeleton, suggesting that shell strength does not play an important role in governing the abundance of specimens in the currently forming fossil record of seagrass-associated mollusks. The lack of any notable correlation between abundance and fragility suggests that relative abundance of fossil mollusks may archive ecological over taphonomic data.

University of Florida (UF)

37. Conditional Dopamine D2 Receptor Loss Alters Excitatory Neuron Density in the Medial Frontal Cortex

Giovanni Moraes

Mentor: Dr. Gregg Stanwood

The dopamine D2 receptor (D2R) plays an important role in neurodevelopment and is an important drug target for the treatment of certain neuropsychiatric diseases. Previous studies have shown that changes in cell densities and brain function may be an important factor in the development of

certain neuropsychiatric disorders. The project focuses on understanding D2R effects on neurodevelopment in mice in a subset of neurons located in the medial frontal cortex (MFC). To assess this, a conditional knockout (cKO) mouse model for D2 receptors in the GABAergic cells of the MFC was used. Using in situ hybridization and fluorescent microscopy, the glutamatergic and GABAergic neurons were marked and imaged in the superficial and deep cerebral cortical layers of adult mice. The investigation of the cellular changes in the MFC of D2R cKO and control groups was conducted by manually counting those cells. A significant increase (~20-30%, p=0.031) in excitatory cells between the control and cKO groups in the superficial layers of the MFC was found. No changes in the number or distribution of inhibitory cells were observed. It was hypothesized that this increase is due to developmental alterations in neurogenesis and/or apoptosis. This project can give better insight into neuronal adaptations and maladaptations that accompany developmental loss of neurotransmitter receptor expression or signaling, and may improve our understanding of disorders including schizophrenia and bipolar disorder.

Florida State University (FSU)

38. Engineered Water Repellency for Resilient Sewage Systems

Erik Anderson

Mentors: Dr. Micheal Uduebor and Dr. Seneshaw Tsegaye

This research addresses the critical environmental challenge posed by sewer water leakage, which can lead to groundwater pollution and negatively impact delicate ecosystems like the Everglades. The primary focus is on preventing toxic runoff from entering groundwater systems, a problem often caused by faulty infrastructure or natural disasters. We introduce an innovative solution: Engineered Water Repellency (EWR). EWR involves treating soil with an organic polymer to make it hydrophobic, thereby hindering water and chemical infiltration. Our experimental approach utilized a 1:40 treatment dosage to test EWR's effectiveness. Two scenarios were simulated: water entry from above and from below. In both instances, EWR successfully prevented water permeation, highlighting its potential as a barrier against groundwater contamination. Further, we evaluated EWR's ability to block common household chemicals found in sewage runoff. The results were promising, demonstrating EWR's capability not only in restricting water flow but also in impeding various contaminants. These findings suggest that EWR could significantly reduce the environmental impact of sewer water leakage. By offering a method to safeguard groundwater from pollution, this study contributes a practical and potentially transformative solution to a pressing ecological issue. This research is funded by the Whitaker Center of Education Head Start Research Grant & the Backe Chair of Research/Sustainable Water and Renewable Energy.

Florida Gulf Coast University (FGCU

39. FTIR Spectroscopy of PVC in Variable Multiphase Mixtures

Chloe Perednia

Mentor: Dr. Brynna Jones

Polymers are widely versatile and robust, which makes them highly advantageous in manufacturing. However, the incorrect disposal of polymers often leads to their entry into environmental waters which results in pollution. One of the most common techniques to detect and study polymers in these systems is infrared (IR) spectroscopy. To understand and to be able to address polymer pollution, it is crucial to establish standardized IR spectra of solid polymers in different ratios with various liquids. This allows for the separation of spectral changes due to concentration fluctuations from the chemical changes that can give insight into polymeric versatility, stability, and degradation processes. In the development of a standard system, three different liquids, MilliQ water, isopropanol, and a 100-ppm tannic acid solution, were utilized. Likewise, five various weights of PVC were introduced into 0.40 mL of each solution resulting in standardized spectra that was subsequently analyzed. While these liquids do not fully represent naturally occurring bodies of water, they serve as a preliminary platform for the future analysis of PVC degradation in standardized environments. Ultimately, the resulting standard spectra serve as a foundation for future analysis of PVC stability, the determination of PVC concentrations in unknown samples, and the degradation process of PVC. Similarly, the analysis of this data directly contributes to the understanding of PVC and its behavior in different liquid environments.

University of North Florida (UNF)

40. How Does Right-Wing Authoritarianism Correlate With Attitudes Towards COVID-19?

Eric Haseman

Mentors: Dr. Martha Hubertz and Dr. Karen Mottarella

During the height of the COVID-19 pandemic, Americans belonging to opposing Democrat and Republican political parties frequently held differing attitudes towards COVID-19 (Deane, 2021). This included their beliefs about the severity of COVID-19, the effectiveness of suggested precautions against COVID-19, and their concerns about how COVID-19 may impact their lives. While Democrats tended to consistently view COVID-19 as threatening, Republicans seemed to be more split on their views (Deane, 2021). The present study investigates the relationship between right-wing authoritarians and attitudes towards COVID-19. Data analysis is underway. 595 college students at the University of Central Florida participated in a survey in 2021 that measured their attitudes towards COVID-19 and their scores on the Very Short Authoritarianism Scale (VSA; Bizumic & Duckitt, 2018). Scores on the VSA will be compared with responses provided for questions related to attitudes towards COVID-19 to see if any correlations can be drawn between the degree to which individuals align with right-wing authoritarianism and common attitudes. It is hypothesized that stronger alignment with right-wing authoritarianism will predict a less threatening perception of COVID-19 and vice versa. This would suggest that more neutral scores on the VSA would predict more neutral attitudes about COVID-19, potentially explaining why Republicans would be more split on the issue of COVID-19 than Democrats.

University of Central Florida (UCF)

41. Genetic Mechanism of Melatonin Biosynthesis and Physiological Effects in Plants

Marlon Vargas Castillo

Mentor: Dr. Xing-Hai Zhang

Melatonin and serotonin are pivotal plant growth and development regulators and influence diverse cellular processes. Their biosynthesis begins with the conversion of tryptophan to tryptamine by tryptophan decarboxylase (TDC), followed by transformation to serotonin by tryptamine 5-hydroxylase (T5H). N-acetyl serotonin is produced by serotonin N-acetyltransferase (SNAT), whereas acetylserotonin methyltransferase (ASMT) generates N-acetyl 5-methoxytryptamine (melatonin) from serotonin.

This study explored the biosynthesis pathways, regulatory mechanisms, and roles of melatonin and serotonin in plant physiology. Genetic diversity, subcellular localization, expression patterns, and responses to environmental cues were investigated, emphasizing their intricate interplay with stress responses, and hormone signaling. The effect of light availability and stress on serotonin and melatonin production underscores their importance in plant adaptation. Insights into Nicotiana tabacum nucleotide sequences shed light on the molecular weights and potential functional relationships among enzymes, highlighting the complex orchestration of phytomelatonin biosynthesis.

Miami Dade College

42. Race Perception and Proximity

Jennifer Martin

Mentor: Dr. Benjamin Marsh

The current study analyzes the impact of presentation context on the memory of a racially ambiguous faces while focusing on the cross-race effect (CRE), a phenomenon where individuals to recognize and remember faces from their own race more accurately than those from other racial groups. It was hypothesized that racially ambiguous other-race faces grouped together would be better remembered than when grouped with their respective unambiguous other-race faces. It is expected, that the CRE will be moderated by the racial context in which racial ambiguous faces appear. A priming phase aimed to make racial identity salient, by emphasizing participants racial background or American identity. We expect by making the racial identity salient, it will increase the size of the CRE, making it worse. The study involved 124 White college-aged participants viewing faces of White, Black, Asian, and Latino background in 4 racially homogeneous blocks, with high ethnic typicality, and 1 racially heterogeneous block which was racially ambiguous. A recognition test followed presenting 128 test faces, testing for recognition memory judgement. Half were seen during the study phase, and half were new faces. The CRE showed that participants had a higher proficiency in identifying faces of White individuals in contrast to faces of individuals from non-White racial backgrounds. This effect was more pronounced when participants were primed with racial cues. Presentation context influences memory, non-White racially ambiguous faces were better recalled when among similar faces then their unambiguous counterparts. Suggesting, lower ethicality complicates racial categorization, causing deeper analysis of facial features.

University of Tampa (UT)

43. Effects of Deep Space Radiation on Lymphatic Vessel Structure and Function

Hanna Neustadter

Mentor: Dr. Anand Narayanan

When people travel into space, they are exposed to the unique spaceflight environment, which includes experiencing weightlessness (e.g. microgravity) and space radiation. Physiological adaptations occur when exposed to these different environmental stimuli; one example being the alteration of lymphatic function. The lymphatics are involved with cardiovascular health, fluid regulation, and our immune system responding to different conditions. We have observed suggestions of astronauts experiencing changes in their lymphatic biology, based on symptoms they experience including swelling in the head, vision loss, etc. This study is specifically focused on examining the long-term effects of space radiation on lymphatic biology. We have completed experiments investigating the physiology and biochemistry of lymphatic vessels in response to being treated with simulated deep space radiation and then allowed to recover, simulating a trip of astronauts to the Moon and back and measuring their health later in their lives. Our preliminary findings suggest novel adaptations and responses of the lymphatics to space radiation. The results from this study will increase our overall knowledge in the field of space medicine as well as improve life on Earth by expanding our understanding of the lymphatic system and how biology responds to certain forms of radiation.

Florida State University (FSU)

44. Efficacy of Administering Remote Vigilance Tasks

Hanya Irfan

Mentor: Dr. Peter A. Hancock

Sustained attention is the capacity to maintain focus on relevant stimuli for an extended period of time. This capacity is vital for operators in safety domains such as military sentry duty, TSA screening, and pilot monitoring. However, humans are notoriously poor monitors, often showing a decrement in performance just a few minutes into a task. Researchers often utilize vigilance tasks to study this capacity. Recently, with the COVID pandemic, there has been an increase in research being conducted remotely. Consequently, it is important to determine the validity of these findings, as remote studies offer less experimental control. The present study examines the efficacy of administering remote vigilance tasks in comparison to the traditional laboratory setting. In order to begin this investigation, a thorough review of the empirical studies employing a remote vigilance task was conducted. Performance metrics of response time and detection accuracy were reviewed and compared across settings. These analyses yielded mixed results with some studies finding variations in response time and accuracy between remote and in-person tasks, and others suggesting that online vigilance testing provides valid results. It is important to note that research empirically testing remote versus in-person administration of vigilance tasks is scarce. Therefore, we propose a study to directly assess this. Such research is important in an increasingly automated world, in which humans are more frequently assuming the role of monitor. The results of this study can also serve to validate the results obtained from remote vigilance research.

University of Central Florida (UCF)

45. Analyzing the Mechanistic Impact of Plasma Metabolomics on Cytotrophoblast Proliferation

Chloe Van Horn, Caleb Faison and Joseph Tebou

Mentor: Dr. Dominick Lemas

Maternal obesity has been shown to increase the likelihood of pediatric obesity. Obesity-associated metabolites in maternal plasma during the 3rd trimester of pregnancy have been identified. We hypothesize that these obesity-associated plasma metabolites interact with the placenta to influence risk of obesity. The goal of this study is to understand how obesity-associated plasma metabolites impact placental function and cell signaling. This will provide insight into the mechanistic impact of plasma metabolomics on cytotrophoblast proliferation. Two metabolites, GlcNAc and 3-HPAA, were found to have an influence on obesity. However, after multiple rounds of experimentation, no significant correlation was found between metabolite concentration and BeWo cell proliferation. Although no significant correlation was found between metabolic concentration and cell proliferation, it is possible that there

is a correlation between metabolic concentration and extracellular vesicle production. This would indicate that these metabolites result in increased communication with the placenta, mammary glands, and other organs in the body, thus increasing the likelihood of the infant developing pediatric obesity. Therefore, maternal obesity would be linked to pediatric obesity through metabolic production.

University of Florida (UF)

46. Stability, Structural Insight, and Characterization of Novel Photosensory Transducer Encoded by alr 3166 in Anabaena PCC 7120

Providence Pangira

Mentors: Dr. Vishwa Trivedi and Dr. Brandon Vernier

Organisms of all domains of life use photoreceptor proteins with bound chromophores such as retinal in retinylidene proteins to sense and respond to light. Rhodopsins found in Eukaryotes, Bacteria, and Archaea consist of opsin apoproteins and a covalently linked retinal which is employed to absorb photons for energy conversion or the initiation of intra or intercellular signaling. Anabaena sensory photoreceptor is present under bicistronic operon with another soluble protein in freshwater cyanobacteria, Anabaena PCC 7120. Both genes are in a bicistronic operon reflecting the influence of their regulatory function. Though the structural information along with the significance of their interaction in membrane proximity is evident, the detailed signal cascade is obscure. Interestingly, recently we have outlined the phosphorylation ability of transducer protein. Our detailed bioinformatics study has revealed two possible phosphorylation sites on this novel tetrameric transducer in distinct motifs, first one at 53-56 and another at 105-108 region. In this project, we have focused on stability determination, and motif structural insight using NovaFold and NovaFold AI. The folding pattern of the transducer is quite similar to G-beta. Based on predicted models, we observed that a helical carboxyl-terminal segment for the transducer is analogous to the only other available structure in the database, TM1070. We used the motif analysis to report key similarities between these 2 known structures. The influence of point mutation in 53-56 and/or 105-108 sequences on structural perturbation will be analyzed further. After the initial success of single mutations, we plan to extend double mutant construction.

Bethune-Cookman University (BCU)

47. Quantifying Diagenesis of Florida fish Scales Using IR Spectroscopy

Brian Manzanares

Mentor: Dr. Alanna Lecher

Infrared spectroscopy (IR) is a powerful tool in archaeology to understand the chemical composition of artifacts. Bone digenesis is the chemical and physical process by which bones degrade over time. Archeologists discovered that archaeological bones from different excavation sites have different states of physical diagenesis, depending on site conditions. Methods are needed to quantify the chemical aspect bone digenesis. We are using fish scales, from South Inlet Park in Florida as a model to test IR spectroscopy as a new method to quantify bone digenesis. In this experiment, we used excavated fish scales and categorized them into three diagenetic categories: pristine, degraded, and very degraded. We cleaned each scale, measured the length and weight, photographed, and then measured each with IR. With data from the IR, we will test if the chemical composition of the scales correlates to the diagenetic categories. Additionally, the chemical composition of the archaeological scales will be compared to modern scales, which will show if there was significant difference in the chemical composition compared to archaeological scales, if they are degrading or fossilizing. If successful, this method can be applied to research on how other types of archaeological bone are impacted by diagenesis.

Lynn University (LU)

48. Scott Pilgrim vs. Adaptations: Cross-Media Storytelling from The Dark Knight to The Scott Pilgrim Universe

Maryssa DeVincenzo

Mentor: Dr. Warren Jones

Even before Barny Rubble and Fred Flintstone sold cigarettes in a commercial for Winston Cigarettes in 1961, cross-media has evolved culminating in the newest version of Scott Pilgrim vs. The World and Scott Pilgrim Takes Off. Cross-media storytelling consists of two media objects belonging to the same semantic category, evolving into a form of storytelling. The most recent and famous uses of cross-media tend to mix media for the sake of advertising, such as when Batman: The Dark Knight released a video game in preparation for the movie allowing players to steal the same bus the Joker steals in the movie, in comparison to Aqua Teen Hunger Force placing LED panels of characters around Boston to promote their new movie. Cross-media has also been consumed in the form of taking pictures and posting them online of "your favorite movie character" with social media platforms Snapchat and Instagram promoting Avatar: The Way of Water letting users wear promotional Avatar like face paint as a filter. Scott Pilgrim has enjoyed a new level of cross-media. Creator Brandon Lee O'Malley started Scott Pilgrim as a comic book (2004), which became a live adaptation (2010), concurrently released with a video game. In 2023, an animated TV series, voiced by the same actors from 13 years ago, debuted. As the lines blur across entertainment sources, from social media to Televised series, from films to video games, cross-media seems to be the forthcoming answer to the fragmentation of entertainment into many different venues and sources.

Eastern Florida State College

49. STEM Identity: How Students' See Themselves as Future STEM Graduates

Jackson Ellis

Mentors: Dr. Lapeyrouse and Dr. Tamra Legron-Rodriguez

Identity is defined as one's perception of themselves in relation to the world around them. In application to STEM academia, the successful development of identity attributes to a student's manifestation of professional identity, where students in their future may identify themselves as a professional within a job field. There has been a link between professional identity and student success in undergraduate progression. This study aims to understand gaps in identity development as well as exploring reasons why some students fail to develop such professional identity. A professional identity survey was given to general chemistry courses during spring of 2022 and fall 2023 during the beginning and end of each semester. Responses were coded through thematic analysis, identifying trends within student responses while also considering demographic, social, and economic factors in context to the response, where quantitative measures in statistical frequency in certain responses were utilized to generate a theme. Approximately half responded with general positive emotion, with many whom expressed a

feeling of excitement, positive outlook on future success in respect to both academically and job prospects. On the other side, only about less than 10% of students responded with general negative and general anxiety emotion, with common responses pertaining to self-doubt, fear of the future, and financial burden. Understanding why some students might not develop a professional identity will help institutions to aid students to succeed and to mitigate academic and professional shortcomings.

University of Central Florida (UCF)

50. Of Donkeys, Elephants, and Dehumanization: Exploring Warmth and Competence Stereotypes about Major and Non-Major Political Parties

Diya Gandhi, Melody Mackner, Theo King and Mackenzie Foster

Mentor: Dr. Elizabeth Brown

Nearly four in ten Americans desire more political parties in the United States. In contrast, it has been over 50 years since a candidate from a non-major party won a presidential election. Stereotypes of major and non-major parties are important to analyze because they can impact public opinion on candidates, and therefore affect voting behaviors. While previous research has examined the stereotypes of major political parties (Democrats and Republicans), little research has examined whether these stereotypes also apply to non-major parties, and no research has examined how fundamental stereotypes of warmth and competence apply to political parties. This study examines participants' warmth and competence stereotypes of Democrats, Republicans, Independents, and Libertarians. In two studies [Study 1: 306 undergraduate students (231 women, 199 white, 20 median age; Study 2: 361 people from Amazon's Mechanical TURK (200 men, 248 white, 34 median age)] participants rated competence and warmth stereotypes for major and non-major parties. A Party x Stereotype interaction (ps<.001) emerged for both studies. Independents were rated as the most competent (ps<.05). Democrats and Independents (ps≤.05) were rated as warmer than Libertarians and Republicans (ps<.05). The data indicates that public perception of party significantly differs on the fundamental stereotypes of warmth and competence, likely impacting the public's level of support, their voting behavior. and their beliefs regarding the extent of harm caused by the opposing party's politics. Implications are discussed regarding how these warmth and competence stereotypes are associated with active and passive facilitation behaviors (i.e., BIAS map).

University of North Florida (UNF)

51. Effects of Environmental Disturbance on Bird and Parasite Presence

Katherine Gutierrez and Alexandra Larson

Mentor: Dr. Amber Brace

Zoonoses are parasites that are readily transferred between animals and humans through various forms of transmission. Birds are one group of organisms capable of carrying these parasites and have been shown to transmit Influenza A, West Nile Virus, Lyme Disease, and bacteria genera containing antibiotic resistance to humans. In Florida, both residential and migratory species are able to carry these parasites. Migratory birds include those that utilize the Atlantic Flyway which serves as a migration route for various species in the fall and spring seasons. Within a given area, both migratory and residential species can encounter environmental disturbances such as foot traffic, construction, weed-killing chemicals, and noise and light pollution. These anthropogenic alterations can negatively impact organisms leading to physiological changes including disruptions in reproduction, development, and immune function. Animal, human, and environmental health are inextricably linked such that when one is disrupted, the other two inevitably suffer. Therefore, determining whether environmental disturbance affects the presence and diversity of birds and parasites can provide insight to effects that anthropogenic factors have on both animal and human health. In this study, we are using bird feeders with cameras to monitor species present at The University of Tampa. Fecal samples are collected weekly and analyzed using fecal floatation to identify which parasites are present. Data collected over the course of one year (August 2023 - December 2023) will be analyzed to determine whether bird and parasite presence differs between seasons with or without migration and areas of moderate and high disturbance.

University of Tampa (UT)

52. Leveraging Artificial Intelligence for Enhanced Environmental Sustainability in Urban Areas

Danny Alice

Mentor: Dr. Jinwoo Jang

In an era of urbanization, our global cities are grappling with unparalleled challenges in pursuing environmental sustainability. The intricate balance between accommodating the burgeoning urban population's needs and safeguarding our planet's finite resources presents a complex puzzle. Utilizing Artificial Intelligence (AI) is a beacon of hope within this dynamic context, offering a pathway to innovative, data-driven solutions. This research is a voyage into the uncharted territory of AI's pivotal role in fortifying the foundations of environmental sustainability within urban landscapes. Focusing on the seamless integration of AI technologies, we will unravel the multifaceted dimensions of urban ecological challenges and unveil AI's transformative potential as the cornerstone of more innovative, cleaner, and sustainable cities.

Florida Atlantic University (FAU)

53. Addressing Medical Mistrust in the Black Community to Improve their Health Outcomes

Jillian Weathington

Mentor: Dr. Shante Jeune

Mistrust of the healthcare system is increased among the Black population compared to other race/ethnicity groups. Medical mistrust can lead to intensified health inequities and negative health outcomes among this population including delays in preventative care, seeking treatment, and compliance. Currently, there is limited research that explores ways to address medical mistrust, especially among the Black population. The aim of this study was to investigate medical mistrust to find ways to improve health outcomes among the older Black population. A mixed-methods approach was used for this study. Twenty-one participants in this study completed a Group Based Medical Mistrust Survey and five of those participants participated in a semi-structured interview. Descriptive and correlation analyses were conducted. The GBMMS was separated into three subscales: Factor 1) Suspicion, Factor 2) Group disparities in healthcare, and Factor 3) lack of support from healthcare providers. The mean score for the GBMMS was 3.41 (SD=0.74). Significant correlations were found between Factor 1 and income (r=-.459, p=.048). Results from the in-depth interview indicated, five primary themes were extracted from

the interviews including 1) Historical references to racism in the healthcare system, 2) Racial discrimination common in a doctor's office, 3) Assumptions made about health issues amongst Black patients, 4) Not seeking medical attention when needed, and 5) Utilization of primarily Black doctors. Overall, this study found that medical mistrust in the Black population is multifactorial and offers insight on how to improve relationships between the Black population and the healthcare system.

University of Central Florida (UCF)

54. Acute Leukemia in Hispanic Children and Health Disparities in South Florida

Emily Hernandez

Mentors: Dr. Amilcar Castellano-Sanchez and Dr. Katherine Semidey

Research has demonstrated various health disparities affecting the outcomes of Hispanic patients with leukemia including access to healthcare, socioeconomic status, incidence, and mortality. These disparities have indicated a significant negative impact on health outcomes including decreased survival, higher incidence rates, as well as, treatment-related mortality of Hispanics within the United States. The objective of this study is to assess the extent of health disparities that affect the health outcomes of Hispanic pediatric patients with AL in South Florida. The researcher intends to retrospectively analyze patient medical records from the oncologist group at XYZ Children's Hospital from 2012 to 2022 by investigating the participants and their health outcomes through 5-year survival, incident, and mortality rates in terms of treatment-related mortality. This study will be observing health disparities including insurance status, type of insurance, access to treatment as well as preventative medicine through primary care visits and socioeconomic status based on place of residence. The researcher hypothesizes that health disparities will have a negative impact on health outcomes for Hispanic pediatric patients with AL within South Florida. This study can help providers understand how health disparities affect their patients and work towards the improvement of healthcare policy to alleviate the effects that occur within the Hispanic population. Providers can also create treatment plans considering the evaluation and management of the patient's needs. These findings can also serve to help shape health policies that prevent barriers caused by social determinants of health.

Florida International University (FIU)

55. Quality Improvement in Pediatric Single-Location MRI: Immersive Therapeutic Play Preparation Using a Mock Scanner as a Low-Cost Replacement for Sedation

Dawson Veghte, Shreya Mathur and Ansh Parikh

Mentor: Dr. Cole Dooley

This project attempts to understand the benefit of immersive therapeutic play preparation using an interactive model MRI scanner as a low-cost replacement for sedation or anesthesia to improve quality of care in pediatric single-location MRI. Specifically, we aim to better understand the benefits of Certified Child Life Specialist (CCLS) facilitated therapeutic play preparation involving an interactive model MRI scanner, with and without the effects of an immersive, themed environment to the MRI suite via an undersea-themed paint skin to the walls and scanner. Our approach centers around combining established preparation methods, such as preparatory books and an interactive model MRI scanner, with a newer, immersive approach within the imaging department at Shands. We hypothesize that patients who undergo this preparation strategy will be able to undergo MRI without sedation or anesthesia and yield clinically-viable scans at a success rate of > 90%. Our ultimate goal is to use these methods to reduce anxiety and anesthesia/sedation rates in children undergoing a single-location MRI at UF Health Shands Children's Hospital to improve quality of care and patient safety outcomes.

University of Florida (UF)

56. Using CRISPR Technology to Create NGLY-/- in Human Brain Tissue Cell Lines

Gabriel Springer

Mentor: Dr. Marie Mooney

The NGLY-1 gene produces the N-glycanase 1 enzyme, which removes N-glycans by deglycosylation from misfolded proteins. These misfolded proteins are then sent to the proteasome to be degraded but can aggregate in the presence of a NGLY-1 gene deficiency. Observed phenotypes of an NGLY-1 deficiency include motor deficits, liver dysfunction, and neurological symptoms in zebrafish and mice models. There are many unanswered questions regarding how an NGLY-1 deficiency affects human brain cells and tissues. To study the effects of NGLY-1 in human cells, Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR) technology will be utilized to engineer a Cas-9 NGLY-1 knock-out in the human U87 glioblastoma and SY5Y neuroblastoma cell lines. Involving an NGLY-1guide RNA (gRNA) and CRISPR Cas-9 a loss-of-function model will be created. Introducing NGLY1 deficiency in human brain tissue cell lines will allow observation of critical transcriptional pathways underlying the neurodevelopmental deficits in human brain tissues by whole transcriptome analysis with RNA-Sequencing. Once verified pathways are observed being downregulated in human cells, drugs and enzyme supplements can be used to target those pathways. This will be attempted once the presence of CRISPR Cas9 is confirmed and the NGLY-1 knock out cell lines are created.

University of North Florida (UNF)

57. The Role of Discrimination on the Gender Wage Gap

Musarrat Shaira

Mentor: Dr. Amir Borges Ferreira Neto

The issue of the gender wage gap has been broadly studied since the early 1970s when women began participating in the labor force on a larger scale. Enacting laws like the Equal Pay Act of 1963 and the Civil Rights Act of 1964 have influenced mitigating pay inequality between men and women. Several studies show that in the recent 30 years, the gender wage gap has constricted. However, the wage disparity between men and women is still prevalent in the U.S. and across the globe. Using the Ordinary Least Square (OLS) regression model and the Oaxaca-Blinder decomposition analysis, this study examines the relationship between discrimination and the gender wage gap. The findings of the study suggest that discriminatory practices in the labor market can result in wage disparities between men and women. Through the Oaxaca-Blinder decomposition analysis, this research reveals that $0.036 of the difference can be attributed to observable factors such as age, education, and race, while $0.40 is due to differences in coefficient effects. Furthermore, $0.005 is the combined effect of characteristics that indicate the existence of discrimination in the labor market, contributing to the wage gap between men and women. At this moment we are aware that female workers can face discrimination due to

unobservable factors in the labor market. To gain a better understanding of the discriminatory aspect of the gender wage gap, additional research is needed using open-ended questionnaires to explore female employees' experiences at workplaces.

Florida Gulf Coast University (FGCU)

58. Gender and Psychosocial Differences in Posttraumatic Stress Symptoms Prior to Open-heart Surgery

Ibukunolu Shofolu

Mentors: Dr. Amy Ai, Dr. Hoa Appel and Beren Crim Sabuncu

Acute stress symptoms can occur while cardiac patients await open-heart surgery (OHS). The stress leads to poor outcomes. This study aimed to investigate the association of gender and psychosocial factors (quality-of-life and character strengths). We recruited and interviewed 481 pre-OHS patients (female=42%; mean age=62 years). Medical indices/factors were obtained from the Society of Thoracic Surgeon's national database. Multiple regression analyses were performed following pre-planned steps and adjusting medical factors. Our findings revealed that gender differences in trauma-related symptoms were associated with poor mental wellbeing, alongside comorbidities. Both mental wellbeing and comorbidity factors were directly related to acute stress symptoms, while dispositional optimism had an inverse association with this outcome. To improve OHS outcomes, our findings suggest health care providers be attentive to pre-OHS acute stress symptoms, pay greater attention to the emotional well-being of their female patients, and develop supportive interventions to enhance personality strengths.

Florida State University (FSU)

59. Juliana Huxtable Opens a Door for the Furry Community

Atlas Chambers

Mentor: Thomas Winchester

The work of American artist Juliana Huxtable challenges preconceived notions of how we label and identify ourselves and view those around us. Many of Huxtable's specific works and intentions draw a direct line to the much less 'socially acceptable' subculture known as the furry community, or 'furries'. She questions what society finds acceptable within the modern art world, allowing a chance for a deeper understanding and appreciation into this intrinsically artistic community. Huxtable's connection to the furry community allows her a unique perspective on one of her most used subjects: her own body. Using specific works of art and solo/group exhibitions Huxtable has been a part of, a clear connection to anthropomorphism can be drawn. Sub-cultures like the furry community have long been a safe place for those outside the norm, but Huxtable's work allows the broader art world to see the possibility of a wider acceptance and success for the artistic endeavors of those within the furry community and anyone who enjoys an expression of their identity that has been previously ostracized. While Huxtable may be controversial to some, this presentation proves that she has established herself as a pivotal artist in the present day, allowing the modern art world to see how questioning the presentation of identity can be beneficial to growth and change within ourselves and the things we allow ourselves to view as 'socially acceptable.'

Eckerd College

60. How to Buy an Oscar: Hollywood's Racialized Currency, Symbolic Annihilation, and False Meritocracy

Katia Destine

Mentor: Dr. Sharon Woodill

In 2015, activist April Reign coined #Oscarssowhite as a call to action after the Academy awarded twenty acting nominations to majority-white actors for consecutive years. The Academy Awards have received numerous criticisms over the lack of diversity across nomination categories and voting members. Conversations about representation in Hollywood are often mitigated and reduced into separate constituent parts. This reductionism does not address the issue's complexity and fails to challenge dominant ideologies and the status quo. This grounded theory study analyzes the discourse that emerged during the #Oscarssowhite campaign to challenge preconceived notions and provide interdisciplinary perspectives. I will contextualize the issue of Black representation in the Oscars and the contentious relationship that the Academy has with Black professionals in the industry. I argue that the Oscars aren't won but bought through Hollywood's racialized currency, symbolic annihilation, and a false sense of meritocracy. The Academy Awards' hegemonic practices create an ecosystem of exclusion and hostility towards marginalized creatives. Making the industry largely inaccessible for members of underrepresented and under-resourced communities. While representation does play a key role in uplifting Black creatives, representation within the Academy and American cinema alone isn't enough to challenge the larger issues of inequality within the industry.

University of Central Florida (UCF)

61. Exploring the Interaction Between the Cross-Race Effect and Political Ideology

Luisa Januario

Mentor: Dr. Benjamin Marsh

This research proposal addresses the nuanced intersection of the cross-race effect (CRE), political ideology, and emotional memory enhancement, aiming to expand our comprehension of this psychological phenomenon. The CRE, well-documented but not fully understood, is the tendency for individuals to recognize the faces of their own racial group more accurately than the faces of other races. This study specifically tests whether sharing political ideology with a face or being subtly annoyed by a political position moderates the size of the CRE. The study involved 64 college-aged White participants categorized by their political leanings (left or right). Faces from different racial backgrounds were paired with messages that were either politically right-wing, left-wing, or non-political. Preliminary analysis revealed a significant interplay between the race of faces, political message leaning, and participants' political ideology. For instance, the CRE was largest when comparing White and Asian faces paired with right-wing messages. However, the CRE was mitigated when comparing White and Black faces paired with right-wing messages but not when paired with left-wing messages. Also, participants who leaned politically left remembered Black faces more accurately than those who leaned politically right, likely related to differences in how politically similar they perceive themselves to be to Black Americans. This research holds promise for advancing our understanding of the CRE and its intricate connections to political ideology and emotional memory processes, with potential implications for discussions surrounding racial bias, political polarization, and memory dynamics.

University of Tampa (UT)

62. The Decline in Syngnathid Populations Within the Indian River Lagoon

Shaunace Bowen, Endi Carter and Senait Yusef

Mentor: Dr. Sarah Krejci

Wild seahorse and pipefish are important parts of coastal marine ecosystems but are currently faced with multiple anthropogenic pressures such as habitat loss, overharvesting, pollution, and climate change. The Indian River Lagoon has been experiencing repeated algal blooms since 2010 that has resulted in an 85% loss of seagrasses. Since syngnathids have close associations with submerged aquatic vegetation, it is likely that habitat loss will result in syngnathid loss. This study compared syngnathid populations within the Mosquito Lagoon and Northern Indian River Lagoon between 2014 and 2023. Both locations showed a decline in four species of syngnathids (2 seahorses and 2 pipefish species). Greater numbers of pipefish were found in the N.IRL in both years. Dwarf seahorses were completely absent from samples in 2023 from both locations. The sex ratio was skewed in the N.IRL in 2023 due to the presence of a single female pipefish and the total length of gulf pipefish was 1cm shorter in 2023 compared to 2014, also attributed to a loss of larger females from the population. Syngnathid populations have declined between the two locations during this period of extended disturbance. Additional studies are needed to understand the long term impacts of syngnathid loss to the Indian River Lagoon.

Bethune-Cookman University (BCU)

63. Defining the Contribution of the galE Gene in the Virulence Potential of Porphyromonas gingivalis

Emile Karam

Mentors: Dr. Jose O. Solbiati and Dr. Frank C. Gibson III

Porphyromonas gingivalis is a Gram-negative anaerobic bacterium that is closely associated with periodontal disease. P. gingivalis is unusual as it can synthesize sphingolipids (SL) which our lab previously reported can modulate the host immune response to this organism. It is presumed that the mechanism by which P. gingivalis delivers its SLs to host cells involves outer membrane vesicles (OMVs). OMVs, akin to eukaryotic extracellular vesicles, are released from the bacteria's outer membrane. Previous research using an unencapsulated strain indicates that the P. gingivalis galE gene encodes a UDP-glucose 4-epimerase, and a galE mutant failed to produce OMVs. The purpose of this study was to generate a galE mutant in an encapsulated P. gingivalis strain to understand if OMVs serve as the platform for SLs transfer to host cells. In the present study, we generated a galE knockout in the encapsulated P. gingivalis strain W83, and confirmed the mutation by molecular techniques. Characterization studies of the galE knockout determined that there was an impact on bacterial growth in planktonic culture, and in biofilm assays. Further, the galE mutant did not produce OMVs, yet the SL profile of wildtype P. gingivalis and the galE mutant were similar. Preliminary experiments measuring cytokine and chemokine levels in cell culture supernatant fluids from THP-1 macrophage-like cells cultured with wildtype P. gingivalis or the galE mutant unexpectedly revealed similar or elevated expression of inflammatory mediators compared to wildtype. Ongoing studies aim to determine if the galE mutant is able to transfer its SLs to host cells.

University of Florida (UF)

64. An Analysis of the Change of Students Expectations in a Reformed Physical Chemistry Course

Kevin Morales

Mentors: Dr. Julie Donnelly and Dr. Tamra Legron-Rodriguez

Students hold certain expectations when enrolling in an undergraduate course. The course syllabus is often the first interaction a student has with the course; therefore, it is a critical tool in (re)setting students' initial expectations. However, those expectations may be violated if the students' experiences don't align with what they anticipated, which leads to students constructing a negative perception towards the course. This is a particular challenge in reformed courses because students may expect a traditional lecture based off previous experiences. However, when their expectations are violated, the effectiveness of the method may be reduced. This study was performed in a reformed Process-Oriented Guided Inquiry Learning (POGIL) Physical Chemistry course. POGIL is a learning-centered experience which allows students to engage with others while encountering difficult concepts. In this study, we surveyed undergraduate Physical Chemistry students to gauge their expectations. Three surveys were used to evaluate how students' expectations shifted from before reading the syllabus (initial expectation), to after orientation to the reformed pedagogy (evolved expectation), and at the end of the course (actual experience). The Wilcoxon Mann-Whitney tests were used to identify significant shifts in student expectations after reading the syllabus, this revealed that before syllabi were distributed, most students were expecting a traditional content-centered instruction and not the reformed pedagogy. This highlighted certain components in the syllabus that was responsible for the shift in students' expectations which could help instructors leverage their syllabus to accurately convey the experience students should expect when entering a course with a reformed pedagogy.

University of Central Florida (UCF)

65. The Effects of Sleep Extension on the Gut Microbiome

Kiarah Brown

Mentors: Dr. Jamie Tartar, Ajena Valls and Cassie Evans

The human gut microbiome influences health through the brain-gut-microbiota axis. A large and growing body of research shows that there is a clear relationship between gut microbiota and sleep health. However, the direction of this relationship is currently uncertain. The purpose of this study is to begin to address this question by applying a sleep extension protocol to people with a short sleep duration. We will then compare the gut microbiome diversity and richness before and after sleep extension. We will also carry out neurobehavioral testing using the NIH Toolbox emotion battery which measures the following: psychological well being, stress and self-efficiency, social relationships, and negative affect, also measures various of emotions including: anger, fear, depressive systems, psychological well being, stress and self efficiency, social support, emotional support, loneliness, friendship, and social distress. Saliva samples will also be collected in order to quantify the cytokine. To date this project involved training and testing on the IL-6 quantification using a human immunoassay ELISA kit. The result for the IL-6 plate indicated that the primary antigen was able to find the biomarkers of the saliva samples. The study is ongoing and is currently underway as the gut microbiome analysis will be conducted once all study participants have been tested.

Miami Dade College

66. Does semaglutide Suppress Overconsumption in a Rodent Model of Binge Eating?

Jamila Guard

Mentor: Dr. Lisa Eckel

Binge eating, a core feature of bulimic syndromes, is known to have damaging consequences on an individual's body such as elevated pro inflammatory cytokines like IL-6. With limited pharmaceutical treatments, glucagon-like peptide-1 receptor agonists like semaglutide (SEMA) may pose as a possible treatment to reduce these binge eating episodes in patients. SEMA has been shown to reduce palatable food intake and induce weight loss in clinical patients. The purpose of the current study is to test the effects of SEMA on food intake, body weight, body composition, neuronal activation and inflammation in an animal model of binge eating. Lean female rats were intermittently exposed to a high fat diet while receiving SEMA or vehicle injections daily. Age and weight matched counterparts maintained on either chow or HFD. Food intake and body weight were measured daily. EchoMRI was conducted at the conclusion of the experiment to determine body composition across groups. To assess changes in neuronal activation animals were given a 4g HFD test meal 60 minutes prior to perfusion, whereafter brains were collected and processed for cFos and Iba-1 via immunohistochemistry. We found that semaglutide caused rapid weight loss via reduced caloric consumption. We found that intermittently fed animals (INT) given semaglutide had reduced food intake on HFD access days and the days following. This group also had a significantly reduced fat mass compared to vehicle injected controls.

Florida State University (FSU)

67. Creation of Campus Culture & Community

Isabella Mills

Mentor: Dr. Jessica Chandras

To exist on a university or college campus is to exist in a campus climate that is an overlap of student spheres of demographics and interactions with one another and the institution. A campus climate can be defined by "the aggregated perceptions or feelings of individuals in the college or university about the institutions," and can be intersected by multiple climates of student identity and academic structures (Crosson, 1988, as cited in Miller et al., 1998, p. 142). These perceptions and feelings, along with standards, behaviors, and attitudes, are shaped by relations like access and retention, research and scholarship, curriculum, groups, and other prevailing interactions (Rankin & Reason, 2008, as cited in Vaccaro, 2012). Given the interview and participant observation data that was amassed for this project, the question that guided its analysis was "How are campus community and culture created through events and interaction?" The conclusion is current diversity and campus community can be enhanced by organizing events that cater to a larger group of students and candidates to create a cohesive environment, but simultaneously the campus culture can be hurt by damaging policies and perceptions that result in ostracization and tensions between groups or individuals.

University of North Florida (UNF)

68. Cranky cardinals: artificial night lighting and aggression in urban songbirds

Zion Szot

Mentor: Dr. Kathryn Sieving

Birds (including Cardinalis cardinalis) require sleep for daily functions. In spring, birds sing to protect territory and attract mates. Scant evidence suggests that artificial lighting at night (ALN) increases avian nighttime activity which contributes to sleep loss. This study investigates how artificial night lighting affects the aggressiveness of C. cardinalis responses to conspecific song playbacks. We hypothesize that high ALN near cardinal roosting spots will cause those individuals to have less energy for daytime aggressive behaviors, tested through territorial playbacks in areas of low ALN versus areas of high ALN. We measured ALN at dark and bright urban roosting locations and returned in the morning to play cardinal calls for three minutes and observe individual bird behavior for five minutes. Standard aggressive measures included latency to respond, distance from bird to speaker, number of songs, hops, and flip flops. An aggression index was obtained using principal component analysis which confirmed that aggressive responses featured short latency and approach distance, few chips, and many songs, flip flops, and hops. Analysis of variance revealed the opposite response as expected: cardinals sleeping in high levels of nighttime light engaged in more aggressive morning responses. Further study includes extending playback studies to measure response endurance, conducting studies at different times of day, and deploying recording units to measure magnitude and timing of nighttime vocal activity.

University of Florida (UF)

69. Team-Based Learning in Chemistry: Exploring Team Function and Performance

Linne Goberville

Mentors: Dr. Tamra Legron-Rodriguez and Dr. Julie Donnelly

Active learning is engaging in discussion and class participation with other peers to increase students' understanding of course concepts. This is best done through the use of small groups in the classroom. Team based learning (TBL) is a type of active learning that uses properly managed and formed small groups. TBL encourages students to come to class prepared to fully engage and participate in the team activities for that day. The impact this learning has on students includes understanding content, being able to apply their knowledge to problem solving and decision making, and developing team skills. To create an effective group, the teams were heterogeneously compiled based on gender, race/ethnicity, and GPA. A cornerstone of TBL is the readiness assessment testing process that uses module quizzes to test student preparation for team activities. This includes individual readiness assessment tests (iRATs) and team readiness assessment tests (iRATs). Research in TBL, has shown that teams outperform the highest scoring individual on the readiness assessment tests (RATs) as measured by team gain. This presentation will explore the relationship between team demographics and team gain in an upper-level chemistry course. Analysis of RAT scores showed a team gain of 7% on average, indicating the teams performed better than the highest scoring individual. Students also participated in reflective activities throughout the semester related to their individual and team performance. Preliminary results of the reflective activities regarding team function indicate effective communication, confidence in answers, and course preparation as emerging themes for team effectiveness.

University of Central Florida (UCF)

70. Transcriptome Sequencing of the Eastern Oyster (C. virginica) in Stressful Salinity Conditions

Luke Talham and Blake Busch

Mentors: Dr. Kimberly Dobrinski and Mr. John Ambrosio

Oysters are a vital part of the Florida estuarine ecosystem and commercial fisheries industry. They protect estuarine environments by preventing erosion from storms, and they provide essential habitat and structure for other marine species. Oysters comprise the largest portion of the United States' aquaculture production and they offer a way to address global food insecurity. Despite these benefits, the eastern oyster (Crassostrea virginica) faces multiple ecological and anthropogenic threats, including pollution, climate change, overharvesting, and salinity change, ultimately leading to an 85% decline in global oyster reef distribution. Few studies have used transcriptome sequencing to analyze variable gene expression and for pathway analysis in eastern oysters as a response to stressful salinities as an isolated variable. This project will utilize transcriptome sequencing to examine how extreme low and high salinity events influence the expression of genes and alter pathways related to stress response in eastern oysters. We hypothesize that when eastern oysters are exposed to stressful salinity conditions, molecular pathways related to stress response, including the ER associated degradation pathway and the unfolded protein response pathway, will be upregulated. Further understanding of these molecular pathways will provide insight into the eastern oyster's stress response system and help guide future work in oyster sustainability.

University of Tampa (UT)

71. Lost on the Map: Unraveling Geographic Illiteracy

Kevin Martinez

Mentors: Eric Levi and Dr. Monica Escaleras

Geographic illiteracy, the finite knowledge of geography, has shown that individuals struggle with geographic knowledge. A 21 multiple choice question survey was designed that tested Americans' knowledge on global geographical information. Using Amazon Mechanical Turk to collect data and using IBM's SPSS to analyze the data, a total of 192 people over the age of 18 responded to the survey. The respondents displayed variety among common demographic questions including age, gender, and income. The initial hypothesis was that most Americans aren't well versed in geographic knowledge, so therefore they would perform poorly on this survey. Contrary to the initial hypothesis, approximately 70% of the respondents demonstrated that they had a notable grasp on geographical understanding. Interestingly, respondents in the 65+ age group showed their understanding of geography, by having a near perfect score in answering the questions. As a result, this study fails to support the hypothesis. However, the results of the survey show many interesting correlations that speculate possible questions of what causes geographic illiteracy in certain demographics.

Florida Atlantic University (FAU)

72. Disparities in Hispanics with Prostate Cancer

Michael A Stokes III

Mentors: Dr. Maya Byfield

Prostate cancer is observed to be the second-highest leading cause of cancer-related death among the United States male population. Like findings in African American males (AAM), indicating an increased risk of mortality from late diagnosis, our previous data using the Surveillance, Epidemiology, and End Results (SEER) database shows that there was a significant disparity in the death rate of AAM of ages younger than 50. Studies like this can focus on the concerns regarding prostate cancer and bring awareness to these issues in the interest of addressing these gaps in other populations such as Hispanic men. Research shows that Hispanic men are at a greater risk of being diagnosed with a later stage of prostate cancer than other ethnic groups in the United States. As a result, disparities in prognosis and case fatality rates are evident due to the prevalence of various stages of prostate cancer within these populations. This research is shown to be significant when it is conducted with a Hispanic population greater/less than 50 years old. When comparing greater than 50-year-old Hispanic men to their White counterparts, it is found to be a significant 4% higher death rate, while less than 50-year-old is approximately a 5.5% higher death rate difference. This disparity indicates the need for exploration utilizing databases to retrieve patient data to assess age, case fatality percentages, and stages of prostate cancer within Hispanic male populations. This would help find potential areas for intervention involving healthcare accessibility, discrimination, and biological dispositions.

Seminole State College

73. Oral Manifestations and Obstructive Sleep Apnea (OSA) in College Students

Maria Martinez

Mentors: Dr. Keith Brazendale, Dr. Shawn Davis and Dr. Claudia Andl

Background: The prevalence rate of Obstructive Sleep Apnea (OSA) has been increasing steadily over the past two decades. OSA is often misdiagnosed with other medical conditions, and there are several complications associated with OSA, such as hypertension, coronary artery disease, and cognitive problems, including higher rates of strokes and epilepsy. Further, dental complications may arise from being diagnosed with OSA, impacting overall systemic health. Patients suffering from OSA are more susceptible to developing dry mouth, thus increasing bacterial/fungal growth, leading to tooth decay and periodontal disease. There is currently a lack of data exploring OSA in College Students and the Oral Manifestations (symptoms or conditions linked in the oral cavity) related to having OSA. The present study will investigate the relationship between OSA and Oral Manifestations among College Students. Methods: Approximately 100 college students from a large university will be recruited to participate in our cross-sectional study. The Epworth Sleepiness Scale will be used to screen for students at higher risk for OSA. Students identified as high risk of OSA will be given a wrist-worn sleep device to track their sleeping patterns for seven days. Oral manifestations will be assessed by providing a survey/questionnaire for the students to list their dental history. Implications: These data will allow us to identify the prevalence and rate of OSA in college students and identify common Oral Manifestations linked with OSA. A better understanding of this relationship may lead to oral hygiene improvement and prevention methods geared explicitly toward patients suffering from OSA.

University of Central Florida (UCF)

74. Developmental Exposure to TCDD Alters Sperm Motility and Whole-body Hormone Parameters in a Zebrafish Model

Gabrielle Gonzalez

Mentor: Dr. Tracie Baker

2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) is a global contaminant that is a known endocrine disruptor and has been associated with the etiology of reproductive disease in humans and model organisms. Previous research has found that TCDD exposure to juvenile zebrafish (Danio rerio), an NIH-validated model for developmental and reproductive toxicology, leads to transgenerational infertility and transcriptomic and histopathologic changes in the gonads. TCDD has been found to reduce sperm count and motility in rodent models and several case studies of high-dose exposure in humans. Therefore, we investigated sperm motility as a novel endpoint for sublethal TCDD exposure in zebrafish: to our knowledge, this is one of the first studies to do so using this model. We further aim to examine the effects of TCDD exposure on specific markers of reproductive function through analyzing whole-body reproductive hormones. Preliminary results indicate a significant decrease in estriol for TCDD-exposed male fish ($p=0.03$) as well as significant decreases for six of eight ($p<0.001$) sperm motility parameters (VSL, VCL, VAP, LIN, STR, WOB). These sperm motility outcomes correspond with our findings of infertility and are novel in the field to our knowledge, providing greater insight into the extent to which reproductive parameters are altered by TCDD exposure. As previous research in this lab has identified male-mediated decreases in fertility to be transgenerational, our further goals are to understand both the mechanisms through which developmental TCDD exposure impairs sperm motility and disrupts hormone level, and the persistence of these outcomes as a factor contributing to infertility across generations.

University of Florida (UF)

75. Cookie Cutter Girls: A Content Analytic Investigation of the “Clean Girl Aesthetic” on TikTok

Kenson Moore

Mentor: Madeline R. Wick

It is well-known that social media includes highly idealized content that contributes to the spread of the thin ideal. Many researchers have utilized content analytic procedures to examine specific social media content areas, including thinspiration, fitspiration, and body positivity. However, no content analyses have focused on a popular micro trend known as "Clean Girl Aesthetic." The present study involved a content analytic examination of the themes and characteristics of the "Clean Girl Aesthetic" on TikTok. TikTok videos included in the present content analysis were identified by entering the keywords "Clean Girl Aesthetic" into the search bar on TikTok. Results suggest that the majority of these TikTok videos include women who appear to be in their 20s who are thin, white, and blonde. It was rare for these women to embody characteristics that were not consistent with the thin-ideal, such as acne, wrinkles, or cellulite. Furthermore, the vast majority of women were seen wearing neutral colors, minimal makeup, and gold jewelry. Themes of motivation, commercialism, productivity, and minimalism were common. However, other themes seen in social media's portrayal of the thin-ideal, including thin praise and diet culture, were rare. These results suggest that the "Clean Girl Aesthetic" trend on TikTok promotes the thin-ideal and commercialism to achieve this ideal but does not include as deleterious of messages as other types of content such as thinspiration. Future research should utilize experimental methods to examine how viewing "Clean Girl Aesthetic" videos impact viewers, especially those who may not embody the thin-ideal themselves.

Florida State University (FSU)

76. High-Pressure Raman Spectroscopy Study of GdTe1.8

Hannah Truong

Mentor: Dr. Irina Chuvashova

Gadolinium Telluride1.8 (GdTe1.8) is a Rare Earth Telluride (RETe) consisting of a Lanthanide and a Chalcogen with interesting properties at ambient conditions. The non-integer number of Te atoms means that there are some defects in the structure leading to attractive properties. Special f orbital characteristics allow lanthanide-based compounds to exhibit profound magnetic and optical properties. Rare Earth Chalcogenides incorporates lanthanide bonding with a group 7 element for pressure-induced transitions. Group 7 material GdTe1.8 has a unique 2-D shape, paramagnetic at extremely low temperatures, upholding high electrical resistivity. In this study, GdTe1.8 is compressed to extreme pressures using Diamond Anvil Cell (DAC). DAC can achieve extreme conditions by squeezing the sample between two diamonds; the pressure changes the molecular structure and enhances the material properties. The sample squeezes up to 1,000 Gigapascals (GPa), compared to Earth's core at 360 GPa. The transparency of diamonds allows in situ measurements by Raman spectroscopy. The study's objective is to understand the behavior of GdTe1.8 at high pressures. The compression of GdTe1.8 was analyzed by examining spectra, determining peak positions and their pressure dependence with software T-Rax, Fityk, and Origin. GdTe1.8 was compressed up to 53 GPa with a step of about 6 GPa. Starting from 14 GPa, 6 Stokes and 5 anti-Stokes lines were detected moving upon compression up to 53 GPa. Our study revealed two phase transitions where the atoms were rearranged below 14 GPa. As new structures of GdTe1.8 are found, properties changes will be measured accordingly.

Florida International University (FIU)

77. Effects Of Invigorating and Relaxing Music on Heart Rate Variability, Blood Pressure, Oxygen Saturation, and Heart Rate

Matthew Faur

Mentors: Dr. Hansen Mansy and Dr. Tina Chiarelli

Music is known to have a pathological effect on the human body, but little is known of the correlation between typically exciting or relaxing music and psychophysical patterns that can arise from either. The goal of this study is to provide an in-depth analysis into how music and harmony can affect the human body. Although music and HRV haven't specifically been studied previously together, HRV has been studied before as a common predictor for cardio-vascular health and with the application of music doors may open to noninvasive ways of improving heart health. HRV is heart rate variability within each successive beat, a time measurement can be taken to analyze how variable it is, low variability is said to be in a state of fight or flight, having poor health, or lowered cognition. High Variability however, has shown improved athletic performance, higher cognition, better emotional regulation, and more positive biomarkers. This study aims to analyze the effects of invigorating or relaxing music on a participants. Protocol has IRB approval and includes three phases, PHASE I (baseline control recording which includes no music), PHASE II & III (10 minutes of exciting or relaxing music of choice). PHASE II & III are conducted

interchangeable to remove ladder effects and confounders from the data, which can occur from only having participants go from exciting (elevated state) to relaxing (lowered state). Promising results have been shown within the first 5 participants with the goal set to a sample size of 50.

University of Central Florida (UCF)

78. Calcium Ions Effect on Planaria Feeding Behavior

Jonathan Newman

Mentor: Dr. Cassandra Korte

The purpose of this study is to examine how calcium content in waters housing model organisms affect laboratory research. Calcium is a key nutrient for all living organisms and plays a role in feeding behavior aiding in the transport of messages across nerve and muscle cells. Planaria, invertebrate flatworms that often serve as model organisms for laboratory research, absorb nutrients such as calcium ions through their skin, which fuels their metabolic activities. Previous research has focused on planarian species Schmidtea mediterranea, Dugesia japonica, and Giardia guanjuatiensis but not Giardia dorotocephala. In this study, we examine the feeding behavior of Giardia dorotocephala when immersed in five types of water with varying levels of calcium content. Over the course of two weeks, worms were incubated in the waters and their feeding behavior was recorded. Each water was tested three times. Preliminary findings did not show any noticeable patterns such as reaction time from pharynx or increase in motility, but we plan to perform more trials for analysis. The results from this study will inform researchers on best practices for housing model organisms for research.

Lynn University (LU)

79. Effects of Microplastic Exposure in the Sea Anemone, Exaiptasia pallida

Michael Smith

Mentor: Dr. Gretchen K. Bielmyer-Fraser

Microplastics (MPs) are one of the most common forms of pollution found in marine environments, and their small size (<5 mm) allows them to be easily ingested by marine biota. Exaiptasia pallida is a solitary anemone native to the western Atlantic that harbors symbiotic dinoflagellates like those of reef building corals, and passively feed on prey such as brine shrimp. To assess the influence of MPs on E. pallida, laboratory experiments were conducted in which symbiotic and aposymbiotic anemones were exposed to 100 µm dark red polystyrene MP beads in the presence and absence of brine shrimp. Ingestion and egestion of MPs by the anemones and photosynthetic parameters of the dinoflagellates were measured at 3, 24, and 48 hours following initial exposure. E. pallida consumed polystyrene beads in every MP treatment, and both presence of brine shrimp and symbiotic state significantly increased MP ingestion. Complete egestion of MPs occurred by 48 h after exposure. Aposymbiotic anemones ingested more MPs than symbiotic anemones, suggesting that bleached anemone communities may be more susceptible to MP pollution. Furthermore, no changes in photosynthetic parameters of the symbiont were observed with MP exposure. Oxidative stress has been reported in aquatic animals following MP exposure, therefore an additional experiment was conducted assessing antioxidant enzymes (glutathione peroxidase, glutathione reductase, catalase, and superoxide dismutase) in aposymbiotic anemones exposed to MPs for 24 h. Results of this study have implications for cnidarian health.

Jacksonville University (JU)

80. Making Visible the Historic Hispanic Presence in North Florida through Oral History and the Online Publication of Historical Documents

Johanna Asencio-Morcillo, Alondra Solares and Paola Ramos Maysonet

Mentors: Dr. Constanza López Baquero and Dr. Clayton McCarl

This poster presentation examines our work with two projects that highlight the contributions of Hispanics in North Florida in the past and the present. Voces y Caras: Hispanic Communities of North Florida is an oral history project in which Latino students ast UNF have collected nearly 300 interviews with family members and other immigrants, some of whom have been in the area for decades and others have arrived more recently. The interviews cover topics including the challenges of immigration, and the successes and hopes for the future of immigrants. coloniaLab is an editorial workshop in which students contribute to the digital publication of colonial-era texts from Latin America and, in particular, from Spanish Florida. Many of those documents deal with two topics: the defense of North Florida against foriegn invaders and the problems that a 1776 law regulating marriage created couples in San Agustín. In this presentation, we will discuss the interviews we conducted for Voces y Caras and the documents we edited with coloniaLab. We will reflect on our experiences with these projects and the benefits we think this work has had for us personally. We will also reflect on the value of these projects for Hispanic students at UNF and the campus community at large. Looking beyond the campus, we will also consdier the importance of this work for celebrating local Hispanic communities and bringing recognition to their contributions to the life, culture, and economy of North Florida.

University of North Florida (UNF)

81. Identifying a Cryptic, Invasive Species of Toad Under the Genus Rhinella

Rachel Ryweck

Mentor: Jacob LaFond

This project aims to determine which cryptic species of cane toad of the genus Rhinella has become established as an invasive species in Florida. A cryptic species complex occurs when there is more than one species that appear identical but are actually two or more genetically-distinct species. Two aims of the project include 1) Determine which Rhinella species has invaded and become established in Florida and 2) Determine the likely geographical origin of the founding population(s). To accomplish this, DNA was extracted from the livers of over 144 cane toads from 12 different locations, developed and conducted polymerase chain reaction (PCR) protocols to amplify ~400 base pairs of the cytochrome b (cytb) locus, and completed Sanger Sequencing of PCR products. Subsequently, Geneious was used to trim and align reads, and create a gene tree using both recovered sequences and publicly accessible Rhinella cytb sequences published from previous studies. To date, 3 distinct cytb haplotypes from 14 individuals across 5 different Florida populations have been successfully recovered. All 3 recovered sequences cluster with previously published R. horribilis sequences from southern Mexico, indicating this is the Rhinella population in Florida likely arose from a single founding population of R. horribilis from south Mexico. By determining what invasive Rhinella species is present in Florida, we hope to gain insight into their invasion history, provide information to inform best practices to avoid future invasion events, and determine possible impacts this species is having on Florida ecosystems.

University of Tampa (UT)

82. Optimization of Nutrient-Based Nanoparticles and Their Evaluation To Mitigate Mangrove Die-Off Caused by Pestalotiopsis spp.

Melissa Deinys

Mentor: Dr. Swadeshmukul Santra

Pestalotiopsis spp., a fungal pathogen, poses a significant threat to mangrove ecosystems, causing diseases like leaf blight and dieback in mangrove trees, crucial for supporting marine life and preserving coastal environments. Isolating Pestalotiopsis spp. from Red Mangrove leaves as part of a study on mangrove die-off in Florida, we address this threat through a sustainable solution. Our approach involves MagSuN, a nanoformulation combining Sodium Polysulfide (NaPs) and Magnesium hydroxide nanoparticles (MgSoL), with hydrothermally treated MgSoL particles to enhance efficacy. The hydrothermal annealing process is likely employed to control the size, shape, and surface properties of these nanoparticles. Enhanced crystallinity and morphological changes can lead to increased reactivity and stability, making MgSoL more effective in interactions with Pestalotiopsis spp. Our mycelium growth assays demonstrate growth inhibition of up to 95% for MagSuN when thermally treated and utilized at varying concentrations as compared to the untreated control. Additionally, when MagSuN was utilized in poison food assays it caused the pathogen to stress and resulted in up to 87% reduction in fungal growth. The findings of this study hold promising implications for the development of innovative and eco-friendly strategies for mitigating the spread of environmental pathogens, paving the way for further research and potential applications in the field of environmental science and agriculture.

University of Central Florida (UCF)

83. A Longitudinal Examination of Obsessive Compulsive Symptom Severity as a Predictor of Posttraumatic Stress Disorder Development

Mia Mantei

Mentor: Dr. Norman B. Schmidt

It is well established in literature that Obsessive Compulsive Disorder (OCD) and Posttraumatic Stress Disorder (PTSD) have high rates of comorbidity. Many studies consider trauma exposure as an etiological factor in the development of Obsessive Compulsive (OC) symptoms, however no research to date has considered the contributions of OC symptoms in the development and maintenance of posttraumatic stress symptoms (PTSS) following a traumatic event. Previous literature reports that trauma type and distress tolerance both influence presence and severity of PTSS and OC symptoms. The present study utilizes archival data from 97 trauma-exposed participants selected from a larger randomized controlled trial of four web-based interventions for anxiety and mood symptoms (N = 303). A hierarchical linear regression indicated that baseline OC symptoms predicted long-term follow-up PTSS over and above the variance explained by baseline PTSS, treatment condition, and trauma load. Further, a significant trauma type by OC symptom severity interaction indicated that baseline OC symptom severity had a greater effect on the development or maintenance of PTSS for individuals who experienced interpersonal trauma, as compared to those who experienced non-interpersonal trauma. Additionally, a mediation model demonstrated that month 3 distress tolerance fully mediated the relationship between baseline OC symptoms and long-term follow-up PTSS. The present study was limited by possible treatment effects, outdated methodologies utilized in the original study, and attrition. Despite its limitations the current study provides novel findings and advances our understanding of the relationship between OCD and PTSD symptoms.

Florida State University (FSU)

84. Maternal Nutrition, Obesity, and Infant Obesity Risk: A Comprehensive Analysis of Caloric Intake and Micronutrient Correlations

Hannah Quintal, Bryanna Mirabal, Sionika Thayagabalu, Kathryn Humes, Carly Serlenga, Nicole Wang, Yulianices Fernandez, Alejandra Iglesias and Zara Haruna

Mentor: Dr. Dominick J. Lemas

BACKGROUND: Pediatric obesity affects 1 in 3 children in the US, reflecting a growing public health crisis. Accumulating data suggests maternal obesity may seed an "obesogenic" microbiome responsible for transmitting obesity risk to the child. Exclusive breastfeeding is associated with protection against pediatric obesity; however, the nutritional composition of breast milk and its relation to the metabolic pathways that account for these observations is poorly characterized. OBJECTIVES: Our objectives were to: (1) Examine the interrelationship between caloric intake, maternal obesity, and projected infant weight. (2) Detect which micronutrients in the maternal diet correlate with an increased risk of obesity within the first year of an infant's life. METHODS: Daily nutritional consumption was recorded by normal weight (n=46, pre-pregnant BMI <25.0 kg/m2) and obese (n=37, pre-pregnant BMI >30.0 kg/m2) mothers across consecutive days in the 3rd trimester. Postpartum, the diets of the exclusively breastfeeding mothers were tracked at 2-weeks, 2-months, and 12-months. Nutrition analysis software (ESHA Food Processor) was used to dissect each dietary record into micronutrient amounts. RESULTS: Preliminary analysis of the caloric intake of mothers and their marked obesity status shows that the normal weight group consumed an average of 2162.69 kcal/day while mothers in the obese cohort consumed an average of 2526.12 kcal/day. CONCLUSION: Our results highlight a near 400 kcal difference in daily caloric intake in the third trimester. Our next steps will be to evaluate the statistical significance of this difference and its potential to inform the obesity risk of infants across each group.

University of Florida (UF)

85. The Meat and Dairy Industry's Contribution to Female Exploitation

Jahcinda Law

Mentor: Authur Skinner

The inhumane treatment of agricultural animals allows for a comparison to the experience of womanhood and abuse. Females are the majority of animals used in the meat and dairy industry, setting up roles for animals, femininity, and therefore women. Language around meat allows for the ignorance of slaughter and a representation of sexual abuse (Adams 2015). Popular statements like "I felt like a piece of meat" make the connection clear and expose the view of animals bred for meat and dairy(Adams 2015). Through research of the lives of the animals in the agricultural industry compared to reports of sexual abuse (Brennan 1995), language used around the topic (Rodriguez 2009), and roles women play in sexual relationships with men specifically in porn and rape, reveals how the treatment of women and animals is connected (Dworkin 1988). Evidence from Rodriguez's statement "Female animals are disproportionately exploited because of their reproductive

ability...(2009)" shows the methods in which animals are exploited for their inherent femininity (Brown 2016). Lori Gruen's statement "...animals' bodies are currently bought and sold in ways that are reminiscent of slave trading in the United States or, more recently, Nazi experiments on women(Wyckoff 2014)." shows attempts to separate or reduce the animal down to something without a purpose other than becoming edible or for women, something to sleep with or rape(Kellie, Blake, Brooks 2019). Through the blatant slaughter of female animals in the agricultural industry there is an underlying acceptance that the harmful treatment and exploitation of women is necessary.

Eckerd College

86. Does Mangrove Encroachment on Oyster Reefs in The Indian River Lagoon Enhance Blue Carbon Storage?

Nicole Boisson

Mentors: Dr. Lisa Chambers, Dr. Linda Walters and Dr. Paul Sacks

Mangroves and oyster reefs are two common coastal habitats in Indian River Lagoon; both provide diverse ecosystem services, including carbon sequestration and storage. Decreasing freeze events and increasing sea levels are leading to mangrove habitat expansion, including encroachment onto live oyster reefs. This study will investigate how mangrove encroachment on oyster reefs impacts the abundance and stability of soil carbon, relative to each habitat alone. Soil (0-10cm) was collected from 3 locations in Mosquito Lagoon, each containing a mangrove-only, oyster-only, and mangrove-encroached oyster reef site. Total and active carbon were quantified, and stable carbon was determined through physical and density fractionation that isolates persistent mineral-associate organic matter (MAOM). It is hypothesized that total and active carbon will be greatest in the mangrove soil, but MAOM-carbon will be greatest where mangroves encroach on oyster reefs. This research will identify changes in coastal carbon storage due to mangrove encroachment on oyster reefs.

University of Central Florida (UCF)

87. Apartment Ownership in the Neoliberal City: How Disinvestment, Urban Renewal, and Zoning Reshaped the Rental Landscape

Katie Renzi

Mentors: Dr. David Jaffee, Dr. Jenny Stuber and Dr. Jeff Will

With Florida metros being some of the most cost-burdened cities for housing, it becomes imperative to understand the role of municipalities in shaping capital distribution, especially in the form of property ownership. This study identifies five unique types of property owners across 591 apartment complexes in Duval County, and asks: How have urban renewal initiatives and zoning trends impacted the ways apartments are owned in Jacksonville neighborhoods? I argue that ownership by local individuals is an important aspect of a neighborhood's ability to build generational wealth and create more responsive and empathetic landlord/tenant relationships. I find that most apartments owned by local individuals are in neighborhoods with median structure construction years of 1965 or older. However, these complexes tend to have fewer units than apartments in more recently built communities, indicating a shift towards larger, multistory complexes, pricing out individual buyers. This has resulted in near-universal ownership by real estate companies and investment firms in neighborhoods with median structure ages of 1980 or newer. Further, when examining the impacts of redlining and zoning, it becomes evident that older wealthy white neighborhoods tend to have more local individual ownership than those historically occupied by poorer black residents, which have been targets for gentrification and urban renewal by outside investors. Together, these findings indicate that zoning initiatives have dwindled "middle housing" stock, effectively zoning out the opportunity for ownership by locals. Further, the properties that are locally owned are long-term investments, a result of the generational benefits of wealth and privilege.

University of North Florida (UNF)

88. Breaking the Silence – Combatting Campus Sexual Assault

Danielle McFarkand

Mentor: Dr. Frank Wood

Campus sexual assault remains a salient issue across college campuses and universities in the United States. In 2023, RAINN reported that approximately 9.7 percent of undergraduate female students and 2.5 percent of undergraduate male students experienced campus sexual assault through incapacitation, physical force, and violence (RAINN, 2023). In response to this, campuses and universities have implemented programs and policies that reduce target suitability and enhances capable guardianship. Still, there is a need for more scholarship on this issue, particularly scholarship examining demographic risk factors for campus sexual assault. Hence, this poster provides a review of the literature on demographic risk factors for campus sexual assault. In addition, this poster will discuss and apply routines activities theory and intersectionality to explain the relationship between race, gender identity, and sexual orientation. Finally, this poster will provide recommendations on how to combat campus sexual assault.

Bethune-Cookman University (BCU)

89. Gravitational Wave Detection Using Machine Learning Algorithms with LIGO Data

Isis Robinson

Mentor: Sr. Catherine Grace Loggins, SCTJM

Albert Einstein implicitly proposed the idea behind gravitational waves with his special theory of relativity in 1905, and formally in 1916 and 1918. He showed that as masses accelerate, they generate time-dependent gravitational fields moving away from their sources at the speed of light, called gravitational waves. They have since built detectors worldwide to measure these gravitational waves to prove this theory. On September 14, 2015, the Laser Interferometer Gravitational-wave Observatory (LIGO) detectors, in Washington and Louisiana, observed the merger of two black holes. The study to fine-tune the detection of gravitational waves continues today and is the focus of our current study. We use machine learning techniques to extract gravitational wave data background noise.

St. Thomas University (STU)

90. Impact of Parent-Child Interaction on Adolescent Deviance

Isabella Urena

Mentor: Dr. Tiffany Jenson

The hit 2000's TV show Gilmore Girls presents the typical western teenage experience of family dynamics within characters like Lorelai Gilmore, Lane Kim, and Jess Mariano (Sherman-Palladino et al., 2000). These characters rebelled in extremes against their parents and their participation in

delinquent acts reflects a larger societal trend in parent-child dynamics: the perpetuating myth that strict parents make for deviant children. This study examined the impact that experiencing strict parental supervision and discipline in adolescence had on delinquency. The data used was from Wave 1 of The National Longitudinal Study of Adolescent to Adult Health. From September 1994 to December 1995, U.S. adolescents aged 11 to 20 were surveyed and interviewed. Through studying this data collection along with Travis Hirschi's Social Bond Theory, it can be better understood how problem behaviors develop in adolescence. This study determined parent-child relationship is a significant predictor of delinquency, as well as how control variables gender, race and age correlate to delinquency. This deeper insight into parent-child interaction supports further research into better parenting techniques for child development and preventing harmful interactions.

University of Florida (UF)

91. Rh-Catalyzed C—H Silylation of (Hetero) arenes with Siloxysilanes

Noah Swann

Mentor: Dr. Kangsang Lee

We disclose a series of synthetic methods to access various arylsiloxysilanes. Previous methods require. high temperatures, high arene equivalence, and/or directing groups. We report three methods for the Rh-catalyzed C—H silylation of arenes and heteroarenes with HSiMe2(OTMS), HSiMe(OTMS)2, and HSi(OTMS)3. Silylation with HSiMe2(OTMS) and HSiMe(OTMS)2 is accomplished with a preformed Rh-complex, while silylation with HSi(OTMS)3 is performed in-situ. With these methods, electronically and sterically different arenes and heteroarenes can react with sterically different siloxysilanes to furnish arylsiloxysilanes bearing various functional groups. Advantages of silylation with siloxysilanes include mild reaction conditions, improved atom economy, and environmentally benign waste.

University of Central Florida (UCF)

92. Whale, What Have We Here? A Meta-Analysis of the Impacts of Boating Activity on Orca Whales Orcinus orca

Remi Siegel-Ventura

Mentors: Julia Saltzman and Dr. Mariana Fuentes

As the largest member of the oceanic dolphin family, orca whales Orcinus orca, have captured the attention of scientists and members of the public for decades because of their sophisticated social structure, intelligence, and their highly variable foraging strategies. As apex predators, orcas play a pivotal role in marine food webs by exerting top-down control on their prey species, a control which maintains the balance of marine food webs. Recently, video documentation of orcas circling, bumping, and even damaging vessels has made international news as interest in damage costs and injuries to the mammals increases. However, the increasing frequency of orca-vessel interactions and damage demands an understanding of the impact these boats have on them due to the crucial role they play in ocean ecosystems. As such, this study used meta-analysis to synthesize the impact of vessels on orcas. To date, we have identified and analyzed 27 peer reviewed publications. Preliminary results indicate vessel presence and associated noise impact orca behavior including foraging strategy, vocalizations, and dive times. However, we found that behavioral response to vessels vary with orca ecotype. With the increased frequency of orca-vessel interactions, this work provides important insights which can be employed to inform the formulation of effective and adaptive management strategies. We also underscore the importance of adaptive population-level management, by highlighting the variations in behavioral responses by orca ecotype. This work highlights the utility of meta-analysis in improving understanding of species behavior, anthropogenic impacts, and the development of marine conservation strategies.

Florida State University (FSU)

93. Metaverse-based Platform for Enhanced Active Shooter Preparedness and Response in Developing Countries

Laura Thomas

Mentor: Dr. Lufan Wang

Global increases in disasters are rising threats worldwide. Innovative safety training methods are thus required to improve disaster preparedness and response. The emergence of metaverse presents unprecedented potential to address this need. However, despite extensive existing studies, there is still a lack of effort focusing on training for man-made disasters like mass shootings, terrorism, and gang violence. The few studies tailored for these events are usually meant to train law enforcement personnel, not civilians. To address these knowledge gaps, this paper proposes a metaverse-based virtual game platform designed to train civilians on active shooting events. The proposed platform features a user-controlled design, which allow the users to customize their training environment to familiar settings (e.g., home, office, or school). This approach aims to simulate the real-world situation of the users, thus significantly enhancing their spatial awareness and improving their training performance. The platform is developed using the Unity game engine and is implemented and tested using Haiti as a case study. Preliminary results indicate substantial promise in employing the metaverse to enhance disaster preparedness and response in developing countries with limited resources.

Florida International University (FIU)

94. Examining the Role of CteG Using Drosophila

Om Patel

Mentor: Dr. George Aranjuez

There is not much knowledge regarding the molecular value of the N terminus portion of translocating actin recruiting phosphoprotein (N-tarp), in the effector genes of Chlamydia trachomatis (C. trachomatis. So, our lab began with developing the plasmid containing an assigned gene of interest and vector; this was done through series of plate isolations, PCR's, gel electrophoresis chromatographies, and quantifications using nano-drop technique. The gene of interest in our case was the effector gene CteG that was inserted into E. coli in order to be cloned via polymerase chain reactions, then confirmed using gel electrophoresis and quantified using nano-drop technique. A similar process was done to isolate vector pUAST; pUAST is a vector system that is well studied and effective in generating transgenic flies and controlling transgene expression. DNA clean ups were performed using mini-prep protocol and then each component underwent a double digestion using NotI and KpnI. Using serial dilution, transformants of at least 8 colonies were separated into samples that were amplified using PCR, then ran on an agarose gel to confirm transformants with CteG (gene of interest/effector gene) aptly within the pUAST vector. The identified E. coli transformants were then sent to a laboratory where they will be inserted into Drosophila allowing for N-tarp to be observed through physical characteristics and molecular evaluations. From this research, the effects of the N-tarp

portion of the effector genes has on C. trachomatis bacterial cycle, survival, proliferation, and ability to alter its host cell will be studied.

University of Central Florida (UCF)

95. Straight From Yaad

Lydia-Rose Hanson

Mentor: Dr. Beasley

This research delves into the intergenerational trauma experienced by Jamaicans and those of Jamaican heritage. This mainly stems from the persistent challenges of colorism, domestic violence, and the lack of emotional intelligence. This study investigates the lasting repercussions of these issues on kinship and societal dynamics by shedding light on the dissemination of trauma to first-generation Americans who were given the opportunity to be born in the States. By examining the intersections of these factors this research aims to unveil the deep-rooted effects on mental health, lack of healthy coping mechanisms, social relationships, and individual well-being in Jamaican communities. Addressing and comprehending these topics plays a vital role in healing my community.

University of North Florida (UNF)

96. Gender Differences in Domain-specific Self-efficacy and Self-esteem in Middle School Children

Sophia Fiz, Gabby Barber and Sean Blumenfeld

Mentors: Dr. Patrick Cooper and Dr. Alanna Lecher

Self-efficacy is best described as one's belief in their ability to achieve a certain goal. It has been the subject of numerous studies, many of which took place in the classroom. Previous literature has focused on gender differences in subjects such as math and science, arriving at the consensus that self-esteem scores for females are consistently lower than that of males academically. This study aimed to explore self-efficacy in three other domains: (1) sports, (2) body image, and (3) popularity self-efficacy, in relation to self-esteem in middle school children. The data was collected by surveys given to a sample of 195 children (M age = 12 years). An Independent Samples T-Test was done to investigate possible differences between girls and boys in the sports, body image, and popularity self-efficacy domains, alongside self-esteem and depression. Moreover, a correlation was done to look into any associations between levels of self-esteem and depression, and the three domains of self-efficacy by gender. Our primary finding suggested that self-efficacy in any domain is associated with self-esteem, but for girls only. Boys did not derive self-esteem from exhibiting high sports or popularity self-efficacy. They did, however, develop high self-esteem when they exhibited high body image-self efficacy. As previous literature suggests, it is possible that these differences were due to the existence of gender stereotypes. For instance, sports performance might be rewarded differently for boys and girls, as school sports tend to be male dominated, therefore increasing the reward for female performance.

Lynn University (LU)

97. Quantitative Comparison of Cardiac MRI vs. Echocardiogram for Radiation-Induced Heart Dysfunction in BC Patients

Jonathan French

Mentor: Dr. Walter O'Dell

Background: Breast cancer (BC) is one of the most common cancers worldwide, with radiotherapy as a leading treatment. While radiotherapy increases survivability, it's also accompanied by noticeable side effects. Early detection of radiation-induced heart complications is important for long-term patient care. Both magnetic resonance imaging (MRI) and echocardiography (EC) are trusted technologies for non-invasive assessment of cardiac function. EC is more commonly prescribed due to lower costs. However, MRI scans give a clearer and more accurate image, which we hypothesize is pivotal in ensuring an accurate assessment. In this project, we aim to determine which modality is best for measuring changes in heart function following radiotherapy in BC patients. Methods: We gathered MRI and EC scans of the same patient at approximately the same post-treatment time point. Using custom software to help segment the heart from the images, multiple independent observers calculated the patient's left ventricular ejection fraction (LVEF) and global longitudinal strain (GLS). The standard deviations of the LVEF and GLS measurements were computed across the observers, with a smaller standard deviation indicating a more precise and sensitive imaging technology. Results: MRI was approximately twice as precise as EC for both the LVEF and GLS metrics. Moreover, LVEF was approximately twice as precise as EC. Conclusion: MRI has a greater image acuity, as verified by its greater LVEF and GLS precision via independent contouring. However, increasing MRI usage remains limited due to their higher cost and complexity relative to ECs.

University of Florida (UF)

98. Memory for a Dinosaur Exhibit: Retrieval-Based Practice vs. Restudy

Spencer Henning, Sara Festini, Sofia Condorelli and Adriana Lutzio

Mentor: Dr. Sara Festini

Extensive prior evidence has documented that retrieval-based practice (i.e., testing) increases memory retention compared to restudying (i.e., listening to a fact again) (Roediger III & Butler, 2011; Roediger III & Karpicke, 2006a). Much research on retrieval-based practice has been done in controlled laboratory settings, with less research in everyday environments or in child samples. Therefore, our primary goal was to evaluate the impact of retrieval-based practice vs. restudy with a naturalistic assessment of children's memory for a dinosaur exhibit. After visiting a new dinosaur exhibit at a children's museum, children ages 4-9-years-old were randomly assigned to either the retrieval-based practice or restudy condition, where they were either quizzed on 10 dinosaur facts or were read the same 10 dinosaur facts aloud, respectively. One week after their visit to the museum, parents received a survey via email in which they recorded their child's answers to the same 10 dinosaur questions. Results indicated that the restudy condition and the test condition were not significantly different for recall accuracy, but there was a significant main effect of age group. Bonferroni-corrected pairwise comparisons revealed that 4-5-year-olds recalled marginally less than 6-7-year-olds and significantly less than 8-9-year-olds, but 6-7 and 8-9-year-olds did not significantly differ. We did not observe support for the benefits of retrieval-based practice, although the observed means were in the predicted direction. Furthermore, we observed evidence for memory improvements with age, as

4-5-year-olds exhibited worse memory for the dinosaur facts relative to older peers aged 6-9-years-old.

University of Tampa (UT)

99. Breakfast Skipping in College Students and its Association with Eating Behaviors

Rebekah May

Mentor: Dr. Shante Jeune

Breakfast is important in maintaining optimal diet quality and decreasing preventable diet-related disease later in life. Despite its importance, breakfast skipping is highly prevalent in the college population. Breakfast skipping may reduce one's self-regulation causing increased habits of overeating and decreased diet quality. This study aims to explore characteristics of eating behaviors, such as eating style and daily consumption, among college students who skip breakfast. Undergraduate students participated in an observational study examining those who skipped breakfast the day prior. Participants (n=55) completed demographics, the Self-regulation of Eating Behavior Questionnaire (SREBQ), the Dutch Eating Behavior Questionnaire (DEBQ), and the Short Healthy Eating Index (sHEI). Participants were predominantly female (69%), white (58%), health professions majors (40%), and 21 years old on average. Descriptive statistics and bivariate correlations were analyzed using SPSS V29.0. Of those who skip breakfast, students reported eating breakfast: never (20%), 1-2 days (32%), 3-4 days (42%), or 5-6 days a week (5%). Breakfast consumption frequency was positively associated with external eating (p=0.034). Additionally, lower self-regulation levels were correlated with higher levels of emotional eating (p<.001). There were 94.5% of participants who consumed added sugars above AHA recommendations (women: 24g/130kcal & men: 32g/520kcal); of this value, 47% consumed greater than or equal to 520 calories in added sugar the day they skipped breakfast. The results of this study add to previous research on breakfast while focusing on the characteristics of a student breakfast-skipping population. Future longitudinal studies are needed to compare variables between days with breakfast consumption vs. skipping.

University of Central Florida (UCF)

100. The Cage of Dismissal: Emotional Invalidation, Entrapment, and Minority Suicidal Ideations

Robert Rice, Jay Collar, John Askew, Max Ordenes, Patrick Tootle, Makayla Evans and Min Eun Jeon

Mentor: Dr. Thomas E. Joiner

Minoritized populations are susceptible to emotional invalidation, which may explain their risk towards suicidal thoughts and behaviors. Based on theoretical and empirical works, entrapment may account for the relationship between emotional invalidation and suicidal ideation. To examine this potential pathway, an indirect effects model was estimated in a sample of minoritized individuals (n = 460), which had considerable diversity: 75.9% people of color; 43.9% non-heterosexual. A structural equation indirect effects model was estimated using robust maximum likelihood to test whether the association between emotional invalidation and suicidal ideation was accounted for by entrapment variance. All variables were modeled as latent variables; emotional invalidation and entrapment were modeled with the Perceived Invalidation of Emotion Scale and Entrapment Short-Form Scale, respectively. Suicidal ideation was modeled using sum scores of the Depressive Symptom Index â€“ Suicidality Subscale, Beck Scale for Suicide Ideation, and a single-item measure of suicidal intent. The estimated model fit well (CFI = .970, TLI = .965, RMSEA = .052). Results showed that entrapment accounted for the relationship between suicidal ideation beyond emotional invalidation variance (b = 0.698, SE = 0.089, p < .001), while emotional invalidation had a nonsignificant relationship with suicidal ideation after accounting for entrapment variance (b = 0.098, SE = 0.074, p = 0.181), supporting a complete indirect effect. These findings show that invalidation may confer risk for suicidal ideation through feelings of entrapment; future research may benefit from further exploring this relationship, including cognitive and behavioral aspects of perceived lack of or desire for escape.

Florida State University (FSU)

101. Exploring Nesting Behaviors of the Gopher Tortoise at the FAU Preserve

Martha Torres

Mentors: Lauren Melanson, M.S. and Dr. Evelyn Frazier

The gopher tortoise, also known as Gopherus polyphemus, is a keystone species that provides shelter and resources for over 350 species. In Florida, gopher tortoises are state designated as threatened. It has been observed in previous literature that gopher tortoises reproduce during the spring. Due to the unique subtropical climate of South Florida gopher tortoises may be reproducing all year round. The absence of literature regarding the natural reproductive season is crucial to the conservation of this species. The gopher tortoise's role as a keystone species implies that its disappearance could trigger a trophic cascade with far-reaching ecological consequences. We studied the gopher tortoise population at the Florida Atlantic Preserve to determine if the reproductive season in South Florida extends in that of previously reported literature. After surveying each burrow in the Preserve and determining the sex of the tortoises found within, three cameras were placed in front of burrows identified as housing female tortoises, positioned approximately one meter from the burrow opening. Video footage was captured, and the collected data was subsequently analyzed. Based on the data thus far examined we have seen displays of mating behavior such as head bobbing amongst tortoises as well as the discovery of an unidentified egg in one of the burrows. The information obtained in this study will serve to improve the current Florida gopher tortoise conservation management plan.

Florida Atlantic University (FAU)

102. I'm Perceived, Therefore I Am: Dystopian Narratives, Self-Commodifying, and Generation Z's 21st-century Perception of Individuality

Victoria Jackson

Mentor: Dr. Warren Jones

The impact of heightened surveillance, both real world and those represented in dystopian narratives (such as Brave New World, The Hunger Games, 1984, Black Mirror, and others), has intensified commodification and self-mythologizing within Generation Z, yielding a distinctly different sense of individualism compared with former generations. From Bentham through Foucault to Lyon, the conversation surrounding surveillance is continually evolving and adapting in relation to the evolution of new media through which surveillance occurs, especially within the context of the digital world. Generation Z endures an unprecedented level of surveillance, due to technological advancements and the ubiquitous use of social media that creates a heightened state of hyper-perceptibility (and, more so, the possibility of scrutiny) setting their experience apart

from their predecessors. This surveillance culture shifted Generation Z's concepts of individualism, such as Internalized Authority and the Prison of the Mind. From Brave New World to Doctor Who the over-saturation of media and the illusion of choice of surveillance is actualized. The Hunger Games to Nope features exploitation due to surveillance as a means to prove individual existence. In Black Mirror's Nosedive to Barbie (2023), faux interconnectedness and conspicuous consumption are by-products of their surveillance societies. In 1984, a dystopian cornerstone that exemplifies the extremes of totalitarianism and embodies the future feared by Generation Z, even as they contribute to its inevitable realization. All of which raises questions about whether we have reached a new normal, or if such surveillance of individualism will lead to an even darker future.

Eastern Florida State College

103. Evaluating the Role of the Melatonin in the Mitochondrion-mediated Apoptosis in Thyroid Cancer Cell (MDA-T41)

Jessica Crews and Colten Denby

Mentor: Dr. Daniel Sanches

Melatonin, a hormone produced by the pineal gland, is typically known for its modulation of several physiological functions, alongside its ability to synchronize the sleep-wake rhythms. In recent years, its interactions with cancerous cells and its role in prevention and treatment have been increasingly studied. It has been demonstrated that melatonin can improve the efficacy of chemotherapy drugs and directly inhibit neoplastic cell action. In addition, while melatonin typically displays anti-apoptotic effects in normal cells, it holds pro-apoptotic effects in cancer cells. However, the mechanisms by which melatonin affects cell death and metabolism remain unclear and seemingly differ from cell to cell. Our work aims to understand better melatonin's role in thyroid cancer cell (MDA-T41) apoptosis. We cultured the MDA-T41 cell line with varying melatonin quantities and measured cell death levels using the Realtime-Glo Annexin V Apoptosis and Necrosis assay. Our results showed that melatonin provided anti-apoptotic effects to MDA-T41 cells when co-treated with staurosporine, an inductor of apoptotic cell death. Both apoptosis and necrosis were reduced by 50% in melatonin-treated cells twenty-four hours after treatment. Our next steps will be to evaluate the role of the mitochondrion pathway by measuring caspase activities and expression and the cells' redox state.

South Florida State College (SFSC)

104. Eating Disorders, and Stress in College Students

Naina Bayya

Mentor: Dr. Dawn Witherspoon

Background: The COVID-19 pandemic brought unprecedented stress and mental health challenges for college students. Previous literature during the pandemic noticed changes in dietary habits and minor adjustments in physical activity levels (Palmer et al., 2021), and an increase in eating disorders (Tavolacci et al., 2021). Aims: To investigate the association between stress, eating disorders and weight among college students following the pandemic. Methods: 188 undergraduates in Northeast Florida, enrolled through SONA, a virtual research system used for psychological science. Most identified as female (n=167), with an average age of twenty (M=20.57). 60% identified as white, 14.7 % as Hispanic or Latino, 13.2% as Black or African American. Measures included a health, demographic and food security questionnaire, The Perceived Stress Scale -4, and The Eating Disorder Examination Questionnaire 6.0 (EDE-Q 6.0) which includes four subscales. The study received IRB approval, and participants consented to the study. Results: About half of the participants were in the healthy BMI category (n = 99, 53.8%), the remaining were either underweight, overweight, or obese. Age was not correlated with EDE-Q scores, perceived stress, or food security. However, BMI was correlated with the total EDE-Q score and scores on the Restraint, Eating Concern, Shape Concern, and Weight Concern subscales of the EDE-Q. The EDE-Q subscales were all correlated with perceived stress. Conclusions: The current study found a significant relationship between stress, weight and eating disordered behaviors in college students following the pandemic. Food insecurity was a significant factor.

University of North Florida (UNF)

105. The Pearl-Fect Solution

Grace Domonkos

Mentors: Dr. Jose Soto-Shoender, Captain Tyler Fortune and Professor Amy Bohan

The purpose of this study was to examine how different aquatic and man made substrates affect species abundance of Crassostrea virginica—Eastern Oysters—in the Northern Sarasota Bay. Oysters play a crucial role in global oceanic health and the local economy by filtering the surrounding water; providing habitat, food, and jobs; serving as barriers against storms and tides; and preventing erosion. The objective of this study was to identify how to effectively increase oyster populations to boost oceanic health and productivity. Our hypothesis was that Eastern Oysters are most abundant on anthropogenically placed sea walls due to oyster's preference for hard, stable, and rough surfaces. Our results support our hypothesis and show that relative abundance of oysters in all substrates was statistically significant ($p<0.05$), with the sea wall substrate supporting a higher abundance of oysters.

New College of Florida (NCF)

106. Wearable Device to Track Astronaut Health Status Via Transdermal Interstitial Fluid Analyte Concentration Changes

Yamila Diaz

Mentor: Professor Ismael Voltaire

The proposed invention is a wearable point-of-care device that monitors organ functions through protein fluctuations produced by the organs of interest. The device's capabilities extend to diagnosing infection as glycoproteins on the cellular wall of bacteria can also be targeted. The patented wearable device will be the next-generation health monitor designed to instantly track molecular changes in an individual's biochemistry through changing analyte concentrations. The device works by uptaking biomarkers of interest from interstitial fluid in the skin through microneedles. The concentration of the molecule of interest will be determined via aptamer-binding techniques. Once the aptamer-protein binding complex is complete, nanoscale weighing through quartz crystal microbalances will determine the protein concentration within the interstitial fluid. Due to the aptamers' high specificity and low space requirements, we anticipate over 11 tests before the accuracy of testing decreases by more than 10%.

St. Thomas University (STU)

107. Evaluating Obsessive Compulsive Behaviors in Huntington Disease Model Mice

Sabrina Lipkin

Mentor: Dr. Amber Southwell

Obsessive compulsive symptoms (OCS) are more frequent in individuals with Huntington disease (HD) than in the general population. OCS are experienced by 15-50% of HD gene carriers. OCS have been linked to dysfunction of neural circuits connecting the striatum, thalamus, and frontal cortex. The frequent occurrence of OCS in HD patients is unsurprising given that the earliest and most aggressive neurodegenerative hallmark of HD is progressive striatal degeneration, which is accompanied by degeneration to the cortex and thalamus. Pre-manifest HD individuals report higher levels of OCS decades prior to disease onset, with symptoms increasing as disease onset approaches. Multiple mouse models of HD display progressive behavioral and cognitive abnormalities beginning prior to onset of motor deficits. However, until now these evaluations have primarily focused on traits analogous to anxiety, depression, and disrupted learning and memory. This study aims to evaluate the presence of obsessive and compulsive behaviors in young and HD mice. The Q175FDN mouse model of HD contains human huntingtin (HTT) exon 1, with approximately 200 CAG repeats, knocked in to the WT mouse Huntington disease homolog (Hdh) gene. Q175FDN heterozygous mice exhibit motor and cognitive deficits by 6 months of age but show neuropathological signs of degeneration, gene expression changes, and depressive and anxiety-like behaviors as early as 3 months of age. We assessed these mice for obsessive and compulsive behaviors 3 months of age to determine whether the Q175FDN line can serve as an effective model of OCS in pre-manifest HD.

University of Central Florida (UCF)

108. Physics-Constrained Deep Learning of Atomic Diffusion in Inertial Fusion Experiments

Juan Valderrama

Mentor: Dr. Christopher McDevitt

Inertial confinement fusion (ICF) experiments at the National Ignition Facility (NIF) have achieved record-breaking fusion yields in recent years, with burning plasma and ignition regimes reached in August 2021 and December 2022, respectively. Fusion yield is a product of the plasma temperature, density, and energy confinement time. One of the main contributors to the degradation of fusion yield is the atomic diffusion of the capsule material into the plasma during the implosion experiment. As the heavy capsule ions diffuse and mix into the plasma, they absorb and radiate away energy that would otherwise be retained by the burning plasma, thus decreasing the amount of fusion yield obtained in the experiments. In this work, physics-constrained deep learning tools are utilized to model the capsule-plasma diffusion layer as a function of various parameters, including capsule material, plasma ion species, and spatiotemporal coordinates. Additional steps are taken to implement 2-dimensional cases and perturbed capsule-plasma interfaces.

University of Florida (UF)

109. E. esperance: A Cell-Based Therapeutic for Trimethylaminuria (TMAU)

Sai Devulapalli, Colton Keib and Christian Suastegui

Mentors: Dr. Cesar Rodriguez and Mr. David Montez

Trimethylaminuria patients are ostracized from society and left to fend for themselves due to the lack of knowledge in the healthcare community. Trimethylaminuria, TMAU for short, is a rare disease that causes patients to release foul odors due to lacking the ability to properly oxidize Trimethylamine, a digestive by product from common amino acids we consume daily. Our human practices team focused on getting the most well-rounded stories from all parties involved. Speaking with patients suffering from this disease, researchers at the leading edge of TMAU research and testing, and medical professionals who are unaware of this disease, our human practices team emphasized spreading awareness as much as possible. The lack of knowledge is devastating as many of these patients take months and/or years to build up the courage to step out into public spaces again but are turned away or misunderstood most of the time. Recognizing the severity of this issue, our entrepreneurial endeavor, E. esperance, has emerged as a potential solution for these individuals. This innovative cell-based therapeutic represents a dedicated effort to alleviate the challenging symptoms faced by TMAU patients. This probiotic utilizes engineered E. coli by expressing the TMM Enzyme (Trimethylamine Monooxygenase) which oxidizes excess concentrations Trimethylamine, thereby mitigating the raw fish odor that profoundly impacts their quality of life. The research conducted builds a foundation to develop a startup venture that emphasizes ethical and sustainable business practices, including partnerships with established e-commerce platforms for product distribution and a commitment to fiscal responsibility.

Florida State University (FSU)

110. Enhancing Aircraft Recognition and Location Estimation Using Monocular Depth Estimation and Deep Learning

Logan Luna

Mentor: Dr. Richard Stansbury

In the realm of aviation, accurate aircraft recognition and localization are paramount. This study delves into the application of computer vision in conjunction with aerial maps to enhance aircraft recognition, location estimation, and real-time tracking. The methodology focuses on developing an autonomous system for identifying and localizing aircraft, along with evaluating integrated computer vision against standalone methods. A significant part of the exploration focuses on monocular depth estimate (MDE), noted for its efficacy at extended ranges, cost efficiency, and simplicity. Merging MDE with deep learning, especially Convolutional Neural Networks, augments the understanding of a scene's 3D structure, capturing depth for precise distance estimation. This research offers practical tools for air traffic control to track and identify aircraft, enhancing airspace safety and regulatory compliance. Additionally, it offers a potential alternative to aviation cybersecurity, providing an independent substitute to verify aircraft identity if a cyberattack were to happen.

Embry-Riddle Aeronautical University (ERAU)

111. TIM/TAM Receptors: A Potential Biomarker for Predicting Sensitivity to Zika Virus-Induced Oncolysis in Non-Small Cell Lung Cancers

Shankari Somasekar

Mentor: Dr. Kenneth Alexander

Zika virus presents a new oncolytic possibility for the treatment of non-small cell lung cancers (NSCLC). A marker predictive of cancer cell susceptibility to Zika-induced oncolysis has not been established. TIM/TAM proteins

have been identified as the putative Zika virus receptors on human cells that mediate Zika virus entry. This project investigates the correlation between the expression of TIM/TAM receptors and Zika virus sensitivity in a panel of six diverse NSCLC cell lines. We hypothesize that the various TIM/TAMs on lung cancer cells act as activators or inhibitors of virus entry, and their expression predicts sensitivity to Zika virus-induced lysis. Based on preliminary studies, high AXL (TAM) expression correlates with cancer cell sensitivity to Zika virus-induced oncolysis. Conversely, high TIM-1 (TIM) expression correlates with decreased Zika virus-induced oncolysis. We will explore the effect of TIM/TAMs on Zika-induced oncolysis by siRNA knockdown of AXL or TIM-1 in six NSCLC cell lines. In the cell lines sensitive to Zika, knockdown of AXL should result in reduced infection and cytotoxicity. In the cell lines resistant to Zika, the knockdown of TIM-1 should result in enhanced infection and increased cytotoxicity. If siRNA-mediated silencing of AXL and TIM-1 affect cancer cell susceptibility to virus-induced lysis, then the expression of TIM/TAMs could be used as a predictive marker for cancer cell susceptibility. TIM/TAM expression, a predictor of cancer cell susceptibility to Zika virus-induced lysis, could be used to identify which tumors would be appropriate for Zika virus oncolytic therapy.

University of Central Florida (UCF)

112. Exploring the Role of K60 in Stabilizing the Open State of MscS

Phuong Nguyen

Mentor: Dr. Hannah R. Malcolm

The ion channel is involved in maintaining the membrane potential in cells and regulating the internal osmotic concentration. Bacteria mechanosensitive ion channels gate in response to a change in membrane tension which leads to a change in the curvature of the cell membrane causing the channel to open in response to tension. There are seven known mechanosensitive channels in E. coli bacteria: MscL, MscS, MscK, YnaI, YbdG, YpeJ, and YbiO. MscL and MscS are the most well-studied, and both are in response to mechanical tension on the cell membrane induced by osmotic shock. MscS, small conductance, is a homo heptamer, and is known to have at least three unique kinetic states: closed, open, and desensitized. In this project, we looked at MscS K60E which was located at the termination of TM1 to determine which state of kinetic K60 was involved and how important it is in that state through a series of point mutations of K60 by osmotic downshock, patch clamp, growth curve assay, steady state assay experiment. Our results in those experiments indicated that K60 is involved in an essential interaction in the open state.

University of North Florida (UNF)

113. Mild and Efficient Cs2CO3-Promoted Synthesis of Silyl Carbonates and Silyl Carbamates

Phillip Gray III and Colby Lavigne

Mentor: Dr. Ralph Salvatore

Silyl carbamates and carbonates are ubiquitous compounds that hold a wide array of use as pesticides, serve as novel protecting groups, and possess interesting medicinal applications as peptidomimetics. A novel phosgene free method, environmentally benign synthesis of silyl carbonates and silyl carbamates were developed via a three-component coupling of an amine or alcohol, carbon dioxide and a trialkyl or trialkylsilyl halide. Cesium carbonate not only promoted successful carbonylations of alcohols and carbanations of amines, but also suppressed common side reactions traditionally seen using existing protocols. Various alcohols and amines were examined, using a wide array of trialkyl-, triaryl halides or sulfonates, respectively. In the future, a solid phase synthesis of the title compounds will also be investigated.

Southeastern University

114. The AHEMD-IS as a Tool for Predicting Developmental Outcomes: A Review

Victoria Rodriguez

Mentor: Dr. Eliza Nelson

The Affordances in the Home Environment for Motor Development-Infant Scale (AHEMD-IS) is a parent-report tool developed to evaluate opportunities for motor development that the family and home environment provide for infants aged 3 to 18 months. Several studies have used the AHEMD-IS as a research tool for predicting developmental outcomes but there has been no review of this literature. The purpose of this study was to compile studies that have used the AHEMD-IS since it was published in 2011. This decade+ period represents a rising interest in the concept of developmental cascades, whereby gains in one domain (e.g., motor) have been linked to later gains in seemingly unrelated domains (e.g., language). To capture studies that have used the AHMED-IS, we examined citation counts in Google Scholar of the original instrument (Caçola et al., 2011) and subsequent refinement of the measure (e.g., Caçola et al., 2015). Preliminarily, we identified 316 potentially relevant papers. Search results are being organized with Microsoft Excel to identify and remove duplicates as well as papers that cited the AHMED-IS but did not collect data with it. To date, a small number of papers (N = 29) used the AHMED-IS as a predictor in analyses, combining the tool with standardized assessments such as the Ages and Stages Questionnaire and the Bayley Scales of Infant Development to predict outcomes across a variety of domains including motor, language, cognition, and social, among others. This review contributes to the field by synthesizing key findings on research applications of the AHMED-IS.

Florida International University (FIU)

115. Formosan Alate Moving Undetected on an HBCU Campus: A Case Study Evaluating Precipitation and Isolated Colonies and Identification of Termites

Jade Christie and Xharia Lipkins

Mentors: Mr. Thomas White and Ms. D'Elia Bonilla

Background: Coptotermes formosanus Shiraki, is a species native to Asia but has been documented in tropical areas across the U.S. and causes billions of dollars' worth of property damage annually. This study was conducted to evaluate rain and weather conditions in various locations throughout Leon County and termite activity. This study measured the chemical components of rain from ten locations in Tallahassee and its effect on the Formosan subterranean termite. Methods: Windspeeds and rainfall data were collected using the National Weather Station data from the Weather Underground website. Soil and Water samples were collected and analyzed using the HACH surface water, soil, and pH testing kit. A factorial experiment with a split-plot design was replicated three times. Wind speeds, rainfall Dissolved oxygen, pH levels, and soil samples were evaluated and compared using a 95% conf. interval. Results: The dissolved oxygen content and pH levels were expected to be different in wooded areas close to ponds, waterways, or canals. Foliage-dense areas were predicted to have the highest probability of insect infestation and oxygen

content than those areas of less nutrients. Conclusion: The correlation between chemical components and termite activity, as well as damage and identification, are discussed. Florida A&M University is home to several historic buildings including the Black Archives, which are constructed partially of wood and would be very hard to reconstruct if infested with termites. The current study is used to spread awareness of the potential threat to the university and its history.

Florida Agricultural and Mechanical University (FAMU)

116. State Laws Mandating Pain Management Contracts for Opioid Analgesic Treatment

Shriya Doranala

Mentor: Dr. Barbara Andraka-Christou

In response to the opioid overdose crisis, some states now mandate the use of pain management contracts between patients and clinicians when clinicians prescribe opioid analgesics for chronic pain. To our knowledge, no study has examined the content of laws regulating pain management contracts, including the prevalence of such laws and elements of such laws. We conducted a systematic review of state statutes and regulations present in 2022 using NexisUni legal database. Two researchers coded each law, negotiated discrepancies until a final code was decided, with the codebook iteratively revised to reflect emerging themes. 159 laws met our inclusion criteria across 19 states. Mandated elements of pain management contracts included the following: frequency of refills; drug testing; reasons for treatment termination; treatment goals; non-opioid treatment options; prohibitions on sharing/misusing medications; required single provider/pharmacy; health benefits/risks; recording of the contract in the medical record; and frequency of contract review.

University of Central Florida (UCF)

117. Sex Differences in the Effects of Age on Prefrontal Cortex-mediated Cognition in Fischer 344 x Brown Norway F1 Hybrid Rats

Madison Halcomb

Mentors: Dr. Barry Setlow and Katherine Gonzalez

Aging is associated with changes in prefrontal cortex-mediated cognition; however, most rodent models have almost exclusively used males to investigate such cognitive alterations. In this study, we evaluated young adult (6 mo.) and aged (22 mo.) Fischer 344 x Brown Norway F1 hybrid rats of both sexes on intertemporal choice, working memory, probabilistic reversal learning, and progressive ratio tasks, on all of which young and aged males have been shown to differ. In the intertemporal choice task, in which rats selected between a small, immediately delivered food reward and a large food reward delivered after a variable delay, aged males preferred the large, delayed reward more than all other groups. In the working memory task, in which rats had to recall the location of a lever following a short delay, aged males performed less accurately than all other groups. In the probabilistic reversal learning task, rats learned to differentiate between two levers reinforced at different probabilities of delivering a food reward, and these probabilities were switched multiple times per session. Females of both ages performed more reversals than males. In the progressive ratio task, rats were presented with one lever, and the number of lever presses required to receive a food reward increased after each successive reward earned. Aged males earned fewer food pellets than all other groups. Together, these data suggest that aging has different effects on executive functions in males and females, highlighting the importance of including both sexes in aging studies.

University of Florida (UF)

118. If Everyone Else Can Do It... So Can I

Sarah Aker

Mentor: Dr. Jon Matheson

This research examines Immanuel Kant's philosophical discourse on moral action as presented in his seminal work, Groundwork for the Metaphysics of Morals. Kant postulates the existence of universal moral principles, mandatory for all individuals, predicated on good will and rationality. Central to his thesis is the concept of the categorical imperative, a mechanism he proposes for evaluating the moral rectitude of actions. Among the three variants of the categorical imperative delineated by Kant, this poster delves into the Universalizability Formulation (UF). UF dictates that an action is morally justifiable if, and only if, its underlying principle can be consistently willed as a universal law. This analysis rigorously explores Kant's UF, providing a detailed examination of its philosophical underpinnings and implications. A critical part of this exploration is the engagement with the renowned 'murderer at the door' scenario, a thought experiment that challenges the practical application of UF. Through this examination, my poster aims to reinforce the argument that Kant's UF remains a compelling and relevant principle in ethical decision-making, despite its complex challenges and nuanced critiques.

University of North Florida (UNF)

119. Dinosaurs! How Exhibit Visits Enhance Science Interest

Stacey Hoffmeister

Mentor: Dr. Jennifer Blessing

How parents engage with their children regarding science-related topics has been long investigated (Leinhardt et al., 2002). To understand how interest in science is encouraged with children, recordings of family conversations after exhibit visits have been observed (Blessing, 2003). The current study was designed to include family self-reports of post-visit activities to better explain how engagement after science exhibit visits strengthens children's interest in science. The included hypothesis is just one hypothesis out of a large-scale study. We hypothesized that children's interest in science is sustained with play that extends beyond learning environments. To gather data, we recruited families with a child between 4 - 9 years old after they had visited the dinosaur exhibit at a local children's museum. We interviewed the children to inquire about their interest in dinosaurs in addition to allowing the child to select a dinosaur toy from two options. A weekly follow-up email was sent to the families with a link to a survey that included post-visit activities related to dinosaurs and science. There was a total of 150 children who participated in the study. To test the hypothesis, data analysis is currently ongoing to look at differences in the frequency of play in terms of scientific interest through running ANOVAs. Variables that were coded to run the analyses included how much dinosaur play children engaged in, how much science play children engaged in, and children's self-report of science interest. Initial results reveal the importance of investigating post-visit family reports regarding science interest.

University of Tampa (UT)

120. System Involvement Among Fatal Overdose Victims

Stephania Mondragon

Mentor: Dr. Amy Donley

This research investigates if individuals who fatally overdosed on opioids in Orange County, Florida in 2021 had prior contact with agencies for potential treatment, aiming to develop interventions and reduce future fatalities in the ongoing opioid epidemic. The persistent U.S. opioid epidemic witnessed a 31% surge in drug overdose deaths in 2020, reaching 91,799, driven by fentanyl and synthetic opioids. Previous Orange County research revealed trends and risk factors, forming the basis for this study. In collaboration with the Orange County Unintentional Overdose Mortality and Morbidity Review (UOMMR) team, the study reviews all 2021 fatal overdose cases. The Medical Examiner provides case files, and meetings with various agencies determine victims' past engagements. The analysis assesses the percentage of victims with agency contact, identifies common agencies, explores overlaps, and correlates demographic traits with agency visits while maintaining privacy through data aggregation. Expected outcomes include revealing the percentage of 2021 fatal overdose victims with agency contact, the most engaged agencies, frequency of contact over five years, and potential demographic correlations. The findings inform relevant agencies on contact levels with potential overdose victims, aiding targeted interventions. The project's individual-level focus contributes a unique perspective to drug abuse intervention literature, potentially addressing gaps in existing research.

University of Central Florida (UCF)

121. Early Studies on the Effectiveness of Industrial Hemp as a Phytoremediator of Polluted Waters

Liliana Plata

Mentor: Dr. Kate Calvin

Fresh water lakes and waterways in Florida have been declining as the result of nutrient pollution. Large amounts of nitrogen and phosphorus from fertilizer, animal feed, phosphate mine events and human waste have been identified as major contributors to this decline. Industrial hemp (Cannabis sativa) has been shown to remove pollutants such as heavy metals and radioactive chemicals from polluted soil and this project is testing the effectiveness of industrial hemp in removing nitrogen and phosphorus from polluted water. The goal of this project is to grow plants that will survive when placed in impaired water long enough to pull out some of the excess nutrients. The hypothesis is that the excess nitrogen and phosphorus in the impaired host water will provide the nutrients needed for the plants' survival. The plant growing strategy used here conditions plants to seek water directly and three generations of plants have demonstrated the ability to survive with their roots submerged in water for over three months. Established EPA methods were used for segmented flow analysis of Total Kjeldahl Nitrogen (TKN), and Total Kjeldahl Phosphorus (TKP) in the water. Preliminary data show that over a period of 36 days and 12 samplings, five plant setups removed a total of 49.4% of the phosphorus provided and 53.0% of the nitrogen provided. Net contributions by the plants alone accounted for 62% of the TKN removed and 73% of the TKP removed. Additional trials are pending and nitrate/nitrite studies are underway.

South Florida State College (SFSC)

122. Preparation of Atomically Smooth SrTiO3 Substrate Surface

Monique Kubovsky

Mentor: Dr. Amlan Biswas

Using Atomic Force Microscopy (AFM), the surface of SrTiOâ‚ƒ (STO) has been observed and studied. Aside from STO having unique properties, such as superconductivity and quantum paraelectricity, the study of STO is also important because its perovskite structure allows it to be used as a substrate for thin film deposition. To use it as such, the material needs to have an atomically smooth surface that is singly terminated, which makes it optimal for good quality thin film deposition. SrTiOâ‚ƒ can have either a TiOâ‚‚-terminated surface or an SrO-terminated surface, which is significant because the termination type determines the order in which the atoms of thin films are deposited on the substrate and the composition and properties of the film. SrTiOâ‚ƒ having a TiOâ‚‚-terminated surface means that only the TiOâ‚‚ layer is exposed at the surface. The main aim of this project is the use of an annealing process to produce an atomically smooth, TiO2-terminated SrTiOâ‚ƒ surface that has a terraced structure with steps that are about the same height as the unit cells of the substrate. The experimental procedure includes ultrasonic cleaning, thermal annealing, and AFM. Looking forward we will use these substrates for thin film growth using pulsed laser deposition. This project is significant because it focuses on perfecting the two-dimensional interface between the substrate and thin film, which plays an important role in the properties of oxide thin films with implications in oxide electronics, where metal oxides are substituted for traditional silicon.

University of Florida (UF)

123. Public Perception of AI Integration in Healthcare: A Survey Study on US Citizens

Pranav Jambulingam

Mentors: Dr. Eric Levy and Dr. Monica Escaleras

In recent years, the revolution of artificial intelligence (AI) has taken the world by storm. From education to entertainment, the integration of AI has had many benefits on how we live our day to day, the potential to lower costs being most prominent. Healthcare is a sector in which AI has not had much entry due to its dependency on human-to-human interaction. To analyze US citizens' opinions on the integration of AI in healthcare settings, I designed a 17 question survey that was sent to various US citizens on Amazon Mechanical Turk. This resulted in 189 complete surveys. Important revelations have been revealed from this survey that could predict a promising future for AI in healthcare. From surgery to radiology, US citizens are hesitant to have AI alone fully control their medical procedures, but are increasingly open to AI's involvement in addition to a human. Surprisingly, the older the respondents were, the more open to AI being integrated into their healthcare. These results are essential for future healthcare workers looking into studying one of various fields of medicine as their prospective field may soon be obsolete. Radiology, for example, has become a field of medicine that US citizens have been far more amenable to with the use of AI. In order to better understand the future of AI, we need to understand how comfortable people are with AI in healthcare settings, and this study provides a basis for that understanding.

Florida Atlantic University (FAU)

124. Small Interfering RNA Treatment for Estrogen Affected MCF-7 Breast Cancer Homologous Recombinational Repair and Proliferation Pathways

Thomas Scott

Mentor: Dr. Robert Borgon

Breast cancer (MCF-7) alteration from synthetic small interfering RNA (siRNA) lead to inhibition of proliferating and repair mRNA. Introduction of estradiol (E2) dependent breast cancer cells cause enhancement of tumorigenesis and elevated mutation rate. Furthermore, the diagnostic testing of BRAC-1, BLM, RAD50, and Bcl-2 were identified with RT-qPCR and immunofluorescence microscopy for control and tumorigenesis baseline. Inoculation of siRNA into MCF-7 by transfection of E. coli with the lentivirus noncoding RNA expression vector was used for anti-cancer testing. These specific siRNA are made to inhibit the effects of cyclooxygenase-2(COX-2) because of upregulation from E2 and leads to the upregulation of human epidermal growth factor receptor 2(HER2). This study provides evidence for anti-tumorigenesis by inoculation of siRNA for inhibition of COX-2 and HER2 and decrease HRR gene degradation.

University of Central Florida (UCF)

125. Generating Novel Drug-like Diketopiperazine Structures via Biosynthesis

Skyeler Klinge

Mentor: Dr. Amy Lane

Living organisms utilize natural products for intercellular communication, making them critical for drug development. Natural products have played a pivotal role in the creation of numerous pharmaceuticals. With the immense diversity of microorganisms, they serve as a rich source for expanding our understanding of natural products. This project aims to create novel natural products that hold potential therapeutic applications and investigate their ecological functions. To achieve this, we employ a biosynthetic approach inspired by nature's toolkit, utilizing bacteria as efficient factories to produce novel druglike prenylated diketopiperazine (DKP) molecules. We hypothesize that a prenyltransferase enzyme from Streptomyces species ISL100 may be a useful tool for catalyzing prenylation of DKPs to yield druglike molecules. A library of 12 DKPs was screened to assess their potential for prenylation utilizing the ISL100 prenyltransferase. The resulting products were analyzed using LC-MS, providing compelling evidence for the successful generation of prenylated DKP compounds catalyzed by the ISL100 prenyltransferase. Our findings, supported by the LC-MS data, demonstrate the successful prenylation of all 12 DKP molecules. However, a few ambiguous results were observed, suggesting the presence of naturally occurring products within the generated mixture. Future endeavors will entail isolating these novel compounds and focus on determining the structure of these molecules by NMR. Additionally, we aim to assess their biological functions and explore their potential as drug candidates.

University of North Florida (UNF)

126. The Lived Experience of Culture Shock

Avary McCann

Mentor: Dr. Stefanie Morris

This qualitative study applies Giorgi's (e.g., 2009) method of phenomenological analysis to the phenomenon of culture shock. This phenomenological method was applied to six descriptions of culture shock in a social setting to define culture and the general structure of the lived experience of culture shock. The data revealed six common themes constituting the subjective experience of this phenomenon: 1) A sense of confusion of social scripts, 2) A feeling of incompetence when completing basic tasks, 3) An inability to relate to people in the new culture (feeling of separation relating to ingroups and outgroups), 4) A conflict of new and old expectations, 5) An interest due to perceived "strangeness" and, 6) A loss of security accompanied by a feeling of uncertainty as one loses their sense of culture. These findings are similar to Mumford's (1998) study on the measurement of culture shock and Xia's (2009) analysis of the impact of culture shock on individual psychology. Funder's (2019) chapter on cultural variations in experience, behavior, and personality was also used to define culture as it pertained to the data, providing the basis for the definition of culture shock as an infringement to an individual's schemas arising from cultural differences.

Ave Maria University

127. Planets in the Stars: The Line Between Inspiration and Stealing Through the Music of John Williams

Timothy Berthiaume

Mentor: Dr. Shannon Lockwood

Similarity is not equivalency. The line between stealing and inspiration in music is ambiguous and controversial. John Williams is a film composer who wrote music that created suspense in Jaws, wonder in E.T Extra Terrestrial, and adventure in the Star Wars franchise. The music within Star Wars rejuvenated the symphonic orchestra in film scoring, due to its grand and epic nature. However, scholars and fans alike have pointed out striking similarities in Williams' scoring to works of past composers, claiming that he was stealing the musical motifs, melodies, and even rhythms. Like Richard Wagner, Williams demonstrates his technical ability by creating "leitmotifs", for each of his characters that not only were unique in their setting, but were adaptable to the situation that they were presented in. Williams uses these motifs to create emotions and tell unique stories. When using similar rhythms to his predecessors, like Gustav Holst, Williams composed distinctive melodies in the foreground. He created tonality and form that had audiences humming his tunes when exiting the theater. Though similar in orchestration, Williams also created virtuosic colors that set out from the rest. Whether it is creating a piece that uses similar melodic lines, or even chord structure, in music, the transformation of previous composers' music is crucial to making a new and innovative piece. Williams adopted previous ideas and created his own style and mark on history.

Jacksonville University (JU)

128. Developing and User-Testing Educational Games for Literacy

Paul Grau Jr

Mentor: Dr. Angelos Barmpoutis

In our project, we developed and tested web-based educational games for literacy based on the UFLI Foundations curriculum developed by the University of Florida Literacy Institute (UFLI). The project involved digitization of the curriculum's lessons, sections, and world lists and the implementation of games in our web platform inspired by the prior work of Emily Laidlaw, a teacher in the state of Hawaii, who had previously created games for the curriculum with Google Sheets. We faced various design challenges including creating an interface suitable for K-2 students and

teachers, making our apps accessible across digital form-factors like desktops and tablets, and distributing it as a web application that could be easily accessed on any platform. After a small-scale user testing run that helped us improve our early prototype and understand how our users navigated through the product, we released it to the 90,000+ users of the existing apps developed through our partnership with the UFLI. We additionally released support for the cloud storage of custom word lists, allowing educators to create and access lessons with vocabulary beyond what was originally available within the curriculum, enabling teachers to extend the use of our program to topics including science and math. Currently, the website sees around 70,000 daily "hits" from students, teachers, and parents across the country. The initial stages of the project were completed through a CURE (Classroom Undergraduate Research Experience) class at the University of Florida. It is now maintained by the Digital Worlds Institute.

University of Florida (UF)

129. Extremely High Levels of Prior Exposure to Those Outside Your Race/Ethnicity May be Needed to Reduce the Cross Race Effect in Change Blindness and Correct Line-up Identifications

Siera Karnes

Mentors: Dr. Leilani Goodmon and Dr. Lisa Carter

Change Blindness refers to the process where people have difficulties identifying change within their visual field and surroundings (Simmons et al., 2002). The cross-race effect is the phenomenon in which eyewitnesses tend to be more effective in identifying members of their own race rather than members of a different race. The current purpose of the study was to identify if there is a difference in change blindness as a function of the perpetrator's race/ethnicity in a person swap-change blindness paradigm involving a crime. The experiment formed a single factor between-subjects design with perpetrator skin tone (dark - black, light - white) as the between-subjects factor and change blindness rates and correct line-up identification of the perpetrator as the dependent measures. Overall, the rate of change blindness was high in that 88% of participants failed to notice the change of perpetrator. In the light condition, significantly more participants exhibited change blindness (N = 30) than those who detected the change (N = 5), Ï‡2 = 17.86, p < .001. Thus, 85.71% of participants in the light condition exhibited change blindness. Similarly, significantly more participants in the dark condition exhibited change blindness (N=43) than those who detected the change (N=5), Ï‡2= 30.08, p<.001. Thus, 89.58% of participants in the dark condition exhibited change blindness.

Florida Southern College (FSC)

130. Comparisons and Combinations of Traditional Antimicrobial and Metal Nanoparticles for Agricultural Applications

Samuel Eastmond and Naileth Gesto

Mentors: Dr. Tom D'Elia, Megan Carroll, Nicholas Larson and Wayne Hunter

Citrus greening disease, or Huanglongbing (HLB), is caused by the transmission of the gram-negative bacterial pathogen Candidatus Liberibacter asiaticus (CLas) by the Asian citrus psyllid, Diaphorina citri. This disease impacts the phloem of citrus trees, making them unable to effectively transport nutrients, leading to crop failure and the eventual death of the tree. There is no known cure for HLB, and since CLas is not able to be cultured, the development of antimicrobial therapeutics is challenging. Current treatment options include application of the antibiotic oxytetracycline. This process raises concerns about environmental exposure and development of antibiotic resistance. Silver and zinc-based nanoparticles have also shown promise in treatment of HLB and in facilitating delivery of therapeutic compounds. We screened a panel of antibiotics (oxytetracycline, vancomycin, cefotaxime, and streptomycin) and silver and zinc nanoparticles against culturable CLas analogs Agrobacterium tumefaciens and Sinorhizobium meliloti to determine the minimum inhibitory concentrations (MIC). Our results confirm that oxytetracycline is most effective, with the lowest MIC for effective growth inhibition (0.156 and 0.313 ppm for A. tumefaciens and S. meliloti, respectively). Silver and zinc nanoparticles were less effective than the tested antibiotics. Previous work has indicated that oxytetracycline and silver nanoparticles work synergistically, resulting in lower MICs than when tested individually. Evaluation of the combinations of the antibiotics and nanoparticles from our panel, along with phytotoxicity assays, will provide insights to direct future treatments and minimize environmental and resistance risks.

Indian River State College

131. Had I Known How to Save a Life

Theo Chapuis

Mentor: Dr. Jonathan Matheson

Capital punishment itself is rather effective in its end: the assurance of a less criminal future. Whether based on retribution, deterrence, or simply ease, most views in support of the death penalty agree that criminals have no place among the public. Here, I think it safe to assume everyone — on both sides of the capital punishment discussion — agree people have a right to safety. This safety as it relates to capital punishment, though, becomes a question of whether that safety demands the execution of criminals or if the indefinite incarceration of them can do that same work. The answer to that consideration largely determines one's position on capital punishment. Here, I explain Ben Jones' arguments in "Death Penalty Abolition, the Right to Life, and Necessity". Having motivated the argument, I consider several objections concerning good faith efforts, culpability, modernity, and retribution and show that all the objections fail.

University of North Florida (UNF)

132. A Critical Discourse Analysis of Dobbs v Jackson in Conservative News

Uma Sriram and Rutwa Shah

Mentor: Dr. Shannon Carter

On May 2, 2022, a draft of the majority opinion by U.S. Supreme Court Justice Samuel Alito in the Dobbs v. Jackson Women's Health Organization case leaked to the public. The decision, finalized on June 24, 2022, overturned both Roe v. Wade and Planned Parenthood v. Casey, taking away the constitutional right to abortion. The Dobbs case quickly became the center of news media attention. Our study uses critical discourse analysis to analyze 160 news articles published on the Fox News website between 5/3/2022 and 12/31/2022, seeking to identify how the decision is presented in conservative news. The findings reveal that news articles present abortion as a highly polarizing issue between two divisive groups, one supporting and the other opposing Dobbs. Dobbs supporters are portrayed as charitable caregivers, who actively care and provide for mothers and children, protecting the dignity and rights of the unborn. Dobbs opposers are portrayed as angry extremists, who resort to vandalism and threats of physical violence. The

Dobbs decision itself is constructed as progressive and democratic, created by women for women based on the latest developments in science and religion. Conversely, Roe is constructed as male-dominated, sexist for devaluing motherhood and degrading work-life balance, antiquated, and anti-democratic.

University of Central Florida (UCF)

133. Engineering 3D Printed Tool for Relieving Body Tension

Mikylla Torralba and Wendy Jiang

Mentors: Dr. Mintoo Patel and Professor Garrett Lee

Many people in today's world suffer from uncomfortable tension in their bodies. This widespread issue affects daily lives and can lead to long-term health problems. While there is a wide variety of mass-produced relief tools designed as one-size-fits-all solutions, these tools are fit for only a fraction of the population that comprises of individuals with great variation in size. A personalized tension relief device will be a better option to cater to an individual's needs for tension relief. Having a customized device according to a person's body will improve the effectiveness of the device. To solve this problem, we propose to use a 3D printer and a computer-aided design to create a tension-relief prototype for alleviation along the upper to lower back, shoulders, hip flexors, and psoas muscles. We intend to utilize the SOLIDWORKS 3D CAD software to produce an efficient prototype with optimal results for the alleviation of muscles and tissue tension. A personalized design will be created according to an individual's body measurements. Factors such as weight, height, waist size, and body width can all affect the design of the relief tool's size and shape. The personalized product will be capable of soothing discomfort and tension along the upper body and hips. Due to its customization, the MEW-relief-toolTM will provide superior comfort and stress relief compared to generic, mass-produced products.

South Florida State College (SFSC)

134. Barbie Unboxed: A Feminist Critique of the Barbie Movie

Melanie Wright

Mentor: Dr. Jelena Petrovic

The Barbie (2023) movie has stirred up a conversation amongst its audience questioning the core purpose for the creation of the movie. In order to discover how the film promoted such conversations, I will be conducting a rhetorical feminist criticism of the Barbie (2023) movie. This study aims to identify the rhetorical strategies used in the Barbie (2023) movie to promote female empowerment by identifying gender roles and identifying with the audience through specific cinematic choices. I will address the uses of characters, settings, plot, and themes throughout the film that play a role in the scenes and elements of the film. I want to explore this more and how it contributes to the conversations on the representation of women in media and how it can invoke social change. Through the identification of these sorts of rhetorical strategies used in the Barbie (2023) movie and knowledge of feminist theories and scholars, I will be able to unpack how female empowerment is promoted and connected with the audience through these film choices.

Stetson University

135. Structural Studies of in vitro & Cell RNA Spliced Leader Sequences of the Red Tide Dinoflagellate Karenia brevis

Danielle Garzon and Alissa Stranberg

Mentors: Dr. Jackie Esquiaqui and Dr. Tina Batoh

Florida Red Tide is a harmful algal bloom of the marine dinoflagellate Karenia brevis. This alga produces a neurotoxin known as brevetoxin. The mRNA precursors of enzymes involved in brevetoxin synthesis undergo a maturation mechanism called spliced leader (SL) trans-splicing, which splices a 5' exon (the SL) from a small noncoding RNA (snRNA) to the 5' end of pre-mRNA sequences of different genes. Details of this mechanism, particularly how SL RNA structure and dynamics impact transcription and splicing, are limited but could provide important insight to understanding the critical steps within the K. brevis life-cycle and toxin production at the molecular level. To study structure and dynamics of K. brevis SL RNAs, two approaches have been used: generation of in vitro RNA via molecular cloning, and isolation of cellular RNAs from K. brevis cultures. The in vitro SL RNA has been successfully generated and studied using electrophoretic mobility shift assays to assess the impact of various environmental conditions on structure. Additionally, K. brevis cells were successfully cultured and total cell RNA was extracted in yields high enough for visualization and sufficient for future studies of mRNA structural dynamics. The two-pronged approach of in vitro and in vivo analysis of trans-splicing in K. brevis will allow for rigorous testing of molecular and cellular mechanisms of brevetoxin production under various environmental conditions.

Palm Beach Atlantic University

136. Detection of Postharvest Quality of Fresh-cut Lettuce Using Hyperspectral Imaging

Qiaowen Chen

Mentor: Dr. Tie Liu

The shelf life of fresh-cut vegetables and fruits, such as lettuce, is influenced by various factors including environmental stresses and developmental regulation. These factors can affect the lettuce's quality, safety, and how long it remains suitable for consumption. The preservation of freshness and shelf life are critical components of lettuce cultivation. This project aims to examine factors affecting the shelf life of lettuce cultivar through physiological and biochemical analyses and image-based machine learning approaches. Multiple approaches are being conducted, including water loss/weight measurement, color measurement, chlorophyll and antioxidant level measurement as well as hyperspectral imaging (HSI), to comprehensively monitor the senescence of ten lettuce cultivars. By seeking connection between biological data of the lettuce and HSI analysis, this study seeks to identify characteristic features of fresh-cut lettuce during postharvest storage. Thus, the development of more effective methods for lettuce breeding and postharvest quality management.

University of Florida (UF)

137. Crystal Structure and Dielectric Properties of Aurivillius type: Bi3-xLaxFe0.5Nb1.5O9

Amanda Jessel

Mentor: Dr. Michael Lufaso

This research project involves the synthesis and characterization focusing on the substitution of lanthanum for bismuth in the series Bi3-xLaxFe0.5Nb1.5O9 from $0 < x < 1$ for its potential use in low temperature co-fired ceramics

(LTCC). Bi3-xLaxFe0.5Nb1.5O9 (0 < x < 1) was synthesized using conventional solid-state techniques and its crystal structure was refined by the Rietveld method using x-ray powder diffraction data. This mixed-metal oxide presents an Aurivillius-type structure adopting an orthorhombic A21am space group, in which the lattice parameters changed anisotropically with increasing x. Dielectric constant and loss show a tunable increasing trend. The dielectric constant falls within the range of 20-30 at 1 MHz. La-substitution resulted in a similar, positive, temperature dependance, suggesting this compound is not chemically tunable to be temperature independent. Future research will include additional temperature and frequency dependent measurements to determine if there is ferroelectric behavior.

University of North Florida (UNF)

138. LDs and SUDs

Melony Orbach

Mentors: Dr. A.J. Marsden and Dr. Nicoletta Nance

Little is known about the exact connection, if any, learning disabilities have with substance use. There has been little research that examines if the type of learning disability, (i.e., autism spectrum disorder [ASD], dyslexia, dysgraphia, processing disorder, etc.) save for Attention-deficit/ hyperactivity disorder [ADHD], has any impact on the rates of substance use, and, if so, how much of an impact there is. The current study interviewed nine college participants at Beacon College. All participants have been diagnosed with a learning disability. Interviewees were asked questions that were created/adapted from a series of modified questions from the Cutting Down, Annoyance by Criticism, Guilty Feeling, Eye-openers Questionnaire [CAGE Assessment] and the Substance Abuse Subtle Screening Inventory [SASSI-4]. Microsoft Excel was used to examine the current study's research question as to how having a learning disability may or may not impact substance usage in college students. A word cloud was also generated using the program Word It Out. Additionally, while nine individuals were interviewed, one of the data sets had to be discarded. Based on the results of this study, it is clear that further research is needed. Implications and limitations are discussed.

Beacon College

139. 'Bioprinting Applications for Functional Hepatocytes Cultured in 3D on Novel Microfiber Scaffolds

Vivienne Zacher

Mentor: Dr. Jamel Ali

Advances in liver tissue engineering offers solutions for the increasing demand for model in vitro liver systems and transplantable organs. Currently, a key challenge in liver engineering lies in expanding functional hepatocytes, parenchymal cells of the liver, in a three-dimensional (3D) culture system for prolonged durations. We hypothesize a novel cationic microfiber system will enhance the growth of hepatocytes and their function compared to two-dimensional (2D) culture methods. A human hepatocyte cell line, THLE-2, was cultured in both 2D and 3D. Utilizing brightfield, epifluorescence, and scanning electron microscopy, we examine cell morphology and cell-matrix interactions. Live/Dead assays are used to evaluate cell viability and proliferation. Hepatocyte cells cultured on 2D surfaces show significant reduction in cell growth after seven days; however, 3D cell cultures remained viable for over 20 days. Additionally, we explore integrating the novel fibrous matrices into alginate-based hydrogels for extrusion-based 3D printing of liver tissue. Performing a series of bulk rheological measurements, we evaluate the viscoelastic properties of biomaterial-infused hydrogels. We confirm the ability of the biomaterial-incorporated hydrogel to extrude into grid-like structures. Quantitative measurements of hydrogel printability indicates that specific printing parameterâ€“hydrogel formulations are optimal. This research illustrates the potential of a 3D cationic microfiber system for long term hepatocyte expansion and bioprinting. These results are promising for the development of printable 3D liver tissue for future applications, both in vitro and in vivo.

Florida State University (FSU)

140. Identifying Distinct Molecular Features of RIP2 Linked to ALOX5 Activity and Function

Vishanth Murugesan

Mentor: Dr. Justine Tigno-Aranjuez

Receptor-interacting serine/threonine protein kinase 2 (RIP2) is a kinase that plays a critical role in nucleotide-binding oligomerization domain-containing protein 1 and 2 (NOD1 and 2) signaling pathways. Agonism of NOD1/2 proteins by bacterial peptidoglycan results in activation of RIP2 which, ultimately, triggers NF-kB activation and the secretion of pro-inflammatory cytokines. Our laboratory has discovered that RIP2 also promotes the enzymatic activation of 5-Lipoxygenase (ALOX5), an enzyme important for the production of lipid mediators. The purpose of this project is to determine the molecular mechanisms by which RIP2 activation influences ALOX5 activity. Interaction of RIP2 with the X-linked inhibitor of apoptosis protein (XIAP) has been demonstrated to be crucial for NF-kB activation and cytokine production. However, how the RIP2:XIAP interaction influences ALOX5 activation is unknown. We used transient transfection, cellular fractionation, SDS/PAGE and Western Blotting to assess the effects of RIP2:XIAP interaction on ALOX5 activating phosphorylation. Our results so far indicate that disrupting RIP2:XIAP interactions maintain or enhance RIP2-mediated ALOX5 activation. Understanding the mechanisms by which RIP2 influences ALOX5 can be helpful in the design, development and testing of RIP2 inhibitors for use in inflammatory diseases.

University of Central Florida (UCF)

141. How Does Artificial Grape Flavor React with the Cilantro Gene?

Sally Clavell, Edward Romero, Aakanksha Pathak, Justin Bolt and Kara Lane-Lightfoot

The group is surveying 100 people in Tallahassee to understand the Cilantro Gene (OR6A2) better. This gene connected to taste causes cilantro to taste like soap. We are studying the effect of artificial grape flavoring on this gene and whether it causes a difference in flavor. For those who do not have the cilantro gene, studies show that artificial grape flavoring would be less desirable because it is overly sweet. This will be tested through surveying and observation. When experimenting, the group will go out in the Tallahassee area and randomly select people in Tallahassee. This experiment will provide each subject with a grape, cilantro, and grape jolly rancher. Allowing them to answer questions after each item. That way, each question is answered without bias or prior knowledge of the questions for each item. This experiment is important because it would better understand the cilantro gene, OR6A2, and how it reacts to other flavors. This information can help further study the gene and how it affects everyday life.

Tallahassee Community College

142. Conflict, Comparison, and Reality TV: An Examination of the Relationship Between Media Viewing Habits and Romantic Relationships

Riley Curie

Mentor: Dr. Martin Heesacker

This study tested whether the more someone reported watching the romantic reality competition show Love Island the more they would (a) believe more strongly that disagreement is destructive in romantic relationships, (b) report more emotional conflict in their romantic relationship, and (c) report engaging in more conflictual relationship behavior. These effects were hypothesized (d) to be strongest for participants who reported they had never been in a romantic relationship and weakest for participants reporting they are currently in one. Participants were predicted (e) to engage in downward social comparison with Love Island contestants, especially study participants currently in romantic relationships. Online survey data were collected from 242 visitors to one of several Love Island social media platforms and analyzed using IBM's SPSS statistical software. Watching Love Island was positively correlated with self-reported relationship conflict, and with self-reported emotional conflict in romantic relationships and uncorrelated with beliefs about whether conflict is destructive in romantic relationships. Only six participants reported never being in a relationship, so the relationship status hypothesis could not be validly tested, but generally, those currently in a romantic relationship produced weaker viewing effects. Viewers downwardly compared themselves to Love Island contestants, but the effect was small and did not differ by relationship status. These findings suggest viewing Love Island is linked to relationship conflict, more for those not in a romantic relationship. Future research can determine whether Love Island viewing increases conflict beliefs, or conflict beliefs drive viewing, or whether a third variable, such as neuroticism, accounts for the relationship.

University of Florida (UF)

143. Too Fast and Too Furious: The Rise of the Hollywood Blockbuster

Gabrielle Whyte

Mentors: Dr. Scott Ferguson, Dr. Todd Jurgess and Dr. Alexander Ponomareff

"Too Fast and Too Furious: The Rise of the Hypermasculine Blockbuster" provides a formal analysis of Rob Cohen's The Fast and the Furious (2001) through the lens of sociopolitical contexts in late 1900s American political society, in order to demonstrate how media aids in the recreation of cultural subjectivities in the wake of drastic changes to socio-political identities. Drawing from literature based in third and second wave feminism, mythopoetic men's movement and Malin's "American masculinity under Clinton: Popular Media and the Nineties "crisis of masculinity"", this paper orients itself within the context of socio political movements which demanded a change in the American cultural definition of masculinity. The paper seeks to identify and explain how The Fast and the Furious utilized common blockbuster aesthetics to provide a novel image of masculinity, assisting the 21st century man with navigating new demands of masculinity while simultaneously holding on to hegemonic sensibilities. In a term coined as "the hypermasculine blockbuster" author Gabrielle Whyte explores the film's formal aesthetics notable distinction from Susan Jeffords' "hardbody blockbuster", and as a site of tense negotiations between progressive and traditional ideas of masculinity as a responsive model for masculinity during the cultural transition to the 2000s.

University of South Florida (USF)

144. Course Modality and Stress in College Students

Knatasha Beck, Navah Aaronson-Barr, Jade Brown, Crystal Moret, Griselda Guavara Lino and Julian Mascarella

Mentors: Dr. Jessica Kester, Dr. Amy Osmon and Dr. Jeff Zahnen

Higher education has undergone a significant transformation in course modalities over the last decade. This shift has been largely influenced by the COVID-19 pandemic (Tarkar, 2020). In the post-COVID-19 era, there remains an unexplored connection between the changes in post-secondary education modalities and self-reported stress levels among college students. This study aimed to evaluate the relationship between course modality and self-reported stress among Daytona State College students post-COVID-19. The researchers surveyed 112 Daytona State College students using a modified version of the Perceived-Stress Scale (Cohen et al., 1983) to examine the relationship between course modality and the self-reported stress levels among Daytona State College students. The results of the study indicate that students enrolled in a combination of face-to-face and online courses self-reported the highest levels of stress compared to students primarily enrolled in one modality. Findings in the sample were found to be statistically significant and applicable to the population of Daytona State College students. The researchers' findings suggest that stress among students enrolled in a mixture of modalities is specifically related to navigating both modalities simultaneously, and not solely attributed to a specific learning format.

Daytona State College

145. Development of Manganese (II) Sulfide Nanoparticles for Pierce's Disease Management

Yael Faroud

Mentor: Dr. Swadeshmukul Santra

Pierce's disease, induced by the bacterium Xylella fastidiosa, has significantly impacted the grapevine industry's economy, causing an estimated loss of $30 millions in income. Pierce's disease leads to leaf scorching, discoloration, and dryness, leading causing irregular maturity in the infected plant. Managing the disease has proven to be challenging, as there is no cure once a plant gets infected. Recent studies indicate that nanoparticles can inhibit Xylella fastidiosa in perennial crops. Further investigation into Xylella fastidiosa reveals its sensitivity to hydrogen sulfide, which disrupts the bacterium's cellular processes. Transition metal sulfide nanoparticles are commonly used in the semiconductor industry; however, they are very insoluble and produce minimal sulfide ions when suspended in water. Despite its general insolubility, manganese (II) sulfide is over a million times more soluble than other metals within its same group. Consequently, manganese sulfide nanoparticles were designed and synthesized using a scalable co-precipitation method as a potential treatment for Pierce's disease. Manganese (II) sulfide nanoparticles (~80 nm) were successfully characterized in their colloidal state using Dynamic Light Scattering (DLS) and in their dry state using Scanning Electron Microscopy (SEM). The crystal structure was confirmed via X-ray diffraction, and its spectrophotometric properties were assessed through Ultraviolet-Visible (UV-Vis) Spectroscopy. We hypothesize that manganese (II) sulfide nanoparticles can improve the foliar absorption of sulfide ions while minimizing phytotoxicity, offering an effective management of Pierce's disease.

University of Central Florida (UCF)

146. Thermoregulatory Color Change in Anolis Carolinensis

Serena Price

Mentor: Dr. Robert Guralnick

Anolis carolinensis, commonly known as the green anole, is the only species of anole native to the United States. Like others within the genus, A. carolinensis is capable of voluntary color change, dorsal coloration can change rapidly between shades of green and brown using organelles called melanophores. However, it is highly debated the adaptive purpose of these color shifts, and studies have been conducted on the species on this subject since the early 20th century. Early studies suggest that the change in coloration serves as camouflage in varying levels of light, while later studies contest that voluntary color change is a form of social behavior to signal dominance, and others have hypothesized a thermoregulatory purpose with brown being more absorbent of heat. The purpose of voluntary color change in A. carolinensis remains unclear because newer and older studies tend to conflict with one another. Additionally, many of these studies were conducted on a small sample of male A. carolinensis in a lab setting. The lack of consensus on the purpose and use of color change in A. carolinensis provides a unique opportunity to investigate the adaptations of a native lizard. This study aims to take a novel approach to investigate the purpose of voluntary color change in this species. By pairing the iNaturalist database with climate metadata, AI computer vision, and AI analysis, the study investigates whether voluntary color change serves a thermoregulatory purpose in Anolis Carolinensis.

University of Florida (UF)