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**STETSON SHOWCASE XXV**

**Collaboration, Connection, Creation**

**APRIL 11, 2023**

***A Celebration of Achievement at Stetson University***

**About the Undergraduate Research and Creative Arts Symposium Showcase:**

Welcome to the twenty-fourth anniversary of Stetson Showcase. This event, with its debut in 1999 and former names of Undergraduate Scholarship and Performance Day (USAPD) and later Undergraduate Scholarship Day (USD) and Stetson Undergraduate Research and Creative Arts Symposium (SURCAS), has grown to be one of the oldest and most distinctive comprehensive Undergraduate Research Days in the United States. Our theme this year, Resilience, Resurgence, Revival, expresses the hope we feel that undergraduate research and creativity will strengthen as barriers lift and we come together once again. You are free to go in and out of sessions all day, attend a music recital, see the art exhibit, and in the evening, listen to Dr. Christopher Roellke, President of Stetson University.

**JUDGING CRITERIA AND PRIZES:**

Each group of judges for each specific location will be deciding among themselves appropriate and consistent criteria that will help them decide which presentations were most effective. In general, students are asked to discuss their projects at a level that anyone not knowing the area can understand. Part of an effective presentation is effective communication, and the judges keep this as consistent criteria for choosing the best presentation for all involved. The winners of each of the locations or poster sessions will receive a Maris Prize of $200 and a certificate of excellence. Eligible pre-selected candidates will also be judged for the Dr. Leonard Nance Award for Excellence in Social Justice Research.

**ARTWORK AND PHOTOGRAPHY**

The poster art has been designed by Diana Rodriguez Allende ’23, Caitlyn Alvarado and Katie Kraft ’23. The cover art was designed by Amalie Kurlander, a senior at DeLand High School as part of her IB diploma requirements. The artwork emphasizes the complications and challenges of creative collaborations and interconnections in research and creative activity.

**Cultural Credit:** A maximum of three cultural credits can be earned for the symposium event. At each venue, students must take a QR code photograph at the end of a presentation. Cultural credit will require three QR codes logged. Cultural credit can also be earned by attending the Keynote address in the early evening.

**THE 2022 JUDGING PANEL:**

Rina Arroyo, Chief of Staff & Senior Development Officer,

Dr. Elizabeth Boggs, Instructor, Honors Program

Jennifer Certo, Executive Assistant to the Vice President of Campus Life and Student Success,

Dr. Corie Charpentier, Assistant Professor of Biology

Stacy Collins, Executive Director of Career and Academic Services

Dr. Elizabeth Congdon, Associate Professor of Biology, Bethune-Cookman University

Dr. Natalia Da Silva, Director, Hand Art Center

Dr. Christopher Ferguson, Professor of Psychology

Terry Grieb, Assoc Professor Emeritus of Instructional Media

Dr. Melinda Hall, Associate Professor of Philosophy

Bud Hanson, Asst. Professor of Practice/Executive Director PACE,

Dr. Lyda Kiser, DeLand Campus Executive Director & Title IX Coordinator, Campus Life and Student Success

Cory Lancaster, Assistant Vice President of University Marketing Media Relations,

Dr. Alexander Martin, Assistant Professor of Music Theory

Dr. Delphine Pinet, Assistant Professor of Practice, Dept. of Chemistry

John Riggs, Professor of Practice Director of Centurion Sales

Alicia Scott, Director of Internal Communications

Dr. Rajni Shankar-Brown, Professor and Jessie DuPont Ball Chair of Social Justice Education

Dr. Matthew Shannon, Assistant Professor of Chemistry

Dr. Amy Smith, Assistant Professor of Education

Dr. John Tichenor, Associate Professor of Management

Akeem Todman, Director of Diversity & Inclusion / Community Engagement & Inclusive Excellence,

Dr. Meg Young, Instructor of Management

**PROGRAM**

**POSTER PRESENTATIONS**

**Brown Hall of Health and Innovation**

Dr. Kevin Riggs, Morning Session Chair

Dr. Melissa Gibbs, Afternoon Session Chair

**Judges**

Morning I: Dr. Amy Smith, Dr. Christopher Ferguson

Morning II: Dr. Rajni Shankar-Brown, Dr. Elizabeth Boggs

Afternoon I: Alicia Scott, Stacy Collins; Rina Arroyo

**Morning I (9 a.m. – 12 p.m. )**

**P-1 Grayson Taber** Imaging Early Developmental Stages of Butterfly, *Vanessa cardui*

**P-2 Emily Shamis and Colby Witts** Progress in Synthesis of SINE Drug Targets via an Enolate Reaction

**P-3 Maral Paleski** The effectiveness of entomopathogenic fungi Beauveria bassiana at killing two-spotted spider mites (*Tetranychus urticae Koch*)

**P-4 Brian Modica** Wastewater Surveillance of SARS-COV-2 and Polio in Central Florida

**P-5 Jazlyn Garcia** Parasite Diversity in Introduced Cane Toads (*Rhinella marina*) in Florida

**P-6 Cassandra Krajnyk** Deviant Behavior, Cyber-Deviance, Morality, and Differential Association Relationships in College Student

**P-7 Brianna Hall** Does the addition of live mycorrhizal fungi roots affect the growth or morphology of *Zea mays* roots?

**P-8 Jan Vandermark** Water Lettuce Seeding in Florida

**P-9 Brandon Evans** Effects of competition and fire suppression on the growth of two sandhill understory plants, *Aristida stricta* and *Pityopsis graminifolia*

**P-10 Leán Lategan** Exploration of the Heat Energy Transferred and Efficiency of Heat Retention in Commercialized Solar Ovens

**P-11 Cassandra Clayton** The Effects of Habitat Type on the Prevalence of *Borrelia Burgdorferi* in Rodent Reservoirs

**P-12 Kari Olson** Get Pissed, Destroy!: *Never Mind The Bollocks*, Catharsis, and the Poetics of Punk Rock

**P-13 Matea Susac** Analyzing he Effect of a Point Mutation on The Plasma Membrane Fusion Protein Prm1p in *Saccharomyces cerevisiae*

**P-14 Brianna Michalski** Native Potential of *Pistia Stratiotes* in Florida using Surface Samples and a Discussion on its Benefits

**P-15** **Gabrielle R Irons** Effect of Glyphosate and Glyphosate-Based Herbicides on Apoptosis in Caco-2 Cells

**P-16 Kelcey Lidy** The Impacts of Reclaimed Water Storage on Pond Health

**Morning II (9 a.m. 12 p.m.)**

**P-17 Margaret Struble** The effect of hypoxia on apoptotic pathways in SKBR3 breast cancer cells

**P-18 Charlotte Kraft** Sargassum as a transport vector for marine plastics onto shores

**P-19 Kailyn Douglas** Intestinal and Fecal Parasitology in Central Florida Rodents

**P-20**  **Tyler Clark** Holding the Temperature of a Cryostat Constant using the Arduino PID Libraries

**P-21 Brendan Thanasiu** Exploration and documentation of the Lake Beresford Springs

**P-22 Ian Sisto** How do size and sex make Cuban Tree Frogs susceptible to parasitic infection by the pentastome *Raillietiella orientalis*?

**P-23 Casey Ramey** Kinesthetic interpretation at Blue Spring State Park

**P-24 Alexis Oliver** Maternal Size does not Impact Larval Size or Behavior in the Species *Aratus pisonii*

**P-25 Olivia Turull** Attitudes and beliefs on complementary and alternative medicine in Stetson intercollegiate athletes

**P-26 Faith Hannah Lea** Is *Babesia microti* Prevalent in Illinois Rodent Populations?

**P-27 Carolyn Koch and Hannah Collins** Wastewater Surveillance and Whole Genome Sequencing on SARS-CoV-2 and Poliovirus in Volusia County

**P-28 Xavier M. Inosencio** Measuring Stellar Magnitudes and How Light Pollution Affects the Night Sky

**P-29 Kaylee Gibson and Tyler Schwarz** Wastewater Surveillance: Detection and Quantification of SARS-CoV-2 and Polio RNA with RT-qPCR and Whole Genome Sequencing

**P-30 Michael Stephen Diotalevi** Displacement, Kleptoparasitism, and Foraging Behavior in the competitive relationship between *Thamnophis sirtalis* and *Thamnophis sauritis*

**P-31 Madeline Bell** Transforming Trash to Treasure:Various Composting Methods and Their Use in a Teaching Garden

**P-32 Paolo Teodorescu** How the political elite affects public opinion: Florida's response to the COVID19 pandemic

**Afternoon I (1 p.m.-4 p.m.)**

**P-33** **Stanstorme Sewe** Effects of Species type on *Mycorrhizae* Abundance

**P-34 Lauren Radesi** Exploring the Effectiveness of Virtual Reality Nature Therapy

**P-35 Gabriela Molina** Photobehavior of the mangrove tree crab, *Aratus pisonii*, in the first zoeal stage of larval development

**P-36 Corinna Lunsford** Zooplankton Abundance in Relation to Chlorophyll Content in Lake Beresford

**P-37 Dylaney Sabino** Investigating The Daisy Patch Using Max Gen~

**P-38 Breanna Karon Parents’ and Peers’ Influences on Risky Drinking Behaviors**

**P-39 Hali’a Locke-Nascimento** Bluegills Locomotive Behaviors in Hypoxic Conditions

**P-40 Kinsey Bella Higgins** The Effects of Ostracism and How We Cope on Mental Well-Being

**P-41 Matthew William DiMinno** Examining the effects of Cyclin-Dependent Kinase (CDK) Inhibitor R-547 in AsPC-1 pancreatic cancer cell cycle regulation and proliferation

**P-42 Mollie Sioux James** The Potential Effectiveness of Vertical Rain Gardens in the Mitigation of Stormwater Runoff and Pollution

**P-43 Renier Pupo** The effects of epithelial jamming geometries on tissue max tensile strength and max tensile strain

**P-44 Brianna Walker** The Ever-Changing but Horrifically Constant Eugenics Movement in 20th Century America

**P-45 MacKenzie Stellrecht** Fish Abundance, Species Diversity, and Species Richness Correlating with Increasing Water Levels Within Blue Springs

**P-46 Sarah Grimes** NRG Increase Hypertrophic Growth in Cardiac Myocytes

**P-47** **Alijah Santos** A computational model for predicting taste reactivity behaviors of rats from Fos-immunoreactive neuron counts

**P-48 Kayle Cunningham** Diversity of parasites in central Florida rodents: *Neotoma, Sigmodon*, and *Peromyscus*

**ART PRESENTATIONS AND EXHIBITIONS**

**Homer and Dolly Hand Art Center**

*1:00 pm-4:00 pm*

*Dr. Dengke Chen, Session Chair*

*Judges: Jennifer Certo, Dr. Natalia Da Silva*

**HAND ART CENTER GALLERY**

**ART-1** 12:00-12:15 **Samantha Berman** VOYEUR

**ART-2** 12:20-12:35 **Layla Gonzalez** Sell Yourself Short

**ART-3** 12:40-12:55 **Marisa Luz Ingram** Suspension

**ART-4** 1:00-1:15 **Mali Morgan-Elliott** Untitled

**Break** 1:15-1:30

**ART-5** 1:30-1:45 **Mario Saponaro** Eternity Doesn't Last Forever

**ART-6** 1:50-2:05 **Brittney Pflanz** Camping in Space: A Look at Narrative in the Music of Outer Wilds

**ART-7** 2:10-2:25 **Hallie Martin** The Venus de Milo: A Case Study of the Persistence of Classical Fascination

**ART-8** 2:30-2:45 **Leah Marisi** Displaying Polychromatic Forms of Greek Antiquity Sculpture

**ART-9** 2:50-3:05 **Lily Paternoster** Uneasy: Commodification of Jean-Michel Basquiat

**Break** 3:05-3:15

**ART-10** 3:15-3:30 **Joshua Camden** The Show Must Go

**ART-11** 3:35-3:50 **Sara Cook** Enchantment Village

**JUNIOR MUSIC RECITALS**

**Lee Chapel, Elizabeth Hall**

*9:00 am-4:00 pm*

*Recital Manager: Dr. Chadley Ballantyne*

*Judges: Dr. Jamie Clark, Dr Alexander Martin*

*Repertoires are to be found in Abstracts at end of program*

**M-1** 9:00-9:30 **Sara Pyburn** Clarinet

**M-2** 9:45 -10:15 **Nidia Gevera-Nolasco** Voice

**M-3** 10:30 -11:00 **Maria Almonte** Voice

**M-4** 11:15-11:45 **Diana Quintero** Voice

**11:45-12:45 Lunch**

**M-5** 1:00-1:30 **Peter Lorenzo** Voice

**M-6** 1:45-2:15 **Isabel Barbato** Voice

**M-7** 2:30-3:00 **Joseph Parr** Organ

**ORAL PRESENTATIONS – SESSION A**

**25 Library Auditorium – Media Center**

*8:15 am-4:00 pm*

*Laura Kirkland, Morning Session Chair*

*Dr. Ken McCoy, Afternoon Session Chair*

*Judges: Dr. Melinda Hall, Dr. Meg Young*

**GENDER AND EQUITY**

**A-1** 9:00-9:15 **Julian Navarro** A Rhetorical Analysis of Lady Gaga's Representation as a Goddess to Herself and Marginalized Groups

**A-2** 9:20-9:35 **Rania Harrara** From Grassroots to Global: A Journey of Advocacy in UN Spaces

**A-3** 9:40- 9:55 **Dylaney Sabino** The Creation of an Accessible Stage Performance

**A-4** 10:00-10:15 **Anna Whitaker** Nineteenth Century Ideals of Masculinity and Savagery: Adventure Piracy Works in Victorian Art and Literature

10:15-10:25 **BREAK**

**A-5** 10:25-10:40 **Rachel Gordon** Gone With The Wind, A Rhetorical Analysis On Scarlett O’Hara and the Confederate South

**A-6**,10:45- 11:00 **Xanthippe A. Pack-Brown** Let Women Love: A Cross Examination of Sapphic Relationships in Fantasy and Reality

**A-7** 11:10-11:25 **Carlye Mahler** Dishing up Feminine Icons: The Business of Communicating Roles in The Post-War Kitchen

**11:45-1:00 LUNCH**

**MODERN STRESS IN A COMPLEX WORLD**

**A-8** 1:00-1:15 **Isabella DeRienzo** Entangled: Navigating the Complexities of Online Dating, Social Captial, and Self-Presentation in a Small College Community

**A-9** 1:20-1:35 **Avery Samuel**s How does the Perceived Relationship with a Coach Affect Student Athlete’s Mental Health?

**A-10** 1:40-1:55 **Kelly Zarembski** The Effects of Movement Therapy on the Motor Functions of Children with Autism

**A-11** 2:00-2:25 **Ashley Hew, Joshua Camden, Joshua Dennis, William Jackson Grey, Avery Heck**

Break the Cycle: A Conversation on Bridging Generational Gaps through an Empathetic Lens

2:25-2:35 **BREAK**

**A-12** 2:35-2:50 **Faith Williams** Clock-in Online: Social Support and Chronic Stress Prevalence as Moderators in Media and Stress Relationship

**A-13** 2:55-3:10 **Chase Sabari** Therapeutic Rehabilitation

**A-15**, 3:15-3:30 **Alyssa Pavek** Illusions of Progress: Action-Fakers, Procrastinators, and Precrastinators Differing in Productivity and Problem-Solving

**ORAL PRESENTATIONS - SESSION B**

**John E. Johns Room 315, Elizabeth Hall**

*9:00 am-3:30 pm*

*Sidney Johnston, Morning Session Chair*

*Grace Kaletski, Afternoon Session Chair*

*Judges: Dr. Lyda Kiser, Cory Lancaster*

**NATIONALISM**

**B-1** 9:00-9:15 **Catherine Kraft** Speaking of Dictators: Stalin's Soviet Union, Mao's China, and the Language of Personality Cults

**B-2** 9:20--9:35 **Madison Sepiol** Defining “Russianness”: A Comparative Analysis of Nationalist Views in the Russian Orthodox Church and Rodnoverie

**B-3**, 9:40-9:55 **Katie Wedderstrand** ‘”I wish you would throw that bone out of the window”: The Bone Wars and Cultural Nationalism in the late Nineteenth Century

**B-4** 10:00-10:15 **Breanna Del Buono** Repatriation: National Solutions to an International Debate

10:15-10-25 **BREAK**

**CONFLICT, WAR AND NEGOTIATION**

**B-5** 10:30-10:45 **Mary Brandt** United States and China: Cybersecurity and Cyberwarfare in the 21st Century

**B-6** 10:50-11:05 **Alexa K. McDonough** Legacies of War: The Church and State in Argentina

**B-7** 11:10-11:25 **Devin Hernandez** Re-Examining the Siege of Constantinople (1453)

**11:25-12:30 – Lunch**

**B-8**, 12:30-12:45 **Alexis Diamond** Words of a Demagogue: A Rhetorical Study of Putin's Rhetoric in the Russo-Ukrainian War

**B-9** 12:50-1:05  **Payton Hayes** Social Learning and Deviance among collegiate athletes

**B-10** 1:10-1:25 **Della Vaughan** The Bard: A Means of Cultural Diplomacy for the Soviets

**B-11** 1:30-1:45 **Evelyn Wysong** The Effects of Political Commentary on Aggression, Political Tolerance, and Political Polarization

**B-12** 1:50-2:05 **Charles Isaac Drummond** The Responsibility of War

**B-13** 2:10-2:25 **Jackson Frank** How Historical Tone Can Break the Barrier of Historical Learning: Historical fiction and the end of the Napoleonic era

**ORAL PRESENTATIONS – SESSION C**

**257 Sage Hall**

*9:00 am-4:00 pm*

*Dr. Jeremy Posadas, Morning Session Chair*

*Dr. Emily Mieras, Afternoon Session Chair*

*Judges: Terry Grieb, Akeem Todman*

***COMMUNITY BASED RESEARCH***

**C-1**, 9:00-9:15 **Alice Quinlan** The Role of Public Libraries

**C-2**, 9:20-9:35 **Chanel Gerena** Filling Gaps Caused By The Cycle Of Chronic Homelessness

**C-3**, 9:40-9:55 **Courtney Cormier** The Necessary Restoration of La Casa Cultural Latina

**C-4**, 10:00-10:15 **Pearl Daskam** How to Identify a Community Partner

10:15-10:30 **BREAK**

**C-5**, 10:30-10:45 **Jacob Robinson** Summer Travel Courses: Recognizing Community Engagement in Environmental Sciences

**C-6** 10:50-11:05 **Grace Herzog and Mallory Holland** Patient Outreach: How to Effectively Market to Uninsured Populations

**C-7**, 11:10- 11:25 **Evans Asuboah** Redesigning Black Home Schoolers of Central Florida's Website for Improved User Experience and Increased Donations

**11:25-1:00 LUNCH**

**C-8**, 1:00-1:15 **Hosanna Folmsbee** Right to Nutrition: Hispanic Health Initiatives Food Pantry Program

**C-9** 1:20-1:35 **Lisa Jordan** Do Kids Really Hate Learning, or Do They Just Need To Be Engaged?

**C-10**,1:40-1:55 **Selene Chancellor** Hatters University

**C-11** 2:00-2:15 **Chloe Washington** K-Kids: Improving Student Engagement and Participation

2:15-2:25 **BREAK**

**C-12**, 2:25-2:40 **Noureen Saeed** *Creative Compass*: The Role of Music and Art in Fostering The Emotional Well-Being and Improving The Social Skills of K-5 Children

**C-13**, 2:45—3:00 **Madeline Morrow** The Uninsurance Epidemic: A Barrier to Access of Community Care

**C-14**, 3:05-3:20 **Analee Monrreal** Effects of Farm-related Risks and Exposures: Evaluating Environmental Injustice on Farmworkers in Pierson, Florida

**ORAL PRESENTATIONS – SESSION D**

**Room 213 Sage Hall**

*8:30 am-4:00 pm*

*Dr. Jean Smith, Morning Session Chair*

*Dr. Harry Price , Afternoon Session Chair*

*Judges: Dr. Delphine Pinet, Dr. Elizabeth Congdon*

***SCIENCE ACROSS THE SPECTRUM I:***

**D-1** 9:00-9:15 **Rebekah Brawley** Examining Cell Fusion Defects of a Point Mutation in *FUS1* in *Saccharomyces cerevisiae*

**D-2**, 9:20-9:35 **Jacob Bronson** Artificial Reefs: Addressing Marine Conservation and Restoration

**D-3**, 9:40-9:55 **Jaiden Archibald-Pennyfeather** The effect of acute immune challenge on the Heterophil to Lymphocyte Ratio of Pygmy Rattlesnakes (*Sistrus miliarius*) infected with Pentastomes (*Raillietiella orientalis*) and Snake Fungal Disease (*Ophidiomyces ophiodiicola*).

**D-4**, 10:00-10:15 **Telma Búadóttir and Olivia** **Mascio** Kira: Your Attentive Financial Confidant

**D-5**, 10:20-10:35 **Saw Pyae Hsu Zaw** Mycorrhizal Inoculation Potential of Soils from the rhizosphere of two Florida sandhill perennials, *Pityopsis graminifolia,* and *Arnoglossum floridanum*

10:35-10:45 **BREAK**

**D-6** 10:45-11:00 **Chris Walker** Effect of Probiotics on Depression and Anxiety Through the Gut-Brain Axis

**D-7**, 11:05-11:20 **Ashtyn Allred** Can Isopods and Mealworms Serve as Intermediate Hosts for an Invasive Pentastome Parasite?

**D-8**, 11:25-11:40 **Heather Neal** Relative Abundance of Exotic and Native Fish at Volusia Blue Spring

**D-9** 11:45-12:00 **Yahia Adla** Spilanthol Alters the Consumption of, as well as Taste Reactivity Behaviors and Neural Response Elicited by, Salt Solutions in Male Wistar Rats

**12:00-1:00 LUNCH**

**D-10** 1:00-1:15 **Nicole Verdecia** Seasonal variation in the biodiversity of benthic animals along an artificial oyster reef in Mosquito Lagoon, FL

**D-11** 1:20-1:35 **Kaira Thevenin** Exploration of Merkel Cell Polyomavirus Small Tumor Antigen in Transformation & Tumorigenesis

**D-12**, 1:40-1:55 **Ava Underdahl** Fragrance preference of honeybees (Apis mellifera) between flower colors on opposite ends of their visual spectrum

**D-13**, 2:00-2:15 **Grayson Taber** Developing an Electronic Microviscometer for Measuring Viscosity in Insect Embryos

**D-14** 2:20-2:35 **Tom Sussan** Boating intensity and proximity to live conspecifics influence settlement of oyster larvae in Mosquito Lagoon, Florida.

**ORAL PRESENTATIONS – SESSION E**

**317 Flagler Hall**

*9:00 am-3:30 pm*

*Dr. Danielle Lindner, Morning Session Chair*

*Terri Stromfeld, Afternoon Session Chair*

*Judges: Dr. Corie Charpentier, Dr. Matthew Shannon*

***SCIENCE ACROSS THE SPECTRUM II***

**E-1** 9:00-9:15 **Kayla Trinidad** Investigating the role of the FUS1 SH3 domain during cell fusion in *S. cerevisiae* through point mutation P504A.

**E-2** 9:20-9:35 **Trinity Sterling, Bryan Sanchez, and Austin Brown**

Genome Sequencing of SARS-CoV-2 and Quantification of SARS-CoV-2 and Poliovirus in Local Wastewater compared to Clinical Testing

**E-3** 9:40-9:55 **Dulce Suarez** Effects of a Mutation, G472D, in the SH3 Domain of FUS1 on Cell Fusion in *Saccharomyces cerevisiae*

**E-4** 10:00-10:15 **Isaac Mendez** Increased cardiomyocyte proliferation in hearts treated with Vitamin D analogues

**E-5**, 10:20-10:35 **Nicole Steiniger** Pygmy Rattlesnakes’ Behavioral Fever Response to Exposure to Bacteria-Derived Antigens

10:35-10:45 **BREAK**

**E-6** 10:45-11:00 **Germaine Smart-Marshall** The Anticancer Effects of *Myrcianthes fragrans* on SKBR3 Breast Cancer Cells

**E-7**, 11:05-11:20 **Abigail Richards** Effects of Naproxen sodium (Aleve) and Ibuprofen on the Development of Axolotl (*Ambystoma mexicanum*) Embryos

**E-8**, 11:25-11:40 **Taylor Oakes** Prevalence of Reservoirs Infected with *Borrelia burgdorferi* in Central Florida

**E-9** 11:45-12:00 **Eros Nehja Guillaume** The effect of hypoxic environments on Eastern Bluegill, *Lepomis macrochirus*, synchronous air breathing behavior

**12:00-1:00 Lunch**

**E-10** 1:00-1:15 **Christian Gomez** Effects Of a Bitter and Sweet Mixture on Neurons in the Central Amygdala and Taste Reactivity in Conscious Rats

**E-11** 1:20-1:35 **Kayla Diamond** Biodiversity of fish assemblages in Florida freshwater springs

**E-12** 1:40-1:55 **Chloe DeYoung** Analyzing the function of Fus1 during cell fusion in *Saccharomyces cerevisiae*

**E-13** 2:00-2:15 **Kieran P. Mannion** Effects of Intra-oral Infusion of Sucrose + Quinine on Fos-Immunoreactive Neurons in the Lateral Hypothalamus and Rodent Taste Reactivity Behaviors

**E-14** 2:20-2:35 **Andrea Mingo** Food Allergies, Anxiety, and Disordered Eating in Young Adults

**SESSION F**

**THE SCHOLARSHIP OF BUSINESS**

**Rinker Auditorium**

*Dr. Matthew Imes, Session Chair*

*Afternoon Session Chair*

*Judges: Bud Hanson, John Riggs*

**F-1** 12:30-12:45 **Miranda Bihler et al** Modeling Supply and Demand in Public Transportation Systems

**F-2**, 12:50-1:05 05 **Madison** Skelton How Syncretism is Bottled and Sold: the proliferation of Coca-Cola in the Mayan world

**F-3**, 1:10-1:25 **Bruno Soto** Ethical Housing

**F-4**, 1:30-1:45 **Rosaileen Vega Acevedo and Helena Pendergrass** BudgetIt! App –ENTP 301

**F-5**, 1:50-2:00 **Samantha Kmetz** Volunteer Income Tax Assistance Program

2:05-2:20 **BREAK**

**F-6** 2:20-2:35 **Helena Pendergrass** Virtual Reality: The New Era of Teaching

**F-7**, 2:40-2:55 **Isabelle Caby** The Impacts of COVID-19 on Restaurant’s Supply Chain and Operations

**F-8**, 3:00-3:15 **Michael Wojciechowski, Enzo Olivia, Jose Valcourt III, Devin Shaffer** Watsco: Sell Recommendation - 2023 CFA Research Challenge

**F-9** 3:20-3:35 **Shadia Muñoz Najar** Riches to Rags: The Paradox of Resource Abundance in Latin America

**SESSION G**

**HONORS 102 SERVICE LEARNING AS SCHOLARSHIP**

**322 Elizabeth Hall**

*Kevin Winchell, Session Chair*

Session description: Students in Honors 102 work in teams to research challenges facing our local community, then design and implement projects to address those challenges. In these presentations, each team will share their project research, goals, plans, results, and reflections.

9:00-10:00am

MAD Hatter’s Closet – Avery Brooks, Mary-Kate Hoang, Darbi Robbins

Right to Nutrition – Hosanna Folmsbee, Will Holland

The Invasive Species Education Program (ISEP) – Anthony Cagle, Patrick Galloway, Sean Gaudreault, Ryan Rosenberg

10:00-11:00am

Sealing and Expungement Workshop – Xavi Csato, Kelly Gende, Tara Özdemir, Madeline Smith

The Feline Fixers – Colleen Coughlin, Ian Hunt, Christopher Kennedy, Aiden Semon, Colin Weber

Drug Awareness Resource Team (DART) – Elizabeth Buss, Madyson Gennett, Tristyn Rampersad, Sarah Tunnell

Gardens for Guardians – Cole Caven, Evan Dean, Charlotte Holley, Nicole Stover

The Adoption Alliance: Finding Animals Forever Homes – Bella Convery, Kara Ho, Abby Radisky

**5: 45 EVENING RECEPTION AND AWARDS**

**Welcome Center**

**6:15: 2023 Grady Ballenger Lecturer**

**Dr. Susan Rundell Singer**

**Vice President for Academic Affairs and Provost, Rollins College**

**President-elect of St. Olaf College**

A picture containing person, wall, clothing, smiling

Description automatically generated**Research and Scholarship for All**

Engaging undergraduates in research in the U.S. dates back 200 years, influenced by the German university model that brought students and faculty together as research collaborators. Rensselaer Polytechnic Institute was one of the early adopters. Founded in 1834, lecturing at RPI was eschewed in favor of students engaging in experimental work as the core pedagogy. Key breakthroughs in genetics were made by undergraduates at Columbia in the 1920s. The launch of Sputnik led to federal funding for undergraduate research in the late 1950s. For decades after, the traditional apprenticeship model of summer research or engagement during the academic year defined undergraduate research. The model expanded to the broader range of disciplines. Across many institutions these opportunities are now open to all students, regardless of major.

By the mid-2000s, there was growing research documenting that undergraduate research was key in the retention, graduation, and pursuit of graduate studies. The impact of research experiences has a particularly strong and positive impact on members of traditionally marginalized groups. Concurrent with the recognition of impact was the recognition that the traditional apprenticeship model doesn’t scale and most students did not benefit from this vital learning opportunity. New approaches to scaling impact have emerged through course-based research afford more equitable and inclusive access to this high impact practice. Embedding research in courses makes it possible for students with extensive employment commitments to benefit. The approach has effectively created opportunity in both 2-year and 4-year institutions. As the research on undergraduate research advances, more is emerging about the specific benefits to different approaches and a clearer articulation of value of learning through research experiences.

**Susan Rundell Singer, Ph.D,** is an experienced national and institutional leader in higher education, uplifting the value of a liberal arts education. Currently, she serves as Vice President for Academic Affairs and Provost at Rollins College and is President-elect of St. Olaf College. Previously, she led the Division of Undergraduate Education at the National Science Foundation (NSF) and was the Laurence McKinley Gould Professor of Biology at Carleton College, where she directed the Perlman Center for Learning and Teaching. Recruited to NSF by the White House, she was charged with implementing holistic, evidence-informed approaches to increase persistence and success of all undergraduates. She led 14 federal agencies in achieving the undergraduate goals of the first Federal STEM Education 5-year Strategic Plan, including producing one million more STEM graduates by 2018. She pursues a career integrating higher education and science aimed at improving undergraduate education at scale. Her scholarship focuses on partnerships and networks of organizations collaboratively advancing undergraduate STEM education, with an emphasis on diversity, equity, inclusion, and belonging. Equitable and excellent undergraduate education is a signature element of her successes at Carleton, NSF, national organizations, and Rollins, enhanced by a strong track record with partnerships and fundraising. Susan is an American Association for the Advancement of Science (AAAS) Fellow, and recipient of the American Society of Plant Biology teaching award and Botanical Society of America Charles Bessey award. She is a past-chair of AAAS’ Education Section. Currently, Susan is an Association of American Universities Senior Scholar, chairs the National Academies of Science, Engineering, and Medicine (NASEM) Board on Science Education, and serves on the Board on Life Sciences and the Roundtable on Systematic Change in Undergraduate STEM Education. She chaired several NASEM studies, including Discipline-based Education Research. Her Ph.D. is in Biology, from Rensselaer Polytechnic Institute.

**Awards Ceremony**

**Maris Awards for Excellence in Showcase**

**Dr. Leonard Nance Award for Excellence in Justice Research**

**2023 SURE Scholars**

**ABSTRACTS**

**Posters**

Madeline Bell (Dr.Wendy Anderson)

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**Transforming Trash to Treasure: Various Composting Methods and Their Use in a Teaching Garden**

With the rise of industrial agriculture and expanding urbanization, younger generations have become increasingly disconnected from food production. To combat this, there has been a rise of agricultural education in institutions like Stetson University with the addition of the new Brown Hall Teaching Garden. This study established protocols and educational materials to demonstrate various methods for composting. Three different methods were developed, evaluated, and compared: open bin composting, tumbler bin composting and vermicomposting. The open compost method contained three different bins with different brown materials to determine which decomposes the quickest along with the green materials. Over a six-week period, weekly analyses were performed to measure the temperature, pH levels, and nitrogen levels of each composting method. Using the protocols and baseline data for each composting system, I developed lesson plans describing how to start and maintain each composting method, as well as the pros and cons of each method. I also developed outdoor signage for passive education of others who pass through the garden. The Brown Hall Teaching Garden provides numerous opportunities to deliver education about different food production techniques to a wide audience.

Tyler Clark (Dr. Kevin Riggs)

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**Holding the Temperature of a Cryostat Constant using the Arduino PID Libraries**

For this project, we created a device that held the temperature of a cryostat constant while it was lowered into liquid nitrogen. We used an Arduino board as it is designed to have easily understandable and effective hardware and software at an efficient price. We developed a program where our Arduino board converted a digital signal to an analog signal by using a solid-state relay and PID controller libraries. The PID (Proportional, Integral, Differential) controller allowed us to bring our current temperature read by a thermocouple to a set temperature by calculating the difference between them and inputting that difference into three respective PID equations. They each produce their own output that are all added together to produce a total output used to turn the relay on for a certain amount of time, then off again. When the relay was on, power flowed from a source to the heating tape coiled around the cryostat. The power flow stopped when the relay was off; this cycle slowly changed the cryostat’s temperature. By determining the best constants for the PID equations, we were able to hold the temperature of the cryostat constant relative to our set temperatures while lowered into liquid nitrogen.

Cassandra Clayton (Dr. Sean Beckmann/Dr. Cynthia Bennington)

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**The Effects of Habitat Type on the Prevalence of *Borrelia Burgdorferi* in Rodent Reservoirs**

The most prevalent vector-borne disease in the United States is Lyme Disease. It is caused by species of spirochete bacteria in the *Borrelia burgdorferi* genogroup (Clark 2004). *Borrelia burgdorferi* is transferred to humans by two primary vectors, the blacklegged tick, Ixodes scapularis, and the western blacklegged tick, *Ixodes pacificus*. These ticks are known as the most prevalent vectors for Lyme Disease in the United States. In northern states, tick-borne vectors like *Ixodes scapularis*, have been correlated with sandy soils, woody vegetation, and clay soil textures. I asked whether there would be a difference between two different woody habitats in central Florida on the prevalence of *Borrelia burgdorferi*. To test this, I collected rodent tissue from Lake Woodruff and Blue Springs State Park during the summer of 2022. PCR testing was used to identify *Borrelia burgdorferi*. Out of eighty-five specimens collected, forty-one were positive for *Borrelia burgdorferi*. There was no significant difference in infection rate between sites. Collecting more data from different habitats could help identify whether habitat affects prevalence of *Borrelia burgdorferi*.

Kayle Cunningham, (Dr. Beckmann, Dr. Cynthia Bennington)

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**Parasitic nematode prevalence and intensity in five species of central Florida rodents: *Peromyscus gossypinus, Sigmodon hispidus, Podomys floridanus, Ochrotomys nuttalli, and Neotoma albigula***

Nematode transmission is dependent upon the host organism, its life cycle, and its habitat. Rodents reside in close proximity to their habitat floor, coming in contact with various fecal dropping of neighbor organisms. Additionally, rodents can be intermediate hosts for human diseases caused by nematodes. Because nematodes can affect human health, it is important to characterize their intermediate hosts and opportunities for transmission. For that reason, we asked two main questions: 1) Does the species of rodent affect the diversity of nematode infection?, and 2) Does the habitat affect the diversity of the nematode infection? We trapped rodents in Blue Springs State Park and Lake Woodruff National Wildlife Refuge, both located in Volusia County, Florida, and collected fecal samples. A fecal flotation test was used to separate the parasitic material from the sample to make parasite identification possible.. We found that roundworm was the most common parasite infection observed and occurred more frequently in rodents caught at Blue Springs. There was not a difference of nematode diversity among rodent species. The hypothesis was not fully supported, roundworm infections were observed in all species captured. In further study, we will assess how these specific species of roundworm infections can spread to humans and gain a better understanding of how parasites transmit between species.

Matthew William DiMinno (Dr. Roslyn Crowder)

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**Examining the effects of Cyclin-Dependent Kinase (CDK) Inhibitor R-547 in AsPC-1 pancreatic cancer cell cycle regulation and proliferation.**

According to the American Cancer Society, 1,918,030 new cancer cases and 609,360 cancer deaths were estimated to occur within the United States in 2022. Of all the cancer deaths that happen within America, pancreatic adenocarcinoma is the third leading cause of all cancer-related deaths. Cyclin-dependent kinases (CDKs) are responsible for regulation of the cell cycle, and are often hyperactive in cancer cells—making them divide and grow uncontrollably. R-547 is a cyclin-dependent kinase inhibitor that has been shown to effectively inhibit a wide range cyclin-dependent kinases. CDK inhibitors work by inhibiting the overactive CDK, preventing the cancer cells from undergoing the cell cycle—killing them. The pancreatic cancer cell line AsPC-1 (isolated from a pancreatic adenocarcinoma) was treated for 5 days with concentrations of 2nM and 4nM R-547; inhibiting CDK1/cyclin B and CDK6/D3 respectively. Since prior studies of hepatocellular adenocarcinoma treated with 2nM r-547 had previously proven successful in cell cycle arrest, we hypothesized that R-547 would significantly inhibit the CDK1/cyclin B of the AsPC-1 pancreatic cancer cells at the 2nM dosage. At the end of the 5 day treatment, a WST-1 proliferation assay was used to investigate changes in proliferation via optical density (a higher optical density value is associate with a larger viable cell count). An ANOVA statistical test was used to compare the proliferation in untreated and treated plates. The 2nM R-547 treatment had an average optical density of .862 (p = .11), and the 4nM R-547 treatment had an average optical density of .852 (p = .007). Though the results of the 4nM were significant via the ANOVA, an additional critical difference test revealed (.129) that the data did not reach the significant critical difference value of .174 or higher. In conclusion, the hypothesis of the 2nM treatment being the most effective cannot be supported, and further testing for the 4nM dose should be investigated further.

Michael Stephen Diotalevi (Dr. Terence Farrell)

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**Displacement, Kleptoparasitism, and Foraging Behavior in the competitive relationship between *Thamnophis sirtalis* and *Thamnophis sauritis***

In herpetology, much knowledge on snake foraging behavior exists. One example of this knowledge is that when living together and ecologically comparable to each other, two snake species can interspecifically compete with each other in natural habitats with limited food resources. The foraging relationship and intraspecific competition between *Thamnophis sirtalis* and *Thamnophis sauritis* has not been studied. We predicted that if competition between *Thamnophis sirtalis* and *Thamnophis sauritis* exists, then *Thamnophis sirtalis* would out-forage, kleptoparasitize, and displace *Thamnophis sauritis* for foraging sites because of *Thamnophis sirtalis*’ greater size. To test our hypothesis, we analyzed 10 hours of footage taken in 2020, 2021, and 2022 at three different dry ponds to see who foraged, kleptoparasitized, and displaced better. Overall, *Thamnophis sirtalis* seemed superior regarding prey capture and eating and significantly superior in displacement. However, almost all kleptoparasitism attempts by both *T. sirtalis* and *T. sauritis* were either inconclusive or failures. This is the first study of its kind. Thus, more research is needed on the relationship of *Thamnophis sirtalis* and *Thamnophis sauritis* regarding foraging behavior, kleptoparasitism, and displacement. Future studies could analyze foraging behavior between *Thamnophis sirtalis* and *Thamnophis sauritis* in different ecosystems and the feeding strategies used this relationship.

Kailyn Douglas (Dr. Sean Beckmann and Dr. Cynthia Bennington)

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**Intestinal and Fecal Parasitology in Central Florida Rodents**

Central Florida rodents are commonly infected by nematodes. I investigated the diversity of intestinal parasites found in the Florida mouse, *Peromyscus floridanus* (Florida mouse), *Peromyscus gossypinus* (cotton mouse), cotton rat, *Sigmodon hispidus* (cotton rat), and *Neotoma floridana* (eastern woodrat) found in two different Volusia County sites, Blue Springs State Park, and Lake Woodruff National Wildlife Refuge. The most abundant parasite found was *Ascaris lumbricoides* commonly known as roundworm, however more roundworms were found in Blue Springs State Park than Lake Woodruff National Wildlife Refuge compared to all the species of parasites in the study. The dominant explanation for this is that the sample size of rodents was larger in Blue Springs than in Lake Woodruff. This could be because Blue Springs has a much dryer, more elevated habitat, while Lake Woodruff has a lower elevation with a wetter habitat. Quantifying parasite prevalence and how it might be affected by site and rodent species can improve our understanding of parasite transmission from Central Florida rodents to other mammalian species.

Brandon Evans\* (Dr. Cynthia Bennington)

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**Effects of competition and fire suppression on the growth of two sandhill understory plants, *Aristida stricta* and *Pityopsis graminifolia***

Sandhill ecosystems occur on sandy ridges in the American southeastern coastal plain and are characterized by a sparse canopy of longleaf pine, and a diverse understory of herbaceous plants and forbs. Two dominant understory plants are *Aristida stricta* and *Pityopsis graminifolia*. This experiment tested the effect of two abiotic factors (pH and disturbance type) on competition between these two species using a 2x3x3 factorial design. I found that soil pH did not have a significant effect on the growth of *P. graminifolia*, but *A. stricta* grew taller and faster in the lower pH soil more similar to its native soils. I also found that, between *A. stricta* and *P. graminifolia*, interspecific competition was much stronger than intraspecific competition, which is a deviation from common competition patterns. This effect is not yet understood but may be related to soil biota competition.

My research suggests that fire exclusion promotes the consistent growth of *P. graminifolia*, which can eventually prevent *A. stricta* from being able to grow. For restoration areas to be successful in recreating natural understory communities, the introduction of fire is the simplest way to accomplish regular disturbance.

\*Recipient of a 2022 SURE Grant

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**Parasite Diversity in Introduced Cane Toads (*Rhinella marina*) in Florida**

Invasive species are increasingly common across the globe. When invasive species enter a new region, they can impact the health of the environment by spreading diseases. Cane toads, *Rhinella marina*, are an invasive species in Florida that are native to South America. There is no published research identifying parasites found in cane toads, *Rhinella marina*, residing in Florida. I dissected 18 cane toads from south Florida and examined their parasites. We hypothesized that we would find the nematode *Rhabdias pseudosphaerocephala* because Florida has a very similar climate to their native region. We also expected them to harbor the invasive pentasome *R. orientalis* as native toads are frequently infected. We found that nine toads carried *Rhabdias*, six carried encysted acanthocephalans, and five had no detectable parasites. We found no *R. orientalis*. There was a tendency for larger toads to have more *Rhabdias*, but there was no significant linear relationship between *Rhabdias* intensity and toad size. There was no statistically significant association between toad gender and infection status. Our hypothesis was supported in regard to *Rhabdias*, however not supported for *R. orientalis*. Cane toads may act as disease facilitators magnifying their impact on the native fauna of Florida.

Kaylee Gibson and Tyler Schwarz (Dr. Kristine Dye)

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**Wastewater Surveillance: Detection and Quantification of SARS-CoV-2 and Polio RNA with RT-qPCR and Whole Genome Sequencing**

Wastewater testing has proven to be an effective method of quantifying and detecting microorganisms, such as the viruses of current interest: SARS-CoV-2 and poliovirus. The protocol for our experiment is a 4-day process. Clinical testing results are available within a day, but wastewater testing is more accurate in determining infection rates in a community because of its unbiased nature. Pasteurization of the samples at the start of the protocol inactivates viruses allowing for BSL2 labs to use the protocol without fear of any contamination from live viral samples. RT-qPCR is done to detect and quantify viral material since viruses are composed of mainly RNA and not DNA. RNA isolated from wastewater may also be sent in for whole genome sequencing after RT-qPCR data is collected to determine if there are any specific variants of SARS-CoV-2 that are dominant in the area. Viral evolution will be tracked for both clinical and research purposes. This protocol is adaptable for other pathogens, such as poliovirus. In the case of poliovirus, viral material is shed into wastewater because of the virus’s natural lifecycle in the body. We have been able to detect SARS-CoV-2 thus far, and we have had positive results in detecting poliovirus.

Sarah Grimes (Dr. Heather Evans-Anderson)

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**NRG Increase Hypertrophic Growth in Cardiac Myocytes**

Cardiac hypertrophy is the growth of cardiac cells in the body. There are two different types of growth that occur during heart development. There is a maturation process in which a switch is made from hyperplastic to hypertrophic growth during postnatal development. Hypertrophic growth can be adaptive when in the case of physiological hypertrophy or dangerous in the case of pathological hypertrophy. Cell growth due to hypertrophy in the heart can lead to hypertension or even heart failure. Chemical signals such as growth hormones or anabolic-androgenic steroids can trigger and/ or regulate either physiological or pathological hypertrophy (Fink, 2017). Neuregulin (NRG-1) has been attributed to heart growth and hypertrophy (Zurek, M., et al, 2020). This study will explore the hypertrophic effect on cardiac myocytes is when EC is exposed to NRG1. This could possibly give some insight on how the effect of these signaling molecules could relate to hypertension. If this is confirmed this would provide more insight into how gene expression in the heart is formed.

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**Does the addition of live mycorrhizal fungi roots affect the growth or morphology of *Zea mays* roots?**

Soil biota, including bacteria and fungi are important features in restoring and protecting natural ecosystems, and can increase the likelihood of reversing biodiversity loss and impacts of other anthropogenic damage. We used corn (*Zea mays*), as a bioassay to ask whether mycorrhizal fungi from native soils affect root growth, and, ultimately, plant success. We seeded rhizotrons with corn seeds and inoculated them with AM fungi from Heart Island Conservation Area. We measured corn root-shoot biomass allocation along with plant growth. Our results demonstrate that soil inoculation with live roots containing mycorrhizal fungi can potentially affect plant growth and root morphology in *Zea mays*. Our findings and those of others suggest that the co-introduction of mycorrhizal fungi and plants may be an important part of successful habitat restoration.

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**The Effects of Ostracism and How We Cope on Mental Well-Being**

Universities across the globe encourage their students to participate, engage or join some type of extracurricular activity. However, sometimes things are taken too far and the feeling of belonging in a group can turn into exclusionary behavior. This exclusionary behavior may cause individuals psychological stress and drive an individual to coping behaviors. As a result of the coping behaviors, an individual’s mental well-being can be affected positively or negatively. The purpose of this study is to explore the relationship between ostracism (in a school environment) and mental well-being, with coping styles. Ostracism is defined as an extreme form of rejection in which one is excluded and ignored in the presence of others. It acts as a threat to the human fundamental need to belong and has various negative effects on psychological well-being as well as self-function. Examples of which include increased levels of anxiety, stress, and depression in individuals. To examine Ostracism, we used a modified version of the Workplace Ostracism Scale (Ferris et al., 2008). In response to psychological stress, individuals cope. This study looked at three primary coping styles (problem focused coping, emotion-focused coping, and avoidant coping) via The Brief- COPE Inventory (Carver, 1997). To examine a participant’s overall feelings, we used the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS; Tennant et al., 2006).

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**Measuring Stellar Magnitudes and How Light Pollution Affects the Night Sky.**

Our ability to observe the night sky as both a causal stargazer or researcher is dwindling more and more each day. As more satellites are launched and cities become larger than life, it raises concern over whether we can still preserve the night sky in the future. To find these effects we need to measure apparent magnitude (brightness) of open star clusters and compare to different locations that vary in light pollution. This was done through using a CCD camera attached to a telescope and capturing various messier objects. Light pollution was found using a light meter which measures the darkness of the area. The results were able to verify what exactly stars we captured and were able to measure a difference in brightness based on light pollution measured. This shows exactly how much light pollution varies based on location and with this we can promote changes that will better preserve our night sky.

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**Effect of Glyphosate and Glyphosate-Based Herbicides on Apoptosis in Caco-2 Cells**

Glyphosate, the active ingredient in the broad-spectrum herbicide Roundup™, is the most widely used herbicide in the United States. It is produced by Monsanto, a company that has faced controversy in the U.S. for years over claims that its herbicide products might be carcinogens. While the general consensus is that labeled uses of glyphosate have demonstrated no evidence of human carcinogenicity, that does not mean that glyphosate and glyphosate-based herbicides do not pose a health risk to humans. Deliberate ingestion of glyphosate-based herbicides has resulted in death within hours of ingestion. Several possible mechanisms for this phenomenon of toxicity have been proposed, but overall, it is largely misunderstood, especially since it is difficult to separate the toxicity of glyphosate alone from that of the entire herbicide formulation. As such, the purpose of this research was to expand upon preliminary studies investigating glyphosate and glyphosate-based herbicides on induced apoptosis and necrosis, or cell death pathways, in the gastrointestinal tract. To do this, intestinal cells known as Caco-2 cells were exposed to pure glyphosate and a glyphosate-based herbicide for 24 hours. Afterward, five intracellular proteins involved in cell death were investigated by Western blotting. The results suggest that glyphosate has no effect on expression of apoptosis proteins Bax, PARP1, caspase-3, cIAP1 as well as the oncogene protein c-MYC in human intestinal epithelium cells in vitro, therefore it cannot be confirmed that glyphosate or glyphosate-based herbicides induce Caco-2 cells death potential in an apoptotic pathway.

Mollie Sioux James (Dr. Jason Evans)

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**The Potential Effectiveness of Vertical Rain Gardens in the Mitigation of Stormwater Runoff and Pollution**

Excess nutrients and pollutants in stormwater runoff cause poor water quality in nearby surface waters. Traditional concrete stormwater management techniques fail to filter runoff and are frequently overwhelmed by the increasing prevalence and severity of storms. Green infrastructure combines natural features within cities to solve these issues. But current green infrastructure techniques can also be problematic, as they are site-specific and require large spaces. Vertical rain gardens may provide the benefits of green infrastructure while avoiding these issues. Rainwater samples from residential downspouts will be tested for nitrogen and phosphorus concentrations before installing vertical rain gardens. The volume of runoff will also be measured. After installation, the tests will be repeated. Unpaired samples T-tests will be used to determine whether or not the volume of runoff and nutrient levels are significantly different after installing the vertical rain gardens. This research project will determine the potential effectiveness of vertical rain gardens in reducing nitrogen and phosphorus concentrations in stormwater, as well as their ability to decrease the total volume of stormwater runoff from downspouts in densely populated urban areas of central Florida.

Breanna Karon (Dr. Michael Eskenazi)

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**Parents’ and Peers’ Influences on Risky Drinking Behaviors**

Over 55% of college students have consumed alcohol within the past 30 days (Hanke, 2020). This frequency of alcohol consumption can be explained by familial and social factors. Social factors include social events, peer and social pressure, social approval, and social networking (Tael-Oeren, et al., 2019). Familial factors include parenting style. Parenting style is associated with drinking such that more authoritative parenting is associated with less drinking. Though much is known about how familial and social factors independently relate to alcohol consumption, research on the interaction of the two is sparse. The purpose of this study is to further understand the interaction between familial factors and social factors in predicting risky drinking in college students. In this study, it was hypothesized that parenting styles moderate the relationship between social influences and risky drinking. College students with less authoritative parents will demonstrate a weak positive relationship between social influences and risky drinking. College students with more authoritative parents will demonstrate a strong positive relationship between social influences and risky drinking. A sample of 86 college students completed an online survey consisting of a modified version of The National Epidemiologic Survey on Alcohol and Related Conditions – III (NESARC-III), Psycho-Social Drinking Inventory, and Parental Authority Questionnaire. A multiple linear regression was conducted to determine whether the parenting styles of mothers and fathers in addition to social influences predict risky drinking. The predictors were able to account for a significant amount of variability in risky drinking, R2 = .46, F(5, 48) = 8.29, p < .001. However, of the individual predictors, only sensation seeking was a significant predictor of risky drinking such that more sensation seeking is associated with more risky drinking behaviors. A second analysis was conducted to see if parenting styles interact with social influences. The predictors were able to account for a significant amount of the variability in risky drinking, R2 = .37, F(3, 70) = 13.50, p < .001. The interaction indicated that if someone has a more authoritative father, they demonstrate a strong positive correlation between social influences and risky drinking. However, if someone has a less authoritative father, they demonstrate a weak positive correlation between social influences and risky drinking. There were three main findings. First, the results indicated that parenting styles are not independently predictive of risky drinking. Previous research indicated that parenting styles are strongly related to drinking and that more authoritative parents have a protective effect against alcohol use (Tael-Oeren, et al., 2019). Second, sensation seeking as a drinking influence is independently predictive of risky drinking. Sensation seeking behaviors such as sexual risks, fighting, and disturbing others, seem to be a strong predictor of why students drink more. Third, social influences and a father’s authoritativeness interact to predict risky drinking. For men and women, having a more authoritative father can increase the likelihood of depressive symptoms which are positively related to problematic drinking (Patock-Peckham & Morgan Lopez, 2007). Overall, this study provides important insights into the interactive nature of parents’ and peers’ influences on risky drinking behavior.

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**Wastewater Surveillance and Whole Genome Sequencing on SARS-CoV-2 and Poliovirus in Volusia County**

As a result of the COVID-19 pandemic, wastewater surveillance usage increased remarkably and has become an useful tool for monitoring and tracking SARS-CoV-2 viral loads. This is because WWS detects SARS-CoV-2 one to two weeks before clinical testing methods can and detects the virus in a whole community regardless of being symptomatic or asymptomatic. The protocol used in this experiment can be used for many viruses including Polio. WWS should be used alongside clinical testing because clinical testing allows one to know if they have the disease or not. WWS is cheaper than clinical testing and provides data from a huge sample population. The objective of this study is to successfully quantify viral loads of SARS-CoV-2 and Polio in Volusia County to monitor the prevalence of the viruses. Viral concentrations of SARS-CoV-2 and Polio are normalized by PMMOV because it is shed by humans at a consistent rate. The data shows that there is a strong correlation between virus loads in wastewater and new COVID-19 cases. The RNA isolated from wastewater will also be analyzed by Whole Genome Sequencing, which tracks how SARS-CoV-2 mutates through the course of the research. WGS is vital for understanding future mutations and variants of a virus because it will help with preparedness and increase knowledge of viral evolution. WWS and WGS should continue to be used especially with the likelihood of novel viruses occurring again in the future.

Charlotte Kraft (Dr. Wendy Anderson)

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**Sargassum as a transport vector for marine plastics onto shores**

The increasing prevalence of marine plastics are a threat to marine, terrestrial, and human life. Both micro- and macroplastics accumulate in gyres in all of the oceans. Plastic-laden Sargassum from the Great Atlantic Sargassum Belt is deposited as shore wrack across the Caribbean and on Florida beaches. In this study, I collected samples of Sargassum from two Volusia County beaches. I assessed the wet weight and dry weight of the samples, and then extracted all macro- and microplastics from the samples. I counted and weighed the plastic pieces and identified the different categories of plastics, which included nerdles, ropes, fishing line, microfibers, hard fragments, balloons and ribbon, bottle caps, and other items. In 827.57g of dry sargassum, 28.48g (or, 3.4%) of the weight was plastics. The plastics ranged in size from <0.1mm to several centimeters in length of rope and ribbon. Similar to how plastics can move through marine webs and even into foods consumed by humans, they can also accumulate in beach food webs, and have impacts on shore fauna. Plastics transported back to shore by Sargassum also contribute to beach pollution and human health issues. Beach managers need to balance the benefits of leaving Sargassum on the beach for its organic and nutrient benefits to dune establishment, with the need to remove the plastics embedded in the Sargassum from the shoreline ecosystems.

Cassandra Krajnyk (Dr. Kyle Dickey)

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**Deviant Behavior, Cyber-Deviance, Morality, and Differential Association Relationships in College Student**

This research study focuses on normative deviant behavior among college students, and if differential association variables: intensity, duration, frequency, and priority, influence the amount of normative deviance they participate in. To add on, I also examined college students and their morality levels to compare that to the amount of deviance they participate in. Ultimately, I wanted to see how their morality levels influence their participation in deviant behavior. I hypothesized that the higher the morality levels, the less individuals are to deviate even if they surround themselves with individuals/friends that do deviate. To examine this theory, I created a survey using the Normative Deviance Scale (NDS), Moral Foundations Questionnaire (MFQ20), and created my own questions and questionnaire to measure Differential Association and cyber-deviance which is a form of online deviant behavior that today’s generation tends to participate in because of the available access to the internet. This includes trash talking while playing video games, starting online fights, spreading lies, posting content that puts individuals in a vulnerable position, etc. The survey was created using Qualtrics provided by my university, and then uploaded onto Amazon MechanicalTurk (MTurk) for participants to take the survey anonymously and be compensated $1.00 for participating in the survey. Results were then analyzed and examined through SPSS. I ran a series of tests through SPSS such as correlational tests, bivariate analyses, and univariate analyses. P-values were looked at during the findings and recordings of this study. Results of this study showed a significant correlation between morality and deviant behavior, as well as morality and differential association. Most importantly on the cyber-deviance scale I created, there was shown to be a significant correlation between cyber-deviance participation and morality levels which is important to note because cyber-deviance is new and does not have much research that has been done on it.

Leán Lategan (Dr. Kevin Riggs)

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**Exploration of the Heat Energy Transferred and Efficiency of Heat Retention in Commercialized Solar Ovens**

Abstract: This study aims to quantify the performance of solar ovens in terms of heat energy transferred and heat retention, focusing on insulation and evaluating the effectiveness of these systems as a sustainable energy source. By measuring the difference in temperature of a substance with a known specific heat, as well as the simultaneous irradiance of the sun throughout collection, I explored the factors that affect thermal change and heat retention in solar ovens. This identifies opportunities for optimization and improvement. The results of this study have important implications for the design, development, and commercialization of solar ovens as well as ways to potentially improve “DIY” or “low-budget” solar ovens. As power/energy becomes a scarcity in third world countries, this research can contribute to the development of cost-effective and sustainable energy solutions for these areas, which would improve their quality of life and reduce dependence on fossil fuels everywhere.

Faith Hannah Lea (Dr. Sean Beckmann, Dr. Cynthia Bennington)

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**Is *Babesia microti* Prevalent in Illinois Rodent Populations?**

*Babesia microti* is an intraerythrocytic protozoan parasite and it is the main species of *Babesia* to infect humans. The main reservoir of this parasite in the United States is the white-footed mouse, *Peromyscus leucopus*, but several other rodent species are known reservoirs. Most research on reservoirs has been conducted in the Midwest, while very little has been conducted in prairie ecosystems. To study which rodent species are potential reservoirs in prairie ecosystems, we captured a total of 469 rodents of three different species in an Illinois prairie and took tissue samples from each rodent. In the lab, we extracted the DNA and ran PCR using *Babesia microti* specific primers, ran DNA gel electrophoresis, and then sent the samples for DNA sequencing if we identified a band at 238 bp on the gel (which corresponds to Babesia microti). Of the three rodent species studied, *Ictidomys tridecemlineatus* was the most likely to be infected (p=0.002 when compared to *Zapus hudsonius* and p<0.001 when compared to *Microtus pennsylvanicus*). These data suggest that *Ictidomys tridecemlineatus* is a reservoir for Babesia microti in prairie ecosystems.

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**The Impacts of Reclaimed Water Storage on Pond Health**

The rapid increase in residential development across Florida has placed stress on the groundwater supply. Groundwater depletion is particularly pertinent in Volusia County as it draws most of its potable water from a sole-source section of the Floridan aquifer to serve more than half a million residents. One strategy for conserving this valuable resource is to reclaim nutrient-rich wastewater for non-potable uses such as irrigation of urban landscapes. To understand the impacts of storing reclaimed water on the health of retention ponds, we assessed several water quality parameters in the sediments and water of four reclaimed storage ponds and four stormwater ponds in the Victoria Park Community. We hypothesized that the reclaimed water storage ponds would have higher nutrient levels in sediments and the water column than stormwater ponds. Although Fall 2022 hurricanes contributed to large fluctuations in pond storage levels across sampling periods, we found that phosphate and nitrate in the water were significantly higher in reclaimed ponds than stormwater ponds, and phosphate in reclaimed storage pond sediments was marginally higher than in stormwater ponds. Chlorophyll-a and visual assessments of algae and cyanobacteria were also marginally higher in reclaimed storage ponds. These results suggest that mitigation efforts are needed to control accumulation of phosphate and associated algal blooms in reclaimed storm ponds. Ecological solutions include planting littoral shelf plants and installing floating wetlands, and encouraging diverse aquatic communities including waterfowl that can transport accumulated phosphorus back into terrestrial landscapes.

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**Bluegills Locomotive Behaviors in Hypoxic Conditions**

A hypoxic environment can be defined as a body of water experiencing irregular and or insufficient oxygen levels. When dissolved oxygen falls below a certain threshold, this can become detrimental to inhabitants, especially fish. Some fish have evolved behavioral (locomotive efforts) and biological (modified organs) measures to compensate for lack of oxygen in the surrounding environment*. Lepomis macrochirus* (bluegill) at Blue Spring State Park, have been observed surfacing to breathe at the air-water interface. We wanted to study the impact DO has on bluegill movement within the water columns. In this study 15 juvenile bluegills, caught from Blue Spring Park, were brought back to Stetson’s campus and tested in a series of dissolved oxygen levels in 10 gallon experimental tanks. We used a GoPro to film 15 minute trials, and then recorded the number of times individuals moved between three vertical zones in the tank. Fish moved more in low oxygen environments and when they had been in the test tanks for more than 7 minutes

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**Zooplankton Abundance in Relation to Chlorophyll Content in Lake Beresford**

Zooplankton are microscopic organisms found in many bodies of water and are one of the smallest elements of the biological food chain. They act as intermediary species transferring energy from primary producers to larger organisms in the environment. Zooplankton abundance can depict a healthy or damaged ecosystem. Chlorophyll-a, a predominant pigment involved in photosynthesis, serves as an indicator for phytoplankton, which is a primary food source for zooplankton. In this study, zooplankton samples and chlorophyll-a content were collected in Lake Beresford throughout the month of September 2022. Datasets were compared across weeks to determine if any spatial correlations were present between zooplankton abundance, type, and chlorophyll-a concentrations.

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**Native Potential of *Pistia Stratiotes* in Florida using Surface Samples and a Discussion on its Benefits**

Ecological history can be studied in sedimental layers. Surface layers often contain vegetation, such as seeds. In Florida, *Pistia stratiotes* or water lettuce is considered an invasive species, but recent suggestions dispute that. Ecological history, abundance, and benefits could alter the status and management practices of *P. stratiotes’*. In this study, surface samples were collected to assess the frequency and abundance of water lettuce seeds. 30 surface samples were extracted along areas containing water lettuce in Gum Slough, FL and Lake Beresford, FL at the Sandra Stetson Aquatic Center (SSAC). At the SSAC, samples were collected at one northern and one southern shoreline location. In Gum Slough, cores were taken at 6 different patches along the spring run. Samples were extracted using a piston core and a sieve was utilized to sift through the sediment. Wet weight (g), total seed count, volume (cm3), concentration of seeds per total weight of sediment analyzed (number/g), and concentration of seeds per total volume of sediment analyzed (number/ cm3) were measured. 3 seeds were found at the SSAC southern location. The seed abundance in surface samples presents a low seeding frequency and supports research on its ecological history, native status, and potential benefits.

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Wastewater Surveillance of SARS-COV-2 and Polio in Central Florida

Wastewater surveillance is an effective way to detect and quantify SARS-CoV-2 as it has the ability to quantify infection that is undetected by clinical testing such as asymptomatic individuals and people who simply do not test. This is because regardless of if you have COVID-19 and are asymptomatic, SARS-CoV-2 will be shed in feces, which wastewater surveillance can detect. The study described in this abstract aimed to detect and quantify SARS-CoV-2 in wastewater through RT-qPCR. To compare SARS-CoV-2 levels between timepoints, PMMoV, a virus that is shed in consistent quantities by humans, was also quantified in order to normalize the SARS-CoV-2 data. Our study also demonstrates the versatility of wastewater surveillance via RT-qPCR, as it can be adapted to detect other microorganisms such as Polio. With the data that has been collected so far, we can conclude that we can detect SARS-COV-2 in wastewater as well as predict surges in COVID-19 cases. Finally, our data also shows that this protocol can be adapted for other viruses such as Polio, as Polio was detected in half of our samples. Together, this data proves the importance of pandemic tracking via wastewater surveillance and reinforce the importance of vaccination to vaccine preventable diseases.

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**Photobehavior of the mangrove tree crab, *Aratus pisonii*, in the first zoeal stage of larval development**

The larvae of crabs are planktonic due to negative buoyancy. Light is an environmental cue that impacts larval swimming activity. For example, the cue can affect larva’s ability to detect light stimuli. Larval depth impacts dispersal, as water flow is greater at the surface. They use two strategies for dispersal: export-and-return, or the retention strategy. Export-and-return is the strategy in which larva are transported offshore while the retention strategy is the individuals staying in their parental habitat. Species that use the export-and-return strategy often exhibit positive phototaxis and negative geotaxis in their early stages to maintain position at the surface for offshore export. Mangrove tree crabs (*Aratus pisonii*) are abundant in coastal Florida. However, their dispersal strategy has only been studied in other locations (e.g., Brazil), where they likely exhibit the export-and-return strategy. In this study, I evaluated the directional swimming responses to downwelling light in *Aratus pisonii* during the first zoeal stage of larval development. I predicted that they would show a positive phototaxis which would be the larvae ascending towards the light stimuli. Surprisingly, larval *A. pisonii* had no significant change on swimming activity when exposed to the variety of light intensities Although the hypothesis was not supported, future studies could focus on the cue gravity and that larvae use it to regulate their depth.

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**Maternal Size does not Impact Larval Size or Behavior in the Species *Aratus pisonii***

Offspring traits that were shaped by their mother’s genotype and environment are known as maternal effects. For example, maternal size and condition may impact offspring size and behavior. In this study, I investigated whether maternal effects were present in the mangrove tree crab, *Aratus pisonii*. Specifically, I compared larval size, sinking rate, and position in the water column to maternal size. I found no evidence for maternal effects in this species Regardless of maternal size, larvae had little variation in size and behavior. This information supports that being small and swimming near the top of the water column as young larvae is essential to their development. Swimming near the top of the water column also suggests that this species uses the export-and-return strategy for dispersal, as being near the surface in early larval development supports transport offshore away from parental estuaries where predation risk is high. This dispersal strategy thereby increases the probability of larval survival and future recruitment.

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**Get Pissed, Destroy!: *Never Mind The Bollocks*, Catharsis, and the Poetics of Punk Rock**

My research analyzes the social function of punk rock music through the lens of theories of catharsis from Classical Greek to contemporary rhetorical theory. Instead of viewing punk rock as merely being rebellious social and political commentary, I argue that it serves as a means of cathartic liberation for those who are marginalized and disaffected, enabling them to remove the satisfaction of control from repressive authorities at all levels of power. Through my rhetorical analysis of the iconic 1977 album *Never Mind The Bollocks*, Here’s The Sex Pistols by British punk rock band Sex Pistols, I demonstrate how it fulfills this role. Specifically, my analysis reveals that punk rock's social function is to offer an alternative way of experiencing and interpreting the world, subverting dominant cultural norms and allowing for a form of resistance against oppressive social structures.

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**The effectiveness of entomopathogenic fungi *Beauveria bassiana* at killing two-spotted spider mites (*Tetranychus urticae* Koch)**

Entomopathogenic fungi are important, naturally occurring pest regulators that have been proposed as a reliable resource for environmentally conscience pest management. *Tetranychus urticae* Koch, the two-spotted spider mite, is a common pest that causes a variety of health problems in plants. These health problems are detrimental to the floriculture economy, as infected and infested plants cannot be sold. This research explores the effectiveness of *Beauveria bassiana*, a pathogenic fungal strain, at killing two-spotted spider mites. Mite colonies were reared on Henderson Bush Beans in a container within a moat to prevent escape. The mites were transferred onto leaf cutouts treated with water (control), or the fungal solution, and were monitored over the course of 5 days. The results indicated that exposure to *B. bassiana* did not result in a significant increase in mite mortality compared to the control group. However, the Henderson Bush Bean seeds were treated with Captan, a common fungicide that has been shown to decrease the effectiveness of *B. bassiana*, which could have had an effect on mite survival after feeding on the developed leaves.

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**The effects of epithelial jamming geometries on tissue max tensile strength and max tensile strain**

This study investigates the effects of epithelial jamming geometries on tissue maximum tensile

strength and maximum tensile strain. Epithelial jamming is a phenomenon that occurs when cells

become tightly packed, resulting in changes to the mechanical properties of the tissue. We used a

computational model to simulate different epithelial jamming geometries and analyzed the

resulting changes in tissue mechanics

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**Exploring the Effectiveness of Virtual Reality Nature Therapy**

Due to increased instability combined with significant academic and social pressure, college students are at high risk for increased mental illness, necessitating further research for innovative therapy techniques (ACHA, 2019). Nature-Based Therapy (NBT) is an effective therapy framework that incorporates natural environments into practice, although its widespread application may be limited, as some individuals do not have access to green spaces due to physical impairments or limited time and resources (Corazon et al., 2018). However, exposure to virtual reality nature environments can significantly improve mood and perceived restorative effects. The purpose of this study was to measure whether virtual reality green spaces have an effect on college students’ working memory, levels of anxiety, mood. It was hypothesized that anxiety and negative affect will decrease, while working memory will improve after exposure to the nature VR environment. A sample of 60 college students ages 17-33 were recruited from different universities in Central Florida. Each participant completed the State Trait Anxiety Inventory (STAI), Positive and Negative Affect Schedule (PANAS), and the Operation Span Task (OSPAN) both before and after being randomly assigned to one of two experimental VR conditions. The experimental VR condition was an interactive game consisting of different nature environments, and the control VR condition was an interactive college dorm environment. First, a 2 (Time: Pre, Post) X 2 (Condition: Nature, Control) Mixed ANOVA was conducted to determine if there was any effect of the manipulation on working memory, but no significant effects were observed. Second, the same analysis was conducted, but with anxiety as the outcome. Overall, there was only an effect of time such that post-test anxiety scores (M = 126, SD =17) were lower than pre-test anxiety scores (M = 130, SD = 18), F(1, 58) = 10.97, p = .002. Finally, the same analysis was conducted with negative affect as the outcome. For negative affect, there was a significant main effect of time, F(1, 58) = 22.38, p < .001, and a significant interaction between time and condition, F(1, 58) = 7.61, p = .008. The control group saw no change in negative affect scores from pretest to post-test. However, for participants in the nature group, negative affect significantly decreased after the VR condition. Based on these findings, nature-based therapy within virtual reality should be more widely used as a means of improving mood and anxiety for those who have access to a virtual reality headset. While there is more research to be done to explore the impact of VR on mental health, this study provides a significant premise for using VR as a means of therapy. For college students with busy schedules, taking the time to be present and mindful can be difficult. Exploring nature environments in virtual reality, however, can take less time and effort to access, and VR can be just as all-encompassing as real nature. For this reason, VR can provide an effective alternative when real natural environments are otherwise unavailable.

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**Kinesthetic interpretation at Blue Spring State Park**

Manatee population health indicates the health of Florida’s coastal and connecting freshwater ecosystems, which have been altered by humans. Florida manatee conservation involves direct ecosystem management and indirect public education to be successful. Known as the “Winter Home of the Manatee,” Blue Spring State Park in Orange City, Florida, is a warm-water refuge for hundreds of Florida manatees from October to March and educates thousands of visitors on conservation and ecosystem function. Seeking more hands-on programing at the park, I tabled twice a week with manatee bones, a retired tracker, and a matching game. I created a survey to collect data from visitors about the exhibit’s impact, including assessment of previous knowledge and new knowledge about manatees. I talked to 2,013 people over a two-month period, and 42 responded to my survey. Of the 42 who responded, 33 indicated that touching manatee bones made an impact on them, including four who did not see live manatees. All respondents reported the same appreciation or increased appreciation for manatees and their role in Florida’s ecosystems. In conclusion, kinesthetic and game-like experiences can enhance conservation education efforts among populations who are already inclined to be interested in manatees.

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**Investigating The Daisy Patch Using Max Gen~**

Electronic Music is a field which requires creativity, musical knowledge and technological expertise. As a student who has always emphasized creativity in her learning and work as well as the study of music, I have always felt the importance of gaining more hardware and software related skills to complete my resume. In order to manifest this goal, I investigated a piece of technology called the Daisy Field using the patching environment Max Gen~ (an extension of the program, Max). The Daisy Field is both a piece of hardware and a digital programming environment, allowing for a variety of tools to be programmed and utilized through this one device. Some of these possibilities include filters, oscillators and synthesizers that mimic keyboards or string instruments. The goal of the research was to investigate its range of possibilities and gain familiarity with its processes. Through shipping delays and manufacturing difficulties related to small business operations and the complication of working with a mentor virtually on a very hands on process I was able to gain knowledge about what it takes to work with both hardware and software and the challenges with putting those skills together. Working with the Daisy brought me academic clarity and confidence in my current and future endeavors and I was able to develop lists of supplies and directions that others should utilize if they decide to take on the challenge themselves. Overall, while it proved to be much more challenging than I anticipated, I was able to gain some basic understanding of a piece of equipment that has more possibilities than I'm even able to imagine now.

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**A computational model for predicting taste reactivity behaviors of rats from Fos-immunoreactive neuron counts**

The gustatory system is the sensory system responsible for the perception of taste. Which is a sense that is perceived through the interaction of dissolved molecules with taste receptor cells in the oral cavity. Currently, five tastes are recognized: sweet, salty, bitter, sour, and umami. Given that the gustatory system can process and sense taste, our brains can determine whether something is beneficial or harmful. An immediate orometer response to tastes in the oral cavity is called taste reactivity behaviors. These behaviors can be interpreted as an indication of the qualities of the tastant. For example, bitter tastes might lead to an oromotor response that shows disgust. Given this information I conducted a study to determine whether certain areas of the gustatory cortex interpreted specific tastes and therefore elicited ingestive or aversive taste reactivity behaviors. I looked at neuron counts within eight areas of the gustatory cortex; GI(lat), GI(med), DI(lat), DI(med), AID(lat), AID(med), AIV(lat), AIV(med). The neuron counts were then compared to the behaviors elicited and a logistic regression was run to determine a potential relationship. I found that the eight areas of the gustatory cortex work together to interpret taste information. I have also created an equation to compute the probability of ingestive or aversive behaviors given neuron counts in the gustatory cortex.

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**Effects of Species type on *Mycorrhizae* Abundance**

Under conditions of low nutrient availability, plants may adopt a number of different strategies for increasing nutrient uptake. The formation of *Mycorrhizae* networks is one of them, the relationship is mostly mutual, so the fungi increases uptake of nutrients while the plant provides sugars to the fungi. However, a mutual relationship is not always the case. In some cases, plants are exploitative meaning it’s a one-way relationship where the plant is getting nutrients but not reciprocating. This is due to some habitats having lots of soil nutrients hence making associations with mycorrhizal fungi unnecessary. This project aims to look at mycorrhizal abundance in the sandhill ecosystem.

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**Progress in Synthesis of SINE Drug Targets via an Enolate Reaction**

Selective Inhibitors of Nuclear Export (SINE) compounds are a relatively recent development and are used selectively in the treatment of certain hematological malignancies due to their inherent toxicity and effect on the body. These drugs inhibit the Exportin 1 (XPO1) protein, which is found in the nucleus district of most mammalian cells. In eukaryotic cells, XPO I is solely responsible for the export of many tumor suppressing proteins (TSPs) and growth regulatory proteins (GRPs). Inhibiting XPO1 expression localizes TSPs to the nucleus causing apoptosis of cells. This makes SINE compounds effective in the treatment of certain oncological ailments. Present research on SINE drugs deals mainly with drug trials and toxicity, with sparse focus on further development. The goal of this research is the synthesis of novel SINE drugs. Using previous research, methods for the synthesis of three novel SINE compounds have been developed. A full reaction scheme for SINE core synthesis, mechanism, and methods of partial target synthesis as well as discussion into the use of NMR, IR, TLC, and column chromatography are included.

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**How do size and sex make Cuban Tree Frogs susceptible to parasitic infection by the pentastome *Raillietiella orientalis*?**

*Raillietiella orientalis* is an invasive parasitic pentastome that has been harming native snake species in Florida. The parasite spreads through intermediate hosts, including lizards and frogs. The purpose of our study to see if the prevalence of the parasites in frogs was based on size and sex. We collected 99 frogs of four species (70 Cuban Treefrogs, 4 Spadefoot Toads, 1 Pig Frog, and 25 Southern Toads) in the DeLand area and dissected them to determine if they were infected with *R. orientalis*. We collected these frogs from 5 retention ponds (Painter’s Pond, Stetson Cove, Pete’s Pond, Brandywine, and Mercer and Fernery at Floyd Avenue) across DeLand. After dissection, we found pentastomes present in 23% of Cuban Tree Frogs and 32% of Southern Toads. However, our results showed that the prevalence of pentastomes in frogs was not significantly associated with the frog body size, sex, or species. Rather, we found that pentastome presence was more related to location, with 41% of the frogs from Brandywine being infected. Our results showed that pentastome prevalence was related to location of the frogs but sex or size.

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**Fish Abundance, Species Diversity, and Species Richness Correlating with Increasing Water Levels Within Blue Springs**

Blue Spring is a first-magnitude spring with variation in water level with season. During the rainy season, water levels rise, creating new habitats for freshwater organisms. One such habitat is a side spring formed by increased water levels from rainfall. Past research suggested that rising water levels in the main spring increase fish abundance, diversity, and richness in this supplemental habitat, but water levels in the side spring were not measured in that study. This study built on previous research and hypothesized that fish abundance, diversity, and richness would increase as water levels increase in the side spring. for about seven weeks, we put two Go-Pro cameras at the end of the side spring, two in the middle, and two in the confluence where the side spring connected to the main spring. We also put four Go Pros cameras in the main spring, two on the left bank and two on the right bank. Once the video recording was done, we analyzed ten minutes of each video and calculated the total number of fish, species richness, and species diversity using the Shannon-Weiner Diversity Index. Using a paired t-test, we measured the difference in fish abundance, species richness, and species diversity between the main spring and side springs. Fish abundance was high as fish used this supplemental habitat, but there was no change in the fish species richness or diversity as water levels rose, nor was there a difference in fish abundance between the side spring and main springs. Even though our results did not support our hypothesis, we can conclude that this supplemental habitat is an important component of the larger spring system.

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**The effect of hypoxia on apoptotic pathways in SKBR3 breast cancer cells**

Uncontrolled cell proliferation leads to cancer. It is imperative that our cells have mechanisms to remove unwanted cells. Apoptosis also known as regulated cell death is a chain of biochemical events that initiate cell death. This cell death cascade is led by a family of proteins called caspases. One particular caspase that is essential to the initiation of the apoptosis is caspase-8. Another molecular mechanism that is often found with solid tumors is hypoxia, or a reduced oxygen environment. Hypoxia induces the expression of specific genes that support cell proliferation, evasion of apoptosis, metastasis and more. In this study we looked to examine the effect of hypoxia on caspase-8 protein expression in SKBR3 breast cancer cells to better understand the anti-apoptotic mechanisms that hypoxia induces. From previous research, we hypothesized that because caspase-8 is a master regulator of apoptosis, and hypoxia increases the evasion of apoptosis, there would be downregulation of caspase-8 protein expression. To examine this, we performed a Western Blot to investigate caspase-8 protein expression in SKBR3 cells grown under normal oxygen conditions and hypoxic conditions. We observed that under hypoxic conditions, there was an upregulation of caspase 8. This data suggests that hypoxia increases caspase-8 protein expression. However, it is unclear if the increased expression correlates with increased sensitivity to apoptosis.

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**Analyzing the Effect of a Point Mutation on The Plasma Membrane Fusion Protein Prm1p in *Saccharomyces cerevisiae***

Cell fusion is an integral mechanism for processes such as myogenesis and zygote formation. While still a severely understudied mechanism, *Saccharomyces cerevisiae* serves as a model organism to understand this essential life process. Various proteins have been identified as playing some role in fusion, including Prm1p, a pheromone-induced protein suspected of being involved in plasma membrane fusion. In previous studies, two-way *prm1*Δmutants showed significant defects in fusion, including inability to fuse or lysis upon contact, which may indicate Prm1 plays a role in cell membrane stabilization. To analyze the role of Prm1p, we created a point mutation in two neighboring, highly conserved residues in the extracellular loop, Prm1p-PF240AA using site-directed mutagenesis on plasmids containing GFP-tagged *PRM1*. When this plasmid was expressed as the only copy of Prm1p in yeast cells, we observed a significant decrease in cell fusion compared to the wildtype protein. When the localization of Prm1p-PF240AA was analyzed through fluorescence microscopy, we found a similar significant decrease in localization to the fusion site. This study is one of the few analyzing the roles of various domains in Prm1p, and the results may suggest that this extracellular domain may be necessary for fusion-specific interactions.

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**Imaging Early Developmental Stages of Butterfly, *Vanessa cardui***

*Vanessa cardui* is a butterfly species which can be found all over the world, but very little is known about its larval development at the microscopic level. The purpose of this experiment was to acquire the first cell-level images of developing *V. cardui* embryos at six-hour intervals until larval maturation. These images will then be used to mark specific landmarks in development. By better understanding the early stages of development in this species, we can identify the effects of gene alteration in this species. While the effects of gene alteration can be studied using CRISPR, many pesticides and herbicides can have the same effect on insect species over generations. By understanding how embryogenesis occurs in this species naturally, we can identify abnormalities that arise in insects affected by harmful chemicals. Fixed-cell fluorescent images of embryos stained with DAPI and phalloidin were acquired between zero and fifty-four hours of collection. Based on the images collected, *V. cardui* appears to develop in a different manner to the well-studied *Drosophila* *melanogaster*.

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**How the political elite affects public opinion: Florida's response to the COVID19 pandemic**

How does public opinion form? Recent literature suggests that public opinion formation occurs from the political elite, who are isolated, powerful political figures such as governors, senators, and the president. Understanding public opinion formation is crucial to understanding campaigns, elections, and voting behavior. The COVID19 pandemic and mitigation strategies became polarized among Democrats and Republicans, as each of these respective party elites used framing to convince the electorate that their protocols are successful and the other party’s is unsuccessful. This project seeks to fill a gap in the literature using retrospective public opinion on the approval of Florida Governor Ron DeSantis’ COVID19 protocols. Using a survey experiment, this project will seek to answer the following research question: What effect do political parties have on influencing public opinion on the government’s response to COVID19?

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**Exploration and documentation of the Lake Beresford Springs**

The surficial and deep Floridan aquifers are recharged along the DeLand Ridge in east Central Florida, but current and past land uses in these recharge areas impact the quantity and quality of the surficial and Floridan aquifer water. This project documented the existence of the spring system within Lake Beresford that is fed by these aquifers. Our intention is to highlight these previously undocumented seepages that contribute to the output and hydrology of the Volusia Blue Springs basin which encompasses much of Deland, Lake Helen, Orange City, and Deltona. These undocumented seepages and springs are particularly impactful to the ecosystems in their immediate vicinity and recognizing them is the first step towards instituting more effective procedures to manage the health of these ecosystems. Lake Beresford has been plagued in the recent past and currently with higher levels of nutrient pollution than expected based on nearby watershed run-off from limited development along the shore. Tracking the sources and destinations of nutrients from the urban and rural DeLand Ridge land uses through the inclusion of the Lake Beresford Springs and seepages builds a more comprehensive view of the DeLand Ridge and Blue Spring Springshed hydrology.

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**Attitudes and beliefs on complementary and alternative medicine in Stetson intercollegiate athletes**

The purpose of this research was to measure the attitudes and beliefs of athletes vs. nonathletes at Stetson University. The CAM Health Belief Questionnaire (CHBQ) was administered to the Stetson student body via a mass email list. Participants had to be over the age of 18 and currently enrolled in a university. A total of 184 responses were collected with 37 of those being athletes. The scores of athletes were 42.712 ± 8.16, while nonathletes were 42.703 ± 9.20. There was no significant difference between both populations however both demonstrated a slightly positive attitude toward CAM. This could suggest that CAM usage has grown over the years in both athletes and nonathletes which has contributed to the slightly positive scores of this study. Future research using a larger sample size could tackle several of the limitations of this study.

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**Water Lettuce Seeding in Florida**

*Pistia Stratiotes* is currently classified as a non-native species to Florida. Under this classification, it is also considered a weed that is regulated in the Florida waterways. The seeds for the plant have been difficult for researchers to acquire out in the field through core sampling. Radiocarbon analysis of seeds found in sediment cores provide insight to the nativity of the plant. Given the difficulty in acquiring Pistia seeds, this research observed variables that may contribute to plant seeding. The study was conducted at three different sites located in Deland, Orange City, and Deltona/Sanford. The following parameters were observed from August ’22 to March ’23: season, pH, nitrate, phosphate, temperature, environmental stressors, and other factors that may contribute to the production and release of seeds. Float testing was conducted to determine if and how long seeds remained suspended at the water surface before dropping down to the sediments. No seeding was observed from August ’22 to November ’22. However, post Hurricane Ian and Nicole, seeds were discovered in abundance on three separate occasions. This project contributes to the mechanisms for *Pistia* seeding in determining the nativity of the plant and those within the field.

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**The Ever-Changing but Horrifically Constant Eugenics Movement in 20th Century America**

This project explores the ways that the eugenics movement in the 1910’s and 1920’s changed by the 1970’s, and describes the reasons it was still allowed to continue as long as it did. The focus is specifically on the eugenics of women of color and how it continued for an extensive period of time by using words wrongly associated with their race, using the media to gain support, and by finding loopholes in the laws. For background, I will discuss the founders of the 20th century eugenics movement, and then link their agenda to the present day continued traditions that the eugenics system has set up against minorities. However, the primary focus is on the Buck v. Bell Supreme Court case and how the outcome of this case set up a culture that allowed the eugenics movement to continue and allowed for laws to be put in place to solidify it. To look at the change over time, the paper focuses then on the next phase of the eugenics movement in America including the unwanted sterilization of women, including the Relf v. Weinberger case.

**Creative Arts**

Samantha Berman (Luca Molnar)

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**VOYEUR**

My work tends to revolve around my emotions conveyed through unconventional and often macabre abstractions. I am fascinated by works involving body horror, specifically those portraying the human body being pushed to its absolute limit. Though often fantastical, I feel as though this type of art truly portrays what we, as humans, feel deep down but cannot show. Being understood is important to me; however, the path to letting other people know what I’m feeling is often a difficult one to follow. Visualizing my experiences with love, anxiety, and depression through intense imagery allows me to invite others in who also have a hard time expressing themselves, uniting us through shared experience.

My project is a window into my mind, my thoughts, my own emotions. The eyes before you are peepholes into different experiences that each tie to unique and distinct emotions. While subtle, you’ll come to find these sights are not so foreign once fully understood.

I invite you to look into my eyes.

Joshua Camden (Dr. Nathan Wolek)

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**The Show Must Go : A Theatrical Documentary**

Skills from all fields of my expertise were utilized to complete this documentary. 100 hours spent producing the show, and another 30 to edit the product presented at showcase. The efforts made by those in onstage entertainment make memories for the audience who witness the result. But how did this work of art come to be? That's what I want to bring to you now. In my project, I worked together with over a dozen members of the theatre department, as well as my advisor, Nathan Wolek, to script and produce an original play, and document the process of doing so. The result is my piece entitled The Show Must Go On. When crafting this, I wanted it to speak

to those who are heavily involved with the theatre arts, so that they feel like their hard work is being more recognized by the public. The audience, the actors, the crew, they all play such a huge role in making successful entertainment, and it's such a blast to accomplish. In theatre, you don't meet peers; you meet family, you make bonds, you have unforgettable experiences while earning skills you may not have expected yourself to be involved in. It's so easy to become involved in theatre, and it's much harder to ever forget it. Enjoy the show!

Sara Cook (Dr. Nathan Wolek, Dr. Dengke Chen)

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**Enchantment Village**

Sara Cook’s project explores the limits of architecture utilizing three-dimensional modeling. Influenced by fairytale stories, Sara has been fascinated by the buildings of fantasy worlds. Her project explores how one can combine fantasy with reality when creating homes. Her world consists of magical wizards, who, like her, push the limitation of structural design. She worked with senior project advisors Dengke Chen as well as Chaz Underriner.

The wizards of this world live in a place called Enchantment Village that they created themselves. The wizards decided to team up together to create a livable town, however they had no concept of correct architecture. They took small physical objects and created life-sized homes utilizing their magic to create them. The wizards utilized food, utensils, clothing, potion equipment, and anything they could find to turn into a home. They needed to create their village due to their old village being destroyed by dark wizards. Enchantment Village is a small town that little to no defenses which causes issues for the wizard community. Many other neighboring villages seek to destroy and loot the small town, and it is up to the player to upgrade the village to protect it.

Layla Gonzalez (Luca Molnar)

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**Sell Yourself Short**

I aim to create realistic and representational art, because I enjoy translating what my eyes see onto paper, but I'm also very interested in exploring liminality and ambiguity. I like to explore the feelings of hollowness and loneliness that I find in liminal spaces, as well as leaning on a sense of nostalgia for times past.

To me, nostalgia is a weight that both propels me forward until I stumble, and holds me down when I inevitably fall, suffocating under the pressure to remember, remember, remember, until I’m able to claw my way back up and start running again. I often feel like I’m trying to outrace my own mind and memories, trying to look to the future while desperately ignoring the past, no matter how good or how bad it may have been. Now, I’m confronting these memories through my work, and not just my own.

I want to focus on exploring the memories that have been left behind, either knowingly or unknowingly, and focus on the feelings of nostalgia that I know everyone has felt in their lives. Within this work, I am using the lens of social media to explore these feelings, as well as tackling the commodification of our memories and experiences through social media marketing.

I’m in the midst of creating a series based on the favorite childhood memories of others, in the hopes of highlighting how we always seem to remember the past in a better light than it actually was. I used a 3x3 inch scale for this series to mimic the size of our phone screens, which is how

we primarily interact with the lives of others through social media, with ads slowly being interspersed between the saturated and airbrushed memories that have been described to me by my peers. I wanted the soul of the work to slowly fade away into commercialism, as demonstrated by the flow of the paintings from memory to advertisement.

Marisa Luz Ingram (Luca Molnar)

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**Suspension**

On HGTV, I’ve seen people literally shudder with disgust at the sight of old flooring. The

aspirational interior design of today privileges structure, white light, and precision—the

antithesis of your granny’s living room, its jumbled cluster, its DIY Mod Podge aesthetic.

The aspirational interior design of today has a cleanliness that is weirdly calming, while the

sterility is also slightly haunting. The blocks of red, black, and white are programmed in us to

haunt our human existence as they’re, frequently found on poisonous or venomous creatures.

They hold me in the present place alert, mind moving yet physically stagnant.

Recently, when I find myself in a sterile, modern environment, in a liminal space like a hallway,

things are quiet. I can focus on subtlety and the physical experience. There is an internal peace to be achieved from a “simple” line as it lays in space, unchanging in form. This feeling exists for

me in freshly laid tile, in the reveal of the line as you peel back blue painter’s tape. I use this

feeling to create a line made of string. As the suspended string lays in space, it starts to vibrate in my vision, creating a controlled illusionistic movement.

The line is straightforward, fresh, and clean, unlike the clutter in life. There is so much traffic—a

cluster of movement in all different directions. I crave organization, and not just in my color-

coded Google calendar. The point of living is just to get on to the next day and get as much done as possible so the next day will be easier until inevitably more comes to extend the perpetual rush.

What is life like not being in a rush? Why is it when the waitress says that she'll seat me in 15

minutes that my first instinct is to start a stopwatch?

What does it feel like to be stagnant? What if I don’t want to feel happy, sad, or mad? What if I

just want to exist, feel one with the space I am in, no feelings, no strings attached. Do you feel

and have that want too, to feel suspended in space?

Leah Marisi (Dr. Katya Kudryavtseva)

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**Displaying Polychromatic Forms of Greek Antiquity Sculpture**

Display methods are the most crucial factor in the mission of a museum to educate the public. A variety of prominent exhibits at large encyclopedic museums which draw in visitors are focused on the art of ancient Greece and Rome (or Greco-Roman antiquity), where the forms of iconic white marble statuary are proudly displayed. The iconic sculptures of the classical world – such as the Peplos Kore – at the Acropolis Museum (Athens, Greece) – have survived with little to no original coloration, which has propagated the inaccurate public opinion on Greek aesthetics. In the twenty-first century, scholars and art institutions have rejected this white aesthetic, deconstructing the Myth of Whiteness, which made the polychromy of Greek sculpture a more of common knowledge to the public. My research addresses the methods of display of polychromy, focusing on installations at the Acropolis Museum, British Museum, and the recent Metropolitan Museum of Art exhibit, Chroma: Ancient Sculpture in Color, analyzing the merits and shortcoming of three distinct approaches towards correcting the erroneous perceptions of ancient statuary.

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**The Venus de Milo: A Case Study of the Persistence of Classical Fascination**

Have you ever wondered why ancient Greek and Roman antiquities are considered some of the

most popular in museums today? The Venus de Milo: A Case Study of the Persistence of

Classical Fascination explores the connection between the European Neoclassical era and the

modern popularity of classical antiquities. The acquisition story of the Venus de Milo, one of the

Louvre’s greatest treasures, provides an example of the politicization of classical art, and how

ancient Greco-Roman objects were used during the neoclassical era as status symbols. This paper

uncovers the long-lasting effects of the neoclassical craze in Europe and explains the fascination

with and allure of Greco-Roman objects.

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**Untitled**

Lily Paternoster\* (Dr. Ekaterina Kudryavtseva)

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**Uneasy: Commodification of Jean-Michel Basquiat**

Jean-Michel Basquiat was an American contemporary artist famed for his abstract and thought-provoking paintings that served as a sharp commentary on racism, drug abuse, and power struggles in America. In the last decade he has gone from being a famous artist to a pop culture icon. The elevation of his status is attributed to a massive boom in merchandise collaborations between his estate and various brands, ranging from Old Navy to Yves Saint Laurent (YSL). My research will analyze these brand collaborations and their respective press releases to determine if the commodification is whitewashing Basquiat’s identity. Using art historical sources and memoirs, biographies, documentaries and interviews I will compare the version of Basquiat in the art history canon to an artist printed onto sneakers, handbags, candles, and even 6,1000 USD YSL skim boards. This comparison will allow me to question the relationship between the artist and the merchandise, which is ignored in art institutions. I will be creating a database of all brand collaborations from the first to most recent alongside their press releases. The

database will be attached to the appendix of my Stetson senior research paper and available through the Stetson Library database.

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**Camping in Space: A Look at Narrative in the Music of Outer Wilds**

Outer Wilds (2019) is a sci-fi video game about life, death, and the universe. The unique nature of Outer Wilds forces players to rely on environmental cues and music in conjunction with the gameplay to piece together the overarching story. In this presentation I will show how the music of Outer Wilds reflects the game’s narrative. After a brief summary of the game, I explain how quantum physics is represented within the music of Outer Wilds through the use multiple keys, called the double-tonic complex (Nobile 2020). I then follow by looking at the instrumentation of individual tracks and show how the music represents different races/characters and conveys certain emotions in response to in-game events. I conclude by demonstrating how the end credits music functions as an overture to the game despite its placement at the end of the game by borrowing fragments of melodies and harmonic progressions from music throughout the game to summarize the complete narrative. From instrumentation to the timing of musical cues, the music of Outer Wilds helps players make connections within the game and more clearly understand it’s overarching narrative.

Mario Saponaro\* (Luca Molnar)

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**Eternity Doesn't Last Forever**

I am terrified of the end. Life is a very fragile thing, after all. There is both complexity and

allure in the limited time we have. Much of mine is spent trapped in the details, but ultimately

my work is made to speak to, and have an impact on, the viewer; to tell a story bound in the

studio as one that transcends time.

The sun rises and sets each day without fail. Time lives outside of a schedule, functioning

almost as if it's religion. We bow, worship, and succumb to its power. In this series I depict the

moments and temptations that invite us to fall for its imposing nature. Using flowing color and

the harsh lines of my materials I juxtapose the vibrancy of life against the darkness of death,

further exploring the rising and setting of contrasting ideas that circle back to create

something new.

40 days and 40 nights represents the grace of a new beginning. Despite the monotony of the

cycle, existing in a circle-like space with no beginning or end, time runs on a finite scale.

Stories close, final pieces end it all. As ours ends, new ones take their place forever and ever.

40 days and 40 nights is just another way of saying eternity; for eternity the unknown calls our

names.

I lack the ability to express how I feel, so I create narratives to help answer impenetrable

questions and explore my fears. This body of work acts as a celebration of the mind and the

intricacies of humanity. It is a slow progression into sadness, one that could only come from

loss. There is beauty in these acute emotions and short moments that make us human.

\*Recipient of a 2022 SURE Grant

**Papers**

Yahia Adla\* (Dr. Michael King)

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**Spilanthol Alters the Consumption of, as well as Taste Reactivity Behaviors and Neural Response Elicited by, Salt Solutions in Male Wistar Rats**

NaCl is an essential nutrient that humans and mammals consume to maintain cellular homeostasis. However, consuming too much NaCl leads to increased mortality in patients with cardiovascular disease and ischemic heart disease. Spilanthol can enhance the taste of NaCl and could help reduce NaCl consumption without sacrificing perceived saltiness. In this study, spilanthol did not significantly change the consumption of a dilute (0.1M) NaCl solution (n=4, p>0.05), while it decreased the consumption of a higher concentration (0.25M) of NaCl (n= 4, p<0.001) in rats. Taste reactivity (TR) behaviors reflect the palatability of the solution in the mouth. Spilanthol decreased the ingestive TR responses (n=4, p< 0.02) while not altering aversive responses (n=4, p=0.19) to a 0.1M NaCl solution. We also investigated the effects of spilanthol on the number of active neurons in taste-responsive brain regions using Fos-immunohistochemistry. We found that the number of neurons expressing Fos protein throughout the salt taste pathway (the rNST, PBN, and GC) decreased after adding 6µM spilanthol to 0.1M NaCl (p-value<0.05). These findings indicate that spilanthol (a salt flavor enhancer) alters NaCl perception and consumption and could be modulating the neural pathways involved in salt taste perception

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**Can Isopods and Mealworms Serve as Intermediate Hosts for an Invasive Pentastome Parasite?**

The introduction of nonindigenous species to an ecosystem can cause a parasite spillover, where nonindigenous parasites are introduced to species native to that ecosystem. *Raillietiella orientalis*, a pentastome that infects the respiratory tracts of snakes, is a rapidly spreading invasive species in the Unites States. The range of *R. orientalis* was thought to be limited to the state of Florida before an infected snake was found within the pet trade. We investigated if isopods and mealworms, two arthropods found within the pet trade, could be competent intermediate hosts for *R. orientalis*. We conducted two exposure experiments over the course of six months, one where we exposed roaches, isopods, and mealworms to pentastome eggs and the second where we fed the exposed isopods and roaches to brown anoles. The dissection results indicate that roaches, but neither isopods nor mealworms were infected by *R. orientalis*. The second experiment indicated that roaches, but not isopods were able to infect brown anoles. Future research into invertebrates that serve as intermediate hosts of *R. orientalis* will be needed as the spread of the parasite continues.

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**The effect of acute immune challenge on the Heterophil to Lymphocyte Ratio of Pygmy Rattlesnakes (*Sistrus miliarius*) infected with Pentastomes (*Raillietiella orientalis*) and Snake Fungal Disease (*Ophidiomyces ophiodiicola*).**

Invasive species can have many negative effects on the ecosystems where they are introduced. One such negative impact is pathogen spillover, such as the spread of pentastomes (*Raillietiella orientalis*) from invasive Burmese pythons (*Python bivittatus*) to native snake populations. Pentastomes are parasitic worm-like crustaceans that live in the respiratory tract of their host and feed on the host’s blood. Snake Fungal Disease (SFD) caused by *Ophidiomyces ophiodiicola*, is characterized by edema, necrosis, and formation of ulcers in infected areas of the skin. Both pathogens have the potential to impose significant energic costs to native snakes due to the energetic demand of maintaining a chronic immune response. To demonstrate the increased energetic expenditure that would accompany infection, we injected Pygmy rattlesnakes (*Sistrus miliarius*) with lipid-polysaccharide (LPS) from E. coli. We hypothesized that the snakes that were already infected with either pentastomes or snake fungal disease would have a higher heterophil to lymphocyte ratio than snakes that had no chronic infection. A total of 20 snakes of varying disease states were injected with LPS and blood smears were made 48 hours (about 2 days) after injection. Blood smears were then scored by counting heterophil and lymphocyte numbers. Future research can investigate the effect that chronic infection has on metabolic rate or other measures of energy expenditure.

Evans Asuboah (Rasheeda Denning)

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**Redesigning Black Home Schoolers of Central Florida's Website for Improved User Experience and Increased Donations**

Black Home Schoolers of Central Florida (BHSCF) is a non-profit organization that provides support and resources for Black homeschooling families in the Central Florida area. Despite their important work, BHSCF's current website is difficult to navigate due to its cluttered layout and excessive information. This project aims to redesign BHSCF's website to improve user experience and increase donations through the website. My responsibilities will include conducting user research, creating wireframes and prototypes, developing a user-friendly design, and integrating donation functionality. The two main goals for this project are to create a more intuitive and visually appealing website that accurately reflects BHSCF's mission and to increase online donations to support their programs and services. Through this project, BHSCF will have a more effective online presence that can better serve their community.

Miranda Bihler, Dr. Hala Nelson, Erin Okey, Noe Reyes Rivas, Dr. John Webb, Anna White\* (Dr. Will Miles)

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**Modeling Supply and Demand in Public Transportation Systems**

Completed during a Research Experience for Undergraduates (REU) program at James Madison University, this project seeks to assist the Harrisonburg Department of Public Transportation (HDPT) in leveraging their data to improve the efficiency and effectiveness of their operations. We construct two supply and demand models that help the department identify gaps in their service. The models take many variables into account, including the way that the HDPT reports to the federal government and the areas with the most vulnerable populations in Harrisonburg City. We employ data analysis and machine learning techniques to formulate insights and make our predictions for the time and space-time models created.

\*Note: Co-authors are at various institutions across North America

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**United States and China: Cybersecurity and Cyberwarfare in the 21st Century**

The United States and China are the two most economically powerful and influential countries in the world. These countries both rely on capitalism to make their mark economically, but their values differ drastically. The United States is a republic with democratic values, and China is a dictatorship with communistic values. In the 21st century, the cyber world has permeated and transformed communication, media, economies, militaries, political landscapes, and personal expression. Both countries aim to achieve national security interests through cyber security and cyber warfare; what is deemed a national security interest between the two countries varies, thus the approaches and strategies China and the United States use are vastly different too.

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**Examining Cell Fusion Defects of a Point Mutation in *FUS1* in *Saccharomyces cerevisiae***

Cell fusion is a necessary process within human development, yet the mechanisms underlying cell fusion are understudied. Fus1p is a known regulator of cell fusion that localizes to the fusion site in mating cells. My research sought to better understand the function of Fus1p’s internal domain through analyzing the effects of a point mutation, Fus1p-L263A, on mating efficiency and Fus1p localization. The Fus1p-L263A mutation was made using site directed mutagenesis and expressed as the only copy of Fus1p in yeast cells. We found that Fus1p-L263A cells show a slight reduction in fusion compared to WT cells in a qualitative mating assay against a fusion compromised mating partner. To determine if Fus1p-L263A was localized to the fusion site, we performed a pheromone induction experiment and examined the localization of GFP labeled Fus1p using fluorescence microscopy. Fus1p appears to be similarly localized at the shmoo tip in both Fus1p-L263A and WT cells. This suggests that a single point mutation is not sufficient in affecting Fus1p’s function, or that the internal domain is redundant with the SH3 domain for some protein interactions. Further work analyzing the phenotypes of other mutations in Fus1p’s internal domain can help provide insight into the internal domain’s function.

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**Artificial Reefs: Addressing Marine Conservation and Restoration**

Abstract: Natural coral reefs are disappearing at an alarming rate, with some estimates predicting the current death toll of all coral reefs to be around half. While there are projects aimed at transplanting, genetically engineering, or replanting coral, immediate solutions are required to preserve and recover disappearing marine species that currently depend on healthy coral reefs. This study compared collected data from Phil Foster Park and Coral Cove Park over the course of six weeks with research conducted by past studies to determine the effectiveness of utilizing artificial coral reefs for marine conservation and restoration. Phil Foster Park contains a variety of artificial sunken structures that together constitute an artificial reef while Coral Cove Park is a natural limestone reef. Phil Foster Park offers a unique look at the benefits of having different kinds of structure available on the reef. Additionally, data collected in this study was used to estimate species richness and biodiversity (derived from the Simpson’s Index) at each reef location. While both reefs were found to be in good health, Phil Foster Park had a higher level of species richness. Both reefs observed similar fish biodiversity.

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**Kira: Your Attentive Financial Confidant**

Kira is a financial advisory tool that is readily available to assist you with a range of financial questions and tasks. Kira communicates strictly through text messages. Kira uses OpenAI’s ChatGPT to answer questions and the Plaid platform to access users’ financial information. Because ChatGPT is a third-party service, users will likely not be willing to submit financial information to a third party, thus we have developed an algorithm to obfuscate the data before sending it to ChatGPT and reversing the obfuscation in its responses.

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**The Impacts of COVID-19 on Restaurant’s Supply Chain and Operations**

The COVID-19 pandemic had a monumental impact on both private lives and businesses. The entire food system was disrupted from harvesting, transporting, distribution, all the way to consumption, including the supply chain and operations of restaurants. The impacts from COVID-19 on restaurants are still being seen even now in 2023. In this study, I interviewed restaurant workers about the past and ongoing impacts of the pandemic on their restaurant. Specifically, I asked “How did COVID-19 impact the restaurant’s ability to source ingredients and influence subsequent changes to the menu?” I also asked what changes to sanitation protocols they made. At national chain restaurants, I found that every aspect of the restaurant had been disrupted. Even a national chain restaurant that has access to global food system experienced significant shortages in key ingredients during the pandemic and after due to ongoing labor shortages. Moreover, because the restaurant chain was constrained in their ability to diversify their food suppliers and shift to local farms for ingredients, they were forced to take several items off their menu. One recommendation is that restaurants, whether locally owned or a national chain, can mitigate disruptions in the global food system by partnering with local suppliers.

Selene Chancellor (Dr. Rajni Shankar-Brown)

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**Hatters University**

‘Hatters University’ is an opportunity to provide students between the ages of 10-14 the opportunity to explore the option of college and the many possibilities that are available to them.  This exposes the students of Deland to the opportunities and resources available to them so they can reach an institution of higher education despite the message that is portrayed to them by society. Hatters University addresses the disparities in education through the lack of exposure and perpetuation of ideas that hinder achievement.The K-12 schools of Deland are situated in an interesting dichotomy as on one end of the city there is a prestigious higher education institution, Stetson University, and on the other side, there is the county jail. This opportunity conveys that the gap in educational achievement is connected to the lack of opportunity that is presented to students within certain social, economic, and emotional environments.

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**The Necessary Restoration of La Casa Cultural Latina**

English as a Second Language (ESL) students and English Language Learners (ELL) make up 10% of students in public school systems in Florida however a massive majority of them never move on to higher education. In the majority of circumstances, an ESL/ELL student is the first person in their family with the opportunity to go to college however they lack the knowledge of how U.S. university systems and rankings work. Additionally, they don’t understand what tests to take, how important GPA is, or how to strategize their applications. La Casa Cultural Latina is a non-profit cultural and educational center whose mission is the advancement and empowerment of Latino|a|x students at Stetson University and within the Volusia County community. La Casa Cultural Latina, like many others, suffered during the pandemic and has had issues receiving recognition and funding. Despite those factors, through several aesthetic implementations and community outreach initiatives, the program has been able to provide academic and language-accessible resources for Spanish speakers within the community and on campus.

Pearl Daskam (Althea Ross-Chavers)

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**How to Identify a Community Partner**

Partnerships are vital for all successful, sustainable programs. No one person can beat a team. However, identifying community partners that share goals and values similar to your own, yet differ in the resources that they have access to, can be a difficult task. In order to help organizations make positive, effective, sustainable partnerships and help ensure that community programs are not only being implemented, but also maintained, I started this project. To do this, I researched and compiled qualitative and quantitative data, the data from this project was analyzed, and the top strategies reported for identifying effective community partners were further researched. The results of this project will be used to help create and maintain sustainable programs in the community through partnerships.

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**Repatriation: National Solutions to an International Debate**

The discussion of repatriation claims of cultural artifacts has emerged in the 20th century, particularly concerning the areas affected by armed conflict and colonization. The extent of colonial looting and the illicit trafficking of cultural materials has grown into a market largely supported by developed, predominantly Western, countries. Underdeveloped locations, especially Latin American countries, represented an easy target for looters due to their combination of high volumes of indigenous cultural materials and a lack of protection policies. As a result, international forums surfaced that prompted legislative repatriation development. However, the continuous growth of illegally acquired cultural materials has led individuals to question the effectiveness of repatriation legislation. International repatriation laws have attempted to resolve the situation, yet a continuous lack of international cooperation has proven to be a fundamental flaw. In the twenty-first century, art institutions felt a growing pressure to address repatriation. The resulting situation has led to increased national efforts from institutions, museums, and activists alike to solve repatriation claims on a case-by-case basis. Therefore, due to a continuous lack of legislative international cooperation, national efforts have increasingly developed new routes to solve repatriation cases.

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**Entangled: Navigating the Complexities of Online Dating, Social Captial, and Self-Presentation in a Small College Community**

The college dating scene is one that is ever-changing, and the introduction of mobile dating applications (MDAs) like Tinder have changed the game. In this investigation, I study the experiences of straight cisgender women who are undergraduate students at a small liberal arts university in the American south. I use qualitative interviewing to learn more about how they navigate modern dating culture online and offline. My study aims to advance literature on this past research and fill the gaps in academia surrounding microsocial college dating culture. My focus specifically is to learn about how these women negotiate Tinder-related interactions both online and offline. I explore issues related to “hookup culture” in a small community and the evolution of dating culture in college. In addition, I investigate how the social capital economy dictates how women navigate dating culture using various strategies. Drawing from research related to gender rules in online dating, Erving Goffman’s theories of self-presentation and face-work, and research on social capital.

Chloe DeYoung\* (Dr. Jean Smith)

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**Analyzing the function of Fus1 during cell fusion in *Saccharomyces cerevisiae***

Cell fusion is a ubiquitous process in human life, however, the mechanisms behind cell fusion are understudied. The budding yeast, Saccharomyces cerevisiae, undergoes cell fusion during mating and is an excellent model to study cell fusion. Fus1 is a protein in Saccharomyces cerevisiae that localizes to the fusion site and is known to promote cell wall degradation. Fus1 has a SH3 domain that has been hypothesized to regulate protein interactions required for fusion. To explore the function of the SH3 domain, we created a full SH3 deletion, as well as the point mutations H469A and W473A within the SH3 domain. Through quantitative mating assays using a fluorescent dye that allows for visualization of the membrane between mating pairs, we found that Fus1-H469A and Fus1-W473A caused severe fusion defects. These proteins were also mislocalized in polarized cells, potentially explaining their fusion phenotype. Interestingly, the more dramatic complete SH3 deletion caused a less severe fusion defect despite the protein also being mislocalized. We hypothesize that important protein interactions occur within the SH3 domain that have been altered in our point mutations.

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**Words of a Demagogue: A Rhetorical Study of Putin's Rhetoric in the Russo-Ukrainian War**

Putin’s call for the invasion of Ukraine has generated a new history for Russia and the world. Demagoguery is a catalyst for the war’s inception, and Putin’s identity as a demagogue provides a deeper understanding as to how the military operations came, and continue, to go into effect. Rhetorically, Putin’s speeches are rife with language seeking to promote pro-Russian, anti-Western, and anti-Ukrainian collective ideologies, as well as extensive use of demagoguery and scapegoating as means of militaristic justification. This study aims to expand the modern understanding of demagogic rhetoric and how it is being used to form new collective ideologies in Russia, and to do so, two of his speeches will be analyzed through a demagogic lens using concepts developed by Justin J. Gustainis. This will be done in order to better understand how Putin’s rhetoric contributes to current understandings of demagoguery, nationalism, and Burke’s theory of scapegoating by analyzing the speeches from February 24th, 2022 announcing the invasion; and his speech given on September 21st, 2022 announcing his plan for partial military mobilization in Ukrainian regions, Kherson, Zaporozhye, Donetsk, and Lugansk. Through extensive intrinsic and extrinsic analysis, this study will illuminate how Putin’s rhetoric contributes to these aforementioned discussions.

Kayla Diamond (Dr. Kirsten Work)

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**Biodiversity of fish assemblages in Florida freshwater springs**

Florida’s freshwater springs while being habitats for many varying species are also important and continuously impacted by anthropogenic forces. Since there is a lot of activity in and around these springs the fish assemblages also vary. With the changes of fish behavior being affected by these different influences we hypothesized that the diversity downstream furthest away from any anthropogenic influences would be higher than that found upstream in a heavily influenced area. Using seine nets and recording snorkel counts we measured the fish density, species richness, and fish diversity. Data was recorded for four weeks in the fall months of September and October. Testing was impacted by natural disaster, Hurricane Ian, which we then used testing from after to see if there was any impact that occurred due to the natural disturbance. Our hypothesis was not supported as there was no significant difference when comparing locations, upstream and downstream, with the aftermath of the hurricane. While there was no significant difference further testing would need to be used to state if there was a difference of fish assemblage based around anthropogenic influence avoidance.

Charles Isaac Drummond (Dr. Sam Houston)

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**The Responsibility of War**

The Responsibility of War written by Charles Isaac Drummond is an analytical essay focusing on the ethical wartime tradition of the Christian West, Just War, and its contributions to the modern UN peacekeeping policies. Through close observation of the Just War tradition’s evolution byway of the works of renowned ethicists and theologians (to include St. Augustine, Thomas Aquinas, and Martin Luther), the essay creates a complete and culminated portrait of Just War and its three stages, Jus ad Bellum, Jus in Bello, and Just Post Bello. From this, it launches a comparative analysis to the contemporary genocide and humanitarian crisis prevention initiative of the United Nations: Responsibility to Protect (R2P). In doing so, it proves that Christian Just War—originall meant as an ethical restriction solely for Western, Christian nation states—has greatly influenced the modern world’s secular peacekeeping platform.

Hosanna Folmsbee (Peter Willems)

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**Right to Nutrition: Hispanic Health Initiatives Food Pantry Program**

The Hispanic Health Initiatives is a 501(c)3 non-profit organization that seeks to educate and empower the west Volusia county area with the ability to make informed decisions about their health, wellness and care options. In connection with the mission to educate, advocate, and connect medically underserved individuals and families to services available in their community, the Right to Nutrition will help to expand the reach of HHI’s impact. By including the Right to Nutrition food pantry program into the current operations of HHI, community members will not only get access to healthy and free food options but will also become informed on their dietary needs. By disseminating accurate information in a culturally sensitive and linguistically competent manner, we will provide accessible, health-informed content to the community and offer free lifestyle coaching when requested. The Right to Nutrition targets low-income, historically underserved residents of west Volusia county, some of whom are living in food deserts. The project’s overall goals are to increase access to nutritious foods, offer bilingual and culturally competent support, and celebrate the diversity of families within our community.

Jackson Frank\* (Dr. Kimberly Reiter)

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**How Historical Tone Can Break the Barrier of Historical Learning: Historical fiction and the end of the Napoleonic era**

The ability to create historical fiction can be a difficult task in aligning all historical context to be accurate within the work. However, an even more difficult task is reflecting the culture and society of the desired time frame in order to not only inform the reader, but transport them into the story itself. Not many idolize the culture in their writing as much as Patrick O’Brian and his Jack Aubrey saga. Each novel which follows Captain Aubrey aboard the Surprise retain the naval society which was evident aboard on-duty ships, and the novel The Hundred Days is one the of the best examples of his craft. Taking place during Napoleon’s second and final stint as French ruler, Jack Aubrey along with Stephen Maturin are sent out to intercept mercenary ships willing to trade with Napoleon. O’Brian is able to convey the culture through multiple factors which heighten the experience for the reader. This includes the novel’s use of impressment, naval superstition, medical practices, and battle strategies. While all of these topics have little in common, it is how they are approached in the novel that gives the words more power and makes the reader believe they are in the time period they are reading. For, if they can identify with the time period, they can begin to understand what it felt like to live during that time in history which outlines the power of literature.

\*second place 2022/23 First Year Seminar Manuscript Award

Chanel Gerena (Debra West)

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**Filling Gaps Caused By The Cycle Of Chronic Homelessness**

The Neighborhood Center of West Volusia is a nonprofit organization that works to provide food for the hungry, shelter for the homeless, and prevent homelessness through a variety of resources. One of the recent programs developed through a partnership with the City of Deland is the Bridge Shelter which serves as an emergency shelter for 30 individuals. Through this program a consistent challenge found with clients is the lack of identification needed to obtain a job to get back on their feet. The path to obtaining identification is wide and strenuous, leading to the never-ending cycle of homelessness. This research project utilizes journals and interviews to achieve the goal of finding the root cause(s) and discovering current solutions put into place to aid chronically homeless individuals in breaking out of the cycle and entering the workforce.

Christian Gomez (Dr. Michael King)

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**Effects Of a Bitter and Sweet Mixture on Neurons in the Central Amygdala and Taste Reactivity in Conscious Rats**

Taste receptor cells respond to specific gustatory stimuli and communicate that information to the central nervous system (CNS) to relay encoded stimuli from the taste palate. We observe the effects of quinine, sucrose, and a mixture of the two in the rat’s central nuclei of the amygdala (CeA) neurons and on their taste reactivity (TR) behaviors. Through behavioral testing using intra-oral cannulas for infusion of solutions and VHS equipment for recording, we were able to record the TR behaviors elicited by rats. As well as visualize the active neurons in the CeA for each solution through Fos-immunohistochemistry and nissle staining. The results showed an increase in Fos-IR (immunoreactive) neurons to solutions with quinine and an increased amount of ingestive TR behaviors to solutions with strictly sucrose. Suggesting that even higher mixtures of sucrose in a sucrose/quinine solution will still be masked by quinine and elicit aversive responses, while any solutions with quinine will cause for a higher expression of Fos-IR neurons in the CeA. Hence, the CeA is more sensitive and active to projections of bitter encoded taste stimuli to allow rats to disengage in feeding behaviors of substances that are hazardous or toxic.

Rachel Gordon (Dr. Erik Johnson)

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**Gone With The Wind, A Rhetorical Analysis On Scarlett O’Hara and the Confederate South**

In my research paper, I showcased how Gone With The Wind (1939) is an important film that contributes to public sentiment towards an outwardly romanticized post-war south. I analyzed the film through a narrative criticism critical lens and through a deep analysis of intrinsic structure, intrinsic audience, extrinsic historical-cultural context, extrinsic rhetorician (persona), the rhetoric of the male gaze, and the rhetoric of the antebellum south. I studied how the white female lead, Scarlett O’Hara is portrayed in the film, Gone With The Wind, because I want to evaluate how an early twentieth century antebellum era film chose to portray gender distinction, race differences and the confederate south pre and post antebellum, in order to help my reader understand the impact public sentiment has on evoking compassion towards a Civil War south. With this research I argue that the manner in which Scarlett O’Hara is depicted and the design of the film's structure elicits empathy towards the antebellum south.

Eros Nehja Guillaume (Dr. Melissa Gibbs)

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**The effect of hypoxic environments on Eastern Bluegill, *Lepomis macrochirus*, synchronous air breathing behavior**

Freshwater environments with low dissolved oxygen levels cause adverse effects on the organisms that live there. Most species of fish rely on their gills to obtain oxygen from their environments, but some that have adapted ways to oxygenate their bodies by either using upper layers of water that are oxygen-rich or breathing air. To avoid predation, some fish have adapted to using synchronous air breathing habits. Eastern bluegill rise to the surface tension of water to utilize higher dissolved oxygen found in upper surface layers. They also swim in schools to avoid predation. A series of lab experiments were performed to induce a combination of these behaviors. The data analysis showed a significant result that the bluegill do perform synchronous air breathing habits more frequently often in low dissolved oxygen environments. This study could show how different fish species utilize social and atypical behaviors to protect themselves in low dissolved oxygen environments.

Rania Harrara ( Dr.Rajni Shankar Brown)

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**From Grassroots to Global: A Journey of Advocacy in UN Spaces**

Advocacy in United Nations (UN) spaces is crucial for achieving sustainable development goals and promoting human rights. Civil society plays a significant role in shaping global policies and advocating for change in UN spaces. This presentation will discuss the inclusion of civil society in UN spaces, and the steps and soft skills necessary to become an effective advocate. Drawing from personal experience as a gender and climate justice activist and organizer at Girl Up, I will discuss the necessary steps and soft skills for effective advocacy

in UN Spaces, including negotiation and drafting recommendations and collaboration with diverse stakeholders. Through my journey in grassroots organizing, I acquired valuable skills that were transferable to advocacy at the international level. I will discuss how I leverage my experience to join the UN Women Advisory Board, White House Climate Youth Advisors, and a Youth representative at the United Nations 67th Commission on the status of Women and the United Nations Water Conference. The audience will benefit from learning about the different ways they can contribute to shaping international policy. The presentation will also provide insights into the unique challenges and opportunities that arise when advocating in UN spaces, and how to overcome them.

Payton Hayes (Dr. Rachel Core)

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**Social Learning and Deviance among collegiate athletes**

My study focused on deviance within collegiate sports and how social learning contributes to the normalization of these behaviors. There have been recent surfacing reports of athletes committing crimes, whether that be drunk driving, domestic violence, or drug use. The theories used to explain this are labeling theory and social learning theory, which can aid the idea that negative behaviors are learned and not innate. My research questions were: Does athletic participation influence higher levels of deviant behavior? How does peer influence contribute to deviant behavior? My hypotheses for this study were: Division athletes will have more deviant traits than the other athlete participants, males will be more likely to participate in deviant behaviors, and athletes who played elite sports will condone deviant behavior more than athletes who did not. For the study I surveyed 49 division 1, club, and intramural athletes at Stetson. Analysis of the data demonstrated significant results.

Devin Hernandez (Dr. Margaret Venzke)

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**Re-Examining the Siege of Constantinople (1453)**

Throughout the course of history, there are a myriad of famous scenarios in which small groups hold out against the onslaught of an enemy that’s much larger than themselves. The famous engagements at Thermopylae, Masada, the Alamo, and Stalingrad are battles, sieges, and last stands that all evoke a sense of awe at the bravery of the resistance force that faces such staggering odds. Due to the monumental nature of such battles, sieges, and last stands- many times elements of these stories are embellished and overexaggerated in the popular memory. The siege of Constantinople (1453) and its story of a few thousand Byzantine defenders holding out for fifty-three days against tens of thousands of Ottoman Turks is one such scenario. Popular and academic narratives of the siege follow a similar narrative arch that over-emphasize the impact of the Ottoman firepower and efficacy of Turkish military and naval operations during the siege. A closer look into the events of the siege through the use of modern critical lenses helps place these mythical moments into objective reality. The use of the three-stage siege cycle framework postulated by historians Marios Philippides and Walter K. Hanak places the actual impact of these popular elements of the siege into objective reality and works to illuminate other key factors in the city’s fall to the Turks, such as how the injuring of a key military leader led to the shattering of the Byzantine morale and to a postern gate being left open which allowed for Ottoman entrance into the city.

Grace Herzog and Mallory Holland (Bill Feyk)

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**Patient Outreach: How to Effectively Market to Uninsured Populations**

The Good Samaritan Clinic is a 501(3)c volunteer-based charitable organization providing free of cost medical, dental, mental health, and pharmaceutical services to those uninsured in West Volusia County. One of our most consistent challenges is growing our patient base. We have many resources available through grants and donors, but some nights very few patients come in to take advantage of our services. We are conducting this research project with the goal of identifying best practices to reach uninsured people in West Volusia County and implementing these strategies into our marketing plans.

Ashley Hew, Joshua Camden, Joshua Dennis, William Jackson Grey, Avery Heck (Krista Franco)

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**Break the Cycle: A Conversation on Bridging Generational Gaps through an Empathetic Lens**

“Things could not be worse…” a repeated phrase that speaks to feelings of hopelessness among today’s generation. The Greatest GenerationZ, a devised theatre piece, produced by senior theatre arts majors, examines the pressures felt by young people today, yesterday and decades ago. Despite generational differences that incite discourse, we discovered that we’ve faced similar issues that generations before us faced, just in different contexts. This original play uses heavier topics such as war, racism, sexism, homophobia, and disease as well as lighter subjects like societal trends, pop culture, and apt colloquialisms to inspire a conversation about empathy. From the script, to the set, to the stage, walk through time and witness the similarities between you and those who came before you. To view the piece please follow this link: <https://www.youtube.com/watch?v=_sj6DmWGQoA>

Lisa Jordan (Althea Ross-Chambers)

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**Do Kids Really Hate Learning, or Do They Just Need To Be Engaged?**

Anyone who has worked in an after-school or educational setting has heard the dreaded, “I hate school,” or “I’m not good at learning.” At the Lacey Family Spring Hill Boys and Girls Club, we do our best to encourage continued learning after our kids leave their classrooms. However, we often face a roadblock with our older students as they have dug their feet into the idea that they are repulsed by (or are bad at) education. In an attempt to combat this, I used my Junior Capstone to fortify an existing bond between the Boys and Girls Club and the DeLand Public Library. There was a discrepancy noticed in the amount and quality of programming for elementary school students versus middle and high school students, and we found that this relationship with the local Library could fill this gap. The Library has been visiting our Club on a biweekly basis for several months now to offer both Reading and S.T.E.M programming to our older students. In turn, we spend each day continuing to engage with these topics and the content they are learning due to their increased engagement with their education. We hope to continue expanding on the programming available for our older students, as well as sustain this relationship with our Public Library.

Samantha Kmetz

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**Volunteer Income Tax Assistance Program**

Catherine Kraft\* (Dr. Leander Seah)

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**Speaking of Dictators: Stalin's Soviet Union, Mao's China, and the Language of Personality Cults**\*

Two people are responsible for the deaths of more than five Holocausts. These individuals, Joseph Stalin (Soviet Union) and Mao Zedong (People’s Republic of China/Communist China), implemented policies which directly caused the deaths of up to 69 million. Yet these two leaders were dictators who stayed in power until their deaths and who had large cults of personality with numerous supporters. My research project analyzes this paradox, arguing that language was instrumental in the shaping of these personality cults that helped Stalin and Mao to rise to power and maintain their positions as dictators. The language in question was disseminated through various mediums and methods such as specific ideological creeds, constant inundation with the likeness of the dictator throughout daily life, propaganda, and the use of technology and fear. In “speaking of dictators,” my project will additionally point out how intriguing, shocking, and tragic it is that these personality cults reached their language-tendrils outside their respective countries, permeating diplomatic relations and shaping international perceptions of Stalin and Mao.

\*Supported by a 2022 SURE Grant and a 2022 Evans Johnson Grant

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**Dishing up Feminine Icons: The Business of Communicating Roles in The Post-War Kitchen**

The invention of Betty Crocker exemplifies the tactics used by the food industry in their conversation with women in defining women’s role in the post-war kitchen. A major contributor to the historical conversation around these convenience foods has been Laura Shapiro. Shapiro’s work spanning multiple books highlights the methods and evolution of the methods used by the food industry to cultivate acceptance of convenience foods from consumers. Susan Marks’ book, Finding Betty Crocker, provides a history of Betty Crocker and her role as a symbol. My work will contribute to this conversation by focusing on feminine icons, most notably Betty Crocker, as tools and rhetorical devices used by the food industry in an ultimately successful attempt to shape taste in favor of convenience foods. Using primary sources including advertising, letters, and branded cookbooks, I will trace the negotiation between the food industry and post-war women. It is important to review how food has created roles across gender lines. I argue that there exists a back and forth negotiation. Women's desires caused food advertisers to mask themselves as a companion through the creation of feminine icons and their adjustments in the ways that convenience foods were used in the post-war kitchen.

Funding: This project will also be presented at NCUR supported by the Honors Stipend. SURE Grant and Evans Johnson grant are pending.

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**Effects of Intra-oral Infusion of Sucrose + Quinine on Fos-Immunoreactive Neurons in the Lateral Hypothalamus and Rodent Taste Reactivity Behaviors**

Much research has been done to analyze various brain regions associated with the rodent taste pathway. However, little mapping has been done in the lateral hypothalamus (LH), a region associated with the taste pathway and appetite. Scant testing has been done to assess neuronal or behavioral responses elicited by mixtures of taste stimulants. Therefore, this study examined the effects of sucrose-quinine mixtures on taste reactivity (TR) behaviors and the number of active neurons in the LH. Groups of rats (n = 5) received intraoral infusions of the following: dH2O, 0.1 M or 1.0 M sucrose, 0.003 M quinine, 0.1 M sucrose + 0.003 M quinine, 1.0 M sucrose + 0.003 M quinine, or no treatment. Fos-immunohistochemistry was used to label activated neurons in the LH. The 1.0 M sucrose + 0.003 M quinine mixture caused an increase in active neurons when compared to all other treatment groups. The two mixture solutions caused equal increases in both ingestive and aversive behaviors compared to the control group, and quantities of both behavioral types for the mixture groups were equal to that of the quinine-alone group. Based on linear regression analysis between behavior and activated neuron counts, LH activation may suppress ingestive behaviors.

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**Legacies of War: The Church and State in Argentina**

Despite Catholic Churches in other Latin American countries trending progressive since the mid to late 20th century, a phenomenon that is often referred to as liberation theology in the field of political science, Argentina’s Catholic Church has remained staunchly conservative throughout history. In Latin American politics, authoritarian regimes tend to result in a more progressive Catholic Church. Despite being controlled by a military dictatorship between 1974 and 1983, Argentina’s Catholic Church remained conservative. Thus, Argentina has emerged as an anomalous case. My research investigated the question of why that is. This project utilized ethnographic research and political anthropology. Interviews were be conducted in Mar del Plata, Argentina, and included testimony from clergymen, congregates, and citizens of Argentina that survived or were impacted by the Dirty War and the (in)action of the Catholic Church. The data and stories collected have been compiled into both a research paper and a journalistic article.

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**Increased cardiomyocyte proliferation in hearts treated with Vitamin D analogues**

Mammalian cardiomyocyte production in the myocardium of the heart is very low after birth but may renew at a limited rate in adulthood. After traumatic cardiac injuries such as a myocardial infarction or heart attack, the regeneration of lost cardiomyocytes is minimal, which prevents the adult heart from repairing damaged tissue. Elucidating the signals that can trigger cardiomyocyte proliferation may help to develop therapeutic approaches to improve myocardial repair. In order to investigate triggers of cardiomyocyte proliferation, the Ciona intestinalis model system was used. This model system has been well characterized for heart development studies and provides a useful tool to study cardiac myocyte biology. Vitamin D analogues, Alfacalcidol and Calcipotriene, were used to treat injured and non-injured adult Ciona intestinalis hearts and the effects on cardiomyocyte proliferation were examined using a WST1 colorimetric assay. Vitamin D analogues are capable of binding to the vitamin D receptor (VDR) to trigger cellular responses. Ciona expresses the gene for VDR, and we hypothesized that Vitamin D analogues trigger ErbB2 signaling in cardiomyocytes, a known essential growth factor for cardiomyocyte proliferation. WST1 readings found an increase in hearts treated with Calcipotriene and were significantly different from non-treated hearts and no significance in hearts treated with Alfacalcidol. Understanding the role Vitamin D may have on cardiomyocyte proliferation might lead to a new therapeutic approach to treating damaged myocardium.

Andrea Mingo\* (Dr. Danielle Lindner)

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**Food Allergies, Anxiety, and Disordered Eating in Young Adults**

Food allergies are related to poorer quality of life and increased anxiety in children and adolescents (e.g., Protudjer et al., 2016, Thörnqvist et al, 2019). We recruited 117 participants between the ages of 18 and 25 that had an allergy to peanuts, tree nuts, eggs, soy, milk, wheat, fish, and/or shellfish. Participants completed an anonymous online survey that included items assessing food allergy symptoms, the Generalized Anxiety Disorder-7 (GAD-7; Spitzer et al., 1999), the Social Interaction Phobia Scale (SIPS, Carleton et al., 2009), the Eating Attitudes Test (EAT-26; Garner et al., 1992), and Nine-Item Avoidant/Restrictive Food Intake Disorder Screen (NIAS; Zickgraf & Ellis, 2018). Preliminary data analyses indicated that participants who reported more than one food allergy scored higher on the NIAS picky eating subscale than those who reported one food allergy, t(110) = 3.00, p = .002. Participants who carry an autoinjector scored higher on the GAD-7 than those who did not, t(110) = 2.47, p = .008. Finally, participants that carry an autoinjector also scored higher on the SIPS than those who did not, t(104) = 1.73, p = .04. Results of this study can inform interventions to help young adults cope effectively with food allergies.

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Analee Monrreal (Dr. Wendy Anderson)

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**Effects of Farm-related Risks and Exposures: Evaluating Environmental Injustice on Farmworkers in Pierson, Florida**

The agriculture sector of the U.S economy relies heavily on migrant, seasonal, and immigrant farmworkers who have little access to health care, and yet are exposed to air pollution and pesticides. Approximately 150,000 to 200,000 migrants and seasonal farm workers come to Florida annually to work on farms. I interviewed 25 farmworkers in Pierson, FL about the health impacts they experience that might be associated to air pollutants and pesticides and had experienced health impacts that research has shown can be associated with air pollution or pesticides. And yet, they have limited access to health care and are motivated either by hostile work environments or the need to earn income to continue working under dangerous conditions. This study increases awareness about farmworker health risks from exposure to air pollution and pesticides and calls for new policies and healthcare resources to protect these vulnerable populations.

Madeline Morrow (Samantha Hindman)

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**The Uninsurance Epidemic: A Barrier to Access of Community Care**

AdventHealth Daytona Beach, formerly known as Florida Hospital Memorial Medical Center, partnered with Bethune-Cookman University to pilot a program in 2014 called AdventHealth Community Care to help residents in-need manage their chronic diseases, such as heart disease or diabetes. Through this program, a team of clinicians including a registered nurse, social worker, dietician, and counselor, supported by a team of student health coaches from Bethune-Cookman University, will coordinate post-discharge care for patients with limited resources to manage their chronic conditions. That being said, some members of the community may not have access to this incredible program due to lack of coverage within their healthcare plan or insurance at all. The research I will be presenting will be entirely focused on the larger issues at hand… “What are the main barriers to obtaining health insurance?”, and “How are these issues connected to each other?” The two main goals of this research-based project is to identify these barriers to accessible medical care, and to bring awareness to the severity of the greatest epidemic to ever plague our nation’s healthcare system: **Uninsurance.**

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**Riches to Rags: The Paradox of Resource Abundance in Latin America**

During the 19th century, several Latin American nations saw significant economic growth, which came as a result of their increase in exportation. However, some of these nations were not able to maintain those new levels of economic development and saw their economies fall again after a few decades. Many scholars point to the resource curse as the main reason why Latin American countries are not able to create longstanding economic growth. But, is the resource curse really the reason, or are there other factors at play? This study uses a mix of qualitative and quantitative methods in order to assess this question. It starts with taking a look at the different factors that affected economic growth during this century in Latin America and then focuses on Chile and Peru for a qualitative most-different case study.

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**A Rhetorical Analysis of Lady Gaga's Representation as a Goddess to Herself and Marginalized Groups**

This study explores how Lady Gaga’s Born This Way era played a role for different marginalized communities such as the gay community, the Hispanic community, women, etc. She has always been outspoken when it comes to equality and the rights of people in the world and the American culture. My analysis of this album and era is that Gaga is doing some things that she has never done before. My argument is that she is taking the time in this era to play a role as a female goddess to represent feminism and the queer community and other communities that involve politics. A lot of her songs in the album such as “Born This Way,” “Government Hooker,” “Judas,” “Hair,” “Scheibe,” and “The Queen,” all speak about how they are about empowerment, light, strength and scandalous. She has taken the time to represent herself but also different audiences that she cares about. I will argue how Lady Gaga plays a role as a powerful being representing the pain and struggles she went through in order to speak up for these marginalized communities.

Heather Neal (Dr. Kirsten Work)

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**Relative Abundance of Exotic and Native Fish at Volusia Blue Spring**

Florida’s springs are vulnerable to disturbances from exotic species. The warm climate of Florida, the pet trade, and aquaculture facilitate invasive fish introduction into new ecosystems. Once they are introduced exotic fish may exhaust resources and dominate habitat space. Exotic fish species are characterized by early maturity, high fecundity, and rapid growth rate that contribute to their ability to dominate ecosystems. In our study we wanted to determine how the exotic fish biomass compares to the native fish biomass in Volusia Blue Spring. We hypothesized that the biomass of exotic fish would be higher than the native fish biomass. The spring gains oxygen as distance of the run increases from the headspring. Therefore, we also hypothesized that the fish biomass would be higher downstream than upstream. Using underwater video and seining as our sampling methods, we collected length data for calculating biomass. We found that there was not a difference between the native and exotic fish biomass. This result was consistent at both upstream and downstream sites. Thus, we concluded that the exotic biomass was half of the total fish biomass at Volusia Blue Spring. Future studies should investigate biomass all year, as fish assemblage changes with time and season.

Taylor Oakes ( Dr. Sean Beckmann, Dr. Cynthia Bennington)

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**Prevalence of Reservoirs Infected with *Borrelia burgdorferi* in Central Florida**

Lyme disease is the most commonly reported vector borne disease in the United States. The extent of the effects of the spirochete bacterium, *Borrelia burgdorferi*, has on the population of the southeast of the United States is poorly understood. The infection of both reservoirs as well as human hosts is dependent on the life cycle of the vector; the most common vector for *B. burgdorferi* is *Ixodes Scapularis*. This study assesses the prevalence of *B. burgdorferi* in different rodent species common to Central Florida. Eighty-Five samples were tested and found positives were sent out for sequencing to confirm positive results. 65% of our samples were determined to be positive by the NCBI. Our results show that there is an overall significant infection frequency of reservoirs found in different habitats throughout Central Florida and support the claim that the prevalence of reservoirs infected with B. burgdorferi poses a public health threat.

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**Watsco: Sell Recommendation - 2023 CFA Research Challenge**

The Roland George Investment Program formed a team of four students to represent the university in a statewide competition. The team was given a security (Watsco, Inc.) to conduct in-depth analysis on and formulate a recommendation based on their findings. The presentation includes what they calculated and all macroeconomic and idioyncratic factors attached to their recommendation.

Xanthippe A. Pack-Brown (Dr. Chris Jimenez)

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**Let Women Love: A Cross Examination of Sapphic Relationships in Fantasy and Reality**

This essay conducts a cross examination of sapphic relationships in the canon, as well as in a fantasy world. There is a lack of normal, healthy sapphic relationships in novels in the canon. Instead, it is fantasy worlds that often depict the sapphic relationships that are sought after in reality. There are several structures in modern western society that could explain this lack of realism. Patriarchal, misogynist, homophobic, and racist structures are all built in; they affect not only the way we consume literature, but the way it is produced as well. I will be using these aspects of reality to explore why fantasy worlds act as better vehicles for real relationships. I will also be looking at specific cliches within sapphic novels, such as homophobic narrative arcs, setting/world building, and characterization, and how they affect the overall perception of relationships in the canon and in fantasy worlds. To do this, I will be using This Is How You Lose the Time War by Amal El-Mohtar and Max Gladstone, a fantasy world coupled with an epistolary style, and Honey Girl by Morgan Rogers, a novel partially set in modern-day Las Vegas, Nevada.

Alyssa Pavek (Dr. Sarah Garcia-Beaumier)

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**Illusions of Progress: Action-Fakers, Procrastinators, and Precrastinators Differing in Productivity and Problem-Solving**

Action-faking is the avoidant delay of an important yet stressful task by completing an unimportant yet non-stressful task (DeMarco, 2017). The purpose of this study is to investigate whether action-faking is different from similar phenomena, specifically procrastination and precrastination, based on self-perceived productivity and avoidance levels. Additionally, because procrastinators and precrastinators have different problem-solving issues, problem-solving could also differentiate action-faking from those concepts. Thus, action-fakers were expected to have high productivity scores like precrastinators and high avoidance scores like procrastinators, with problem-solving scores between precrastinators and procrastinators. Non-business student participants (N=32) were told to complete three tasks varying in difficulty over the course of two sessions. Whether participants completed one or two tasks during the first session and when participants arrived for the second session were recorded, along with scores on a computerized problem-solving task. Then, participants were grouped into procrastinators, precrastinators, or action-fakers based on their scores on two self-reported surveys on productivity and avoidance levels while completing tasks. Preliminary results based on chi square analyses show statistically significant differences in avoidance, productivity, and problem-solving scores amongst action-fakers, precrastinators, and procrastinators. Results suggest more focus on task prioritization over the number of tasks completed when measuring individuals’ productivity.

Helena Pendergrass

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**Virtual Reality: The New Era of Teaching**

Many researchers since the 1990s have been attempting to determine the effect of using virtual reality in education. The same equipment used for entertainment can be equipped by the educational system to provide new and immersive methods to traditional teaching. This present research will conduct an experiment to determine the long-term effects of using virtual reality to teach high school students history lessons where they are immersed into a virtual world to recreate an interactive, historically accurate, lesson-based scene. Using assessments and surveys of the students, this collected data will help to determine which type of lesson, traditional or virtual reality, increases motivation and academic success.

Alice Quinlan (Kate Sprague)

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**The Role of Public Libraries**

Public libraries serve as centers of information and education free of charge to the community they are in. Considering recent legislation passed by Florida’s current administration targeting educational institutions, it is essential to understand the function that public libraries serve in their community so we can make sure they are upheld in their current condition. This project is meant to be the preparatory, research-based stage of an informational or promotional campaign to display to the audience the value of public libraries, which go well beyond academia. Two desired outcomes of this project are increased library patronage and public support for the security of the freedom of library programs.

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**Effects of Naproxen sodium (Aleve) and Ibuprofen on the Development of Axolotl (*Ambystoma mexicanum*) Embryos**

Women are unable to take certain drugs during pregnancy which include non-steroidal anti-inflammatory drugs (NSAIDS). They can cause serious damage to embryo development and function. Our study used *Ambystoma mexicanum* (axolotls) as a model for studying human embryo development and two NSAIDS: ibuprofen and naproxen sodium. My hypothesis was that naproxen sodium would stunt the growth of axolotls more than ibuprofen based on its sodium content and higher recommended dosage. I also hypothesized that length would decrease progressively as drug concentrations increased or a dose-dependent effect. Over the course of two weeks, three trials were conducted with axolotl embryo groups of five. They were exposed to either one of five different ibuprofen or naproxen sodium concentrations for 48 hours, and spring water was used as the control. After all trials were completed, head width, head length, and body length were measured for each individual axolotl. The two-way ANOVA and Tukey tests showed that ibuprofen reduced the head and body length significantly more than naproxen, and there was a dose-dependent effect among both drugs for each body dimension graph. Through this knowledge, we can educate pregnant women on the effects of NSAIDS on embryos which will help them decide whether they want to put their baby at risk at any NSAID dosage.

Jacob Robinson (Dr. Jeremy Posadas)

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**Summer Travel Courses: Recognizing Community Engagement in Environmental Sciences**

The Stetson University Hal S. Marchman Program exists to connect more students with the community in a meaningful way that helps students advance their learning out of the classroom, while meeting the needs of the local community. To this end, the Marchman Program is continuing to host the Civil Rights Summer Travel Course to teach students about the Black-led movement in the 1950s and 60s. This course allows students to travel through several cities in the South to learn about tactics organizations use to bring about real change. From this existing travel course, a proof of concept has been developed for the implementation of a new travel course with a focus on local communities and their efforts to address climate change. From both the existing Civil Rights Summer Travel Course and the proof of concept for an Environmental Travel Course, key concepts have been identified to help frame even more successful courses like these in the future to further connect students of every major with the community. The Creation of an Accessible Stage Performance Student Name: Dylaney Sabino Mentor Name: Dr. Nathan Wolek Abstract: If your vision is unobstructed, you may not think twice about attending theatre performances, concerts, art galleries or museums. The visual elements and necessities of these spaces are second nature to you. However, for audience members who have trouble seeing, a venue that is not aware of the need for supplemental information may accidentally exclude a portion of their audience from poignant moments in the exhibition. By being aware of an audiences’ range of visual ability, venues like theatres can make choices that will allow for a more inclusive environment that entertains all of its guests. One such avenue for inclusivity is audio descriptions. Audio describing is a skill in which a person verbally describes the visual elements of whatever is happening onstage or in a gallery. Oftentimes this information is presented through individual listening devices, so that these audience members may listen in peace and enjoy their experience without any other audience members being able to hear the descriptions. This kind of initiative of theatre and other arts venues to make their services more accessible is important and profoundly impacts the people who utilize those services. As with any human being, there are a diverse array of reasons why someone may want to participate in the arts, be it passion or simply for something to do, and it is crucial that venues and organizations break down the barriers keeping some people from sharing in that enjoyment. Art is made by people for people and should be accessible to all people and the addition of audio descriptions to theatre performances is one way we can make it so.

Chase Sabari (Dr. Joshua Rust)

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**Therapeutic Rehabilitation**

In this paper, I will defend a theory of rehabilitation against the criticism that we objectify criminals in the process. This argument will be presented by first rejecting the MPC's (Model Penal Code) retributivist ideals of punishment. The MPC acts as the guiding principle for how states carry out sentencing. Retributivists' reasoning for punishment requires that the offender be punished only to match the severity of the crime. Often criticized as vengeful punishment, I argue that the MPC embraces these backward-looking concerns and makes forward-looking utilitarian justifications like rehabilitation or deterrence secondary goals. I then construct a modified account of rehabilitation that embraces both types of concerns, which I call Therapeutic Rehabilitation. I start by analyzing Peter F. Strawson's reactive and objective attitudes. Reactive attitudes embody retributivist ideals in that these attitudes result from our responses to wrongdoing proportional to our belief in the offender's innocence. The objective attitude exemplifies a problem-solving approach without an intimate connection between agents, much like utilitarian ideals on rehabilitation. My therapeutic approach will position itself at the intersection of a problem-solving objective attitude and a reactive interpersonal attitude. The resulting attitude will mirror an individual therapist-client relationship. This is significant because it is an attitude unique to both reactive and objective. It incorporates rehabilitation without an objectifying or medical outlook. Therapeutic rehabilitation requires that both an interpersonal relationship be realized and objectified problem-solving occur. I conclude my argument by offering this approach to reimagine rehabilitation that offers more compassion to nonviolent offenders, with measures for violent criminals in place.

Dylaney Sabino (Dr. Nathan Wolek)

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**The Creation of an Accessible Stage Performance**

If your vision is unobstructed, you may not think twice about attending theatre performances, concerts, art galleries or museums. The visual elements and necessities of these spaces are second nature to you. However, for audience members who have trouble seeing, a venue that is not aware of the need for supplemental information may accidentally exclude a portion of their audience from poignant moments in the exhibition. By being aware of an audiences’ range of visual ability, venues like theatres can make choices that will allow for a more inclusive environment that entertains all of its guests. One such avenue for inclusivity is audio descriptions. Audio describing is a skill in which a person verbally describes the visual elements of whatever is happening onstage or in a gallery. Oftentimes this information is presented through individual listening devices, so that these audience members may listen in peace and enjoy their experience without any other audience members being able to hear the

descriptions. This kind of initiative of theatre and other arts venues to make their services more accessible is important and profoundly impacts the people who utilize those services. As with any human being, there are a diverse array of reasons why someone may want to participate in the arts, be it passion or simply for something to do, and it is crucial that venues and organizations break down the barriers keeping some people from sharing in that enjoyment. Art is made by people for people and should be accessible to all people and the addition of audio

descriptions to theatre performances is one way we can make it so

Noureen Saeed (Dr. John Tichenor)

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***Creative Compass*: The Role of Music and Art in Fostering The Emotional Well-Being and Improving The Social Skills of K-5 Children**

*Creative Compass* is an innovative music and art therapy program designed to enhance the emotional wellbeing and social skills of children aged between 5-10 years old in K-5 grades. This community-based research project is located in the Spring Hill area of DeLand, FL, and is affiliated with Stetson University. The program spans a semester of 28 sessions, offering a secure and supportive environment for children to explore self-expression and self-awareness while honing their social skills through the mediums of art and music. The efficacy of art and music therapy in aiding children's mental and emotional development is well established, and the methodology employed by *Creative Compass* employs both formal and informal musical instruments, coloring activities, rhythmic exercises, and meditation techniques. To assess the individual needs and capabilities of each child, a pre- and post-evaluations will be conducted, enabling the customization of therapy sessions and measurement of program impact. *Creative Compass* is currently in the development stage and anticipates a launch date of late August 2023.

Avery Samuels (Dr. Sarah Garcia-Beaumier)

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**How does the Perceived Relationship with a Coach Affect Student Athlete’s Mental Health?**

Rates of suicide have risen for student athletes in recent years, and this is due in part to the stigma surrounding mental health of athletics. Athletes are expected to ignore issues with their mental health, and based on their support system and demographics their mental health may differ as well. The current study looks to examine the relationship between how athletes perceive the athlete-coach relationship and their mental health. The study is also looking to see if race or gender impacts athlete’s mental health. For this study, mental health was defined as levels of anxiety and depression. 55 student athletes completed surveys inquiring about athlete-coach relationships, depression, and anxiety. Main effects were found between race and anxiety in caucasian athletes and female athletes, both of whom have higher anxiety. No interactive effects were found between athlete-coach relationship and demographics. Results suggest the importance of race and gender and the effects it can have on mental health through anxiety. This goes to show the importance of eliminating this stigma, and focusing on the support system for athletes and how to better prioritize their mental health. The following presentation will be used to discuss the findings and relevance of this data.

Madison Sepiol (Dr. Michael Denner)

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**Defining “Russianness”: A Comparative Analysis of Nationalist Views in the Russian Orthodox Church and Rodnoverie**

The landscape of nationalism in Russia shapes the values and rhetoric of many Russian institutions, including religion and religious movements. In this project, I explore the relationship that the Russian Orthodox Church (ROC) and the neo-pagan movement Rodnoverie have with each other, nationalism, and the concept of the Russian World since 2000. I analyze the varieties of nationalism found in the Russian Orthodox Church and Rodnoverie to explain why each type of nationalism is most prevalent within that religious community. The expansionist idea known as the Russian World, which was popularized by Vladimir Putin, proves to be influential to the ROC in particular and shapes the type of nationalist beliefs held by many in the Church’s leadership. The kind of nationalism found in the Russian World concept is unlike the ethnic nationalist perspective found in many branches of Rodnoverie, which demonstrates that a multitude of nationalist views can be found in Russian religious communities. Furthermore, this project suggests that the type of nationalism adopted by a religious group is primarily tied to the other values and aspirations of the religion or religious movement.

Madison Skelton\* (Dr. Sarah Cramer)

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**How Syncretism is Bottled and Sold: the proliferation of Coca-Cola in the Mayan world**

Within traditional Mayan indigenous communities, food production has historical, political, cultural, and spiritual value that extends beyond the basic sustenance value associated with agricultural activity. As globalization and modernization have continued to challenge traditional indigenous food systems, tensions around food and agriculture have emerged as central in the Mayan and indigenous movement. Particularly, the increasing presence of agrochemical and food corporations has threatened the sustainability of traditional Mayan food systems and, in doing so, endangered the sense of identity and cultural cohesion necessary for the success of the indigenous movement. This presentation shares findings on the role of industrial foods, namely Coca-Cola, in re-shaping Mayan identity. These findings are part of a larger project on globalization and modernization in Mayan food systems. Data were collected through eight semi-structured interviews investigating agricultural engagement, personal food production and eating habits, continuity and change in Mayan communities, food dependence and independence, industrial foods (namely Coca-Cola), and Mayan spirituality. Participants came from several Mayan language groups including Tzoltzil Maya, Tseltal Maya, Q'anjob'al Maya, and Yucatec Maya. Participants consistently reported an increase in the consumption of Coca-Cola. Some noted that the beverage had taken on spiritual significance and had begun to replace traditional Mayan beverages, namely posh, chicha, and pozol, in religious contexts. Additionally, many described Coca-Cola as a status symbol that elicited feelings of superiority in those who were able to afford it. The findings of this research reveal how the introduction of industrial foods have disrupted the physical and cultural health of indigenous communities. Funding for this project was provided by the Stetson University SURE Grant.

Recipient of a 2022 SURE Grant

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**The Anticancer Effects of *Myrcianthes fragrans* on SKBR3 Breast Cancer Cells**

Breast cancer is one of the most diagnosed types of cancer in women. As incidences of breast cancer and breast cancer-related deaths increase, the discovery of new treatments is paramount. One-third of cancer drugs developed between 1981 and 2014 were sourced from natural products or compounds found within natural products. This study aimed to determine whether *Myrcianthes fragrans* has the potential to be developed as a cancer treatment. Previous studies have determined that populations of *M. fragrans* in Ecuador contain the compounds Citral. Citral has been noted to induce apoptosis in leukemia cell lines and has antimicrobial activity. This data suggests that *M. fragrans* could have anticancer effects on SKBR3 breast cancer cells. To test this, we treated SKBR3 cells with an *M. fragrans* extract. The *M. fragrans* extract was created using ethanol and dried leaves. The cells were treated for 3 different time points, 24, 48, and 72 hours, then metabolism and proliferation assays were performed. The SKBR3 cell line displayed decreased metabolic activity when treated with the *M. fragrans* extract (p<0.05). The SKBR3 cell line also displayed decreased proliferation when treated with the *M. fragrans* extract over 48 and 72 hours (p<0.05). This data suggests that *M. fragrans* does have cytotoxic effects on SKBR3 cells. These cytotoxic effects could be due to *M. fragrans* containing Citral.

Bruno Soto (Dr. John Tichenor)

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**Ethical Housing**

Affordable housing is a relatively unspoken socio-economic issue compared to affordable healthcare, low-cost K-12 and higher education, public infrastructure investment, retirement funds, and minimum wage policy. Yet, natural law – the logic that one is entitled to their basic needs – would argue that every human being deserves housing as much as food or any other basic need. Unfortunately, today we find the housing market in crisis. Prices for homes have skyrocketed since the start of the pandemic, leaving would-be first time homeowners out of the market. This phenomenon is driven by the development of single-family homes over other residential units, including multifamily homes (residential buildings that contain two separate homes), condominiums, apartments, and “tiny homes”, which are a movement to squeeze in more affordable homes that consume less space and resources. However, there is a lot of money in it for developers to continue building single-family homes, even if they fail to serve the needs of the communities where these homes are built in. In this showcase, I will touch on history, economics, and ethics with my two interviewees, Savannah-Jane Griffin (Neighborhood Center of West Volusia CEO) and Buz Nesbit (Deland Mayor Candidate). I will also discuss solutions to the problem.

Nicole Steiniger\* (Dr. Terence Farrell, with assistance from Dr. Craig Lind)

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**Pygmy Rattlesnakes’ Behavioral Fever Response to Exposure to Bacteria-Derived Antigens**

Fevers, transient elevation of body temperature, are best understood in endotherms, but rarely studied in ectotherms (animals that rely on the environmental for thermal control). Ectotherms may use habitat selection to generate behavioral fevers in response to antigens. To determine if pygmy rattlesnakes perform behavioral fevers, we implanted thermal loggers in 14 snakes to record their internal temperatures. Temperatures were recorded before and after injections of either LPS (a bacterial cell wall component) during the day and night. To determine if time of day, injection type, or their interaction affected mean snake body temperature, I performed two 2-factor ANOVA on body temperatures. The body temperatures during the day of both groups were significantly greater than their temperatures during the night. There was no significant difference between the body temperatures of the snakes in the two treatments pre-injection. There was, however, a significant difference between the treatments post-injection, with snakes in the LPS group having greater internal temperatures. Post-injection LPS snakes had elevated internal temperature during the day but not at night. This interaction effect supports that the snakes were performing behavioral fevers and has important implications for the energetics of disease responses in ectotherms.

\*2022 SURE Grant recipient

Trinity Sterling, Bryan Sanchez, and Austin Brown (Dr. Kristine Dye)

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**Genome Sequencing of SARS-CoV-2 and Quantification of SARS-CoV-2 and Poliovirus in Local Wastewater compared to Clinical Testing**

Wastewater surveillance has frequently been used to monitor enteric viruses as an indicator of community health. Additionally, it has been shown to detect SARS-CoV-2 approximately 1-2 weeks before clinical testing and thus has been implemented worldwide as a measure of SARS-CoV-2 prevalence in cities, with the most focus in metropolitan areas. Additionally, recent outbreaks of poliomyelitis in Rockland County New York have shown cause for monitorization of poliovirus and a push for continued vaccination. Volusia county has approximately 564,000 residents and serves over 1 million visitors yearly. Therefore, the objective of this study was to use quantified measurements of SARS-CoV-2 and poliovirus levels in wastewater to monitor infection rates and variants by collecting samples via a local WWTP. Testing occurred over a period of approximately 12 months, beginning in the spring of 2022. 24-hour composite wastewater samples were received from the Deland, FL, WWTP and immediately pasteurized in compliance with BSL-2 laboratory protocol. Following pasteurization, samples underwent an additional series of experimental steps including centrifugation, phase separation, virus concentration, RNA extraction, and RT-qPCR. Quantification was normalized against PMMoV, and data was then compared against confirmed COVID-19 and Poliomyelitis cases within the state from corresponding time frames. Select samples were also sent for whole genome sequencing in an effort to monitor mutation trends across the N1 gene of SARS-CoV-2. We have confirmed that there is a positive correlation between viral levels in wastewater and community infection rates.

Dulce Suarez (Dr. Jean Smith)

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**Effects of a Mutation, G472D, in the SH3 Domain of FUS1 on Cell Fusion in *Saccharomyces cerevisiae***

Cell fusion is a cellular process in which two cells combine into one. The event can be seen in processes such as osteoclast, embryogenesis, and tissue regeneration. However, deficits with cell fusion have also been a way cancer strengthens and spreads throughout the body and an event that aids in viruses entering the host cells. Understanding the mechanism that initiate cell fusion to commence would help us get an idea on how to combat cell fusion in cancer and other negative aspects involving this process. For my research yeast called Saccharomyces cerevisiae were used since these cells go through cell fusion when mating and can be genetically manipulated. The FUS1 gene aids in protein localization to the tip before mating to aid in cell wall degradation. The SH3 domain in the FUS1 gene contains conserved proteins and its role in fusion is unknown. I hypothesize that creating a point mutation in the SH3 domain will reduce the amount of cell fusion occurring due to the mislocalization of mutant FUS1 proteins. I did three experiments: site directed mutagenesis, semi quantitative plate mating assay, and shmoo microscopy. Results showed a difference between the amount of diploids and mislocalization between wildtype and mutant.

Tom Sussan\* (Dr. Corie Charpentier)

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**Boating intensity and proximity to live conspecifics influence settlement of oyster larvae in Mosquito Lagoon, Florida.**

Boating activity has increased dramatically over the last several decades, which has negatively impacted oyster abundance along the Intracoastal Waterway (ICW) of Mosquito Lagoon (ML), Florida. The energy from boat wakes can destroy oyster reefs, particularly in regions of the ICW that lack hard substrate. Oyster reefs provide habitat to diverse benthic fauna and prevent shoreline erosion. Understanding the abiotic and biotic factors that influence oyster settlement are key to assessing current and future restoration efforts. In this study, we compared the settlement rate of Eastern oysters (*Crassostrea virginica*) on uniform concrete substrate at ML sites that varied in boating intensity and proximity to live conspecifics. Oyster settlement was greater at sites with live conspecifics, relative to those with no conspecifics within 30 m. Surprisingly, oyster settlement was greater at sites with higher boating intensity, which may have been influenced by lagoon hydrology.

\*Recipient of a 2022 SURE Grant

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**Developing an Electronic Microviscometer for Measuring Viscosity in Insect Embryos**

During early development, cells multiply, change neighbors, and undergo broadscale motion. These cells, and the tissues they form, can be characterized as a fluid in such an early stage. After a previous study in imaging the development of butterfly species, *Vanessa cardui*, we expect that the viscosity of any embryo will increase as cells begin to form structures. However, the very low volume of fluid contained within one is far small to use a traditional viscometer. To properly measure the viscosity of a fluid on a small scale, a microviscometer was constructed using an optical system to track a small sphere falling through a fluid. This viscometer was then calibrated using fluids with known viscosities to increase accuracy within embryo viscosity measurements.

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**Exploration of Merkel Cell Polyomavirus Small Tumor Antigen in Transformation & Tumorigenesis**

Merkel Cell Carcinoma (MCC) was found to be caused by the integration of a novel human oncogenic virus, Merkel Cell Polyomavirus (MCPyV); however, the mechanism by which MCPyV causes MCC remains unknown. As MCC tumors are reliant on expression of the ST and LT proteins of MCPyV, we sought to determine the necessity and role of these proteins. Interestingly, MCPyV ST expression in human fibroblasts was found to be independently sufficient for cellular transformation in soft agar assays. Furthermore, MCPyV ST was found to be uniquely transforming as the ST proteins of other human polyomaviruses (HPyV7 and TSPyV) were non-transforming. Through mass spectrometry analysis, it was found that MCPyV ST interacts with many nuclear proteins, consistent with its confirmed nuclear localization. However, as MCPyV ST does not contain a known nuclear localization sequence, it is unknown how nuclear localization occurs and whether it is necessary for MCPyV ST mediated transformation and tumorigenesis. Current studies aim to identify the mechanisms of MCPyV ST nuclear translocation may prove influential in understanding MCPyV ST mediated tumorigenesis and consequently uncover novel MCC therapeutic approaches.

\*Recipient of a 2022 SURE Grant

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**Investigating the role of the *FUS1* SH3 domain during cell fusion in *S. cerevisiae* through point mutation P504A.**

Cell fusion is among the most important biological cell processes, as it is the foundation for processes like embryonic development and tissue repair. However, we still know relatively little about specific mechanisms and proteins involved. The yeast *Saccharomyces cerevisiae* is a great model organism to use when studying cell fusion, as it shares 23% of our genes and its life cycle resembles that of a sexual eukaryote. The Fus1 transmembrane protein found in *S. cerevisiae* is required for cell fusion. Fus1 is localized to the site of cell fusion and known to be involved in regulation of cell wall remodeling. Within the genetic sequence of Fus1, there is a highly conserved SH3 domain that is required for protein functionality during fusion. The specific role of this region during fusion remains unknown. A P504A point mutation made in the *FUS1* SH3 domain caused a significant increase in Fus1 protein mislocalization to the site of cell fusion when compared to wildtype cells. This provides insight into the role of the highly conserved proline residue at position 504 and the importance of a functional SH3 domain during cell fusion.

Ava Underdahl (Dr. Haleigh Ray)

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**Fragrance preference of honeybees (*Apis mellifera*) between flower colors on opposite ends of their visual spectrum**

Honeybees (*Apis mellifera*) rely heavily on both olfactory and visual cues for foraging behaviors. With the overall honeybee population on the decline, it is important to understand their foraging behavior in relation to the pollination of various wildflowers and crops. To determine honeybee foraging preferences, we measured what variable (fragrance or color) worker honeybees prefer when making a foraging decision. For each trial, we placed a worker bee at the long end of a clear Y-tube and placed two competing variables at the arm ends of the Y-tube. We then recorded the decision made and the time it took for the bee to make a decision (n=20, total n=120). The fragrance variables used were linalool and benzaldehyde, which can be found in native Florida flowers; the color variables used were violet and yellow fake flowers, which are colors that are on opposite ends of a honeybee’s visible light spectrum. We analyzed the data using t-tests and chi square tests to determine if there is a significant difference between which variable a honeybee chooses and times taken to decide on a factor. There was no significant difference between times taken to make a selection, but it was found that honeybees consider color over fragrance cues when foraging and prefer violet over yellow when presented with both colored flowers.

Della Vaughan (Dr. Mayhill Fowler)

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**The Bard: A Means of Cultural Diplomacy for the Soviets**

The Shakespearean canon has been performed in a variety of ways and styles since the original productions in Elizabethan England. The theatrical works have been translated into other languages and across cultural divides and interpretations. This essay looks at international tour performances in the Soviet Union and the ways in which Shakespeare was used as a medium for international cultural cooperation. Examining several Shakespearean companies performed in the Soviet Union between 1957 and 1968, this research seeks to show the connections made across the West/East divide. Theatre was able to connect people across cultural, linguistic, religious, and traditional lines.

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**BudgetIt! App – ENTP 301**

The BudgetIt! app is a prototype to aid users in managing their finances in one convenient location. They can input finances into the calendar, budget bills, receive reminders for payments due, and more. This will help bring organization to the financial situations that users often find themselves in, making budgeting easier and money manageable.

Nicole Verdecia\* (Dr. Corie L Charpentier)

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**Seasonal variation in the biodiversity of benthic animals along an artificial oyster reef in Mosquito Lagoon, FL**

Artificial reefs attract oyster settlement and thereby create habitat for benthic fauna. Oyster reefs also stabilize shorelines and prevent erosion. In this study, we evaluated whether installment of an artificial oyster reef increases the biodiversity of benthic animals. In May – November 2022, we conducted biweekly quadrat surveys and quantified species richness, the Shannon Diversity Index, Simpson’s Diversity Index, and evenness alongside a 23-m artificial reef that was installed in June. Although there was a lot of variability between sample days, our biodiversity parameters were not related to the date of sampling across the sampling season. Similarly, we did not observe a consistent increase in biodiversity after artificial oyster reef installment. Our data suggest that potential biodiversity trends were disrupted by Hurricane Ian and that a prolonged monitoring period is required.

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**Effect of Probiotics on Depression and Anxiety Through the Gut-Brain Axis**

The purpose of this study was to determine whether probiotic supplementation could induce a positive effect on depressive or anxious symptoms in participants with gastrointestinal complaints. The foundation of this project is the supposition that a nexus exists between microbiota condition and quality of mental health. 23 individuals were ultimately included in the analysis with 11 in the placebo group and 12 in the probiotic group, as those who did not report depression or anxiety symptoms were omitted from analysis. Subjects ingested four capsules at the same time once a day at approximately the same time of day; this regimen endured for four weeks. Individuals completed the GIQLI before and after supplementation to gauge (mental) health quality. Both the probiotic and placebo groups experienced improvements in their mental health scores, though the difference between pre and post scores for the probiotic group was more substantial. As such, current evidence suggests probiotics can serve as a beneficial remedy for emotional symptoms.

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**K-Kids: Improving Student Engagement and Participation**

The Lacey Family/ Spring Hill Boy's and Girl's Club is a daily, low-cost after-school program with activities in five core areas: education and career development, character and leadership development, health and life skills, the arts, sports, and fitness and recreation. K-Kids is a program that falls under these core areas.  K-Kids is a student-led empowerment and leadership program for elementary school students where we plan and facilitate physical and educational lessons with the youth. K-Kids is every Wednesday and my responsibilities include planning a physical activity that falls under one of the five core areas and that will have the most engagement, as well as leading the event. I am testing ways to improve retention through various options of providing healthy snacks for those who participate and surveying the youth on what physical activties they enjoy the most. The main goals of this project are to improve the retention and consistency for physical activity and wellness goals so that the children are receiving educational lessons and core skills to lead a healthy life.

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**‘”I wish you would throw that bone out of the window”: The Bone Wars and Cultural Nationalism in the late Nineteenth Century**

In the United States, an episode of unethical fossil-hunting called the “Bone Wars” took place between the 1870’s and 1910, creating a paleontological collections competition in American natural history museums. The actions and field collecting of two key figures, Othniel Charles Marsh and Edward Drinker Cope drove the narrative of the Bone Wars and garnered attention from European institutions and paleontologists. Although most of the current literature on the Bone Wars follow Marsh, Cope, and their hired fossil hunters as they search the field for the next big fossil find, little has been said about the relationship between American paleontologists and institutions and their British and European counterparts, especially the role of cultural and intellectual nationalism on the field of paleontology. The competitiveness of the Bone Wars was not an isolated event, as it played on the prior successes of British and European paleontologists in the early 19th century in Europe. Conversely, the Bone Wars’ competitive nature spurred many new discoveries that influenced both American and European paleontology and institutions alike. By acknowledging this relationship and the intellectual/cultural nationalism in which the Bone Wars are set, one can investigate other national relationships within the field, enabling an analysis of the history of paleontology in a more whole sense.

\*Supported by a 2022 SURE Grant

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**Nineteenth Century Ideals of Masculinity and Savagery: Adventure Piracy Works in Victorian Art and Literature**

With the rise of Industrialism during the Victorian era came cultural shifts that placed emphasis on male labor and the importance of being successful in one’s career. These societal issues led to the rise of questions on masculinitY. Such topics were addressed by Nineteenth-Century scholars, who placed an emphasis on concepts such as Muscular Christianity and the Jacksonian Mystique. These phenomena gave rise to a “cult of masculinity” that can be understood through the educational works of the time. This ideal of manliness can be regarded as an ideology that promoted strength, virility and stoicism. This ethos is reflected not only within Victorian educational texts but also in the popular fictional adventure works of the period. My research will analyze how the characteristics of “true manliness” are prevalent themes within pirate fictional works such as Treasure Island and Peter Pan. While some historians have addressed how masculinity is depicted within Victorian popular culture, my work will not only evaluate fictional texts but also pirate illustrations created by Howard Pyle and N.C. Wyeth. This paper will, ultimately, demonstrate that Victorian adventure literary and illustration works of pirates in Britain and the United States was a feature of the 'Cult of Masculinity.'

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**Clock-in Online: Social Support and Chronic Stress Prevalence as Moderators in Media and Stress Relationship**

Research suggests that high levels of stress can have significant negative impacts on the body and mind. However, the presence of factors such as social support and methods of relaxing can help protect from such harmful effects. With an understanding of the well-known high stress environment of university, the current study examines how media genres interact with an individual’s level of social support on their level of chronic stress. The two genres are broken into more simple pleasure, known as hedonistic, and more thought-provoking or serious, known as eudaimonic. Participants were randomly placed into one of the two genre groups or the control group wherein the media groups received a video relating to their genre for 5 days, while the control group was not sent anything. Both groups received questionnaires on social support and chronic stress before and after to determine the true effect of the variables. After running the analyses, all results were non-significant. We believe that this difference from the hypotheses is due to several factors such as a small sample size, the time of the semester when tested, and high chronic stress levels for a majority of the participants.

Evelyn Wysong (Dr. Sarah Garcia-Beaumier)

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**The Effects of Political Commentary on Aggression, Political Tolerance, and Political Polarization**

With the future of democracy in the hands of the current population, understanding how exposing various age groups to similar or dissimilar political commentary is vital, especially as politics influences nearly every aspect of life. This research aims to examine the relationship between political exposure type and levels of aggression, tolerance, and polarization as moderated by age. Upon determining participants’ political affiliation, participants were asked to answer a series of survey questions before being exposed to either a conservative, liberal, or controlled exposure obtained from various social media platforms. We then determined which participants received an exposure that was likeminded, which were exposed to an opposing viewpoint, and which received our control exposure. Post-exposure surveys were used to compare how levels of aggression, tolerance, and polarization changed after receiving the exposure. The analyses are still currently being completed.

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**The Effects of Movement Therapy on the Motor Functions of Children with Autism**

Autism is a developmental condition that can restrict an individual's sense of independence and their quality of life. Occupational therapy is one of the primary treatment mechanisms used to develop, improve, and maintain skills needed for daily living and working. Therapy sessions include activities such as writing, playing with toys, and drawing. A new approach to occupational therapy is movement therapy. Instead of conducting stationary activities, therapy would involve moving around the room for things like tai chi exercises or playing red-light-green-light. Over the course of 6-months, 10 children with autism participated in this study where 5 received traditional occupational therapy and 5 received movement therapy. Our results revealed that there was no significant difference between the two groups (p-value = 0.92, t-value = 0.107). This indicates that movement therapy was not more effective at improving the fine motor functions of children with autism compared to traditional occupational therapy practices. There was high variability in the movement group, so further research can potentially clarify if movement therapy is highly effective for some while being non effective for other children.

Saw Pyae Hsu Zaw (Dr. Cynthia Bennington)

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**Mycorrhizal Inoculation Potential of Soils from the rhizosphere of two Florida sandhill perennials, *Pityopsis graminifolia,* and *Arnoglossum floridanum***

Arbuscular mycorrhizal fungi (AMF) are keystone species that deliver nutrients to plants. However, because soil physical qualities can affect seed germination and seedling establishment, the repercussions for effective restoration are evident. I investigated the AM fungal community associated with two perennial plant species (*Pityopsis graminifolia* and *Arnoglossum floridanum*) from two different sites- Volusia Sandhill Ecosystem and Heart Island Conservation Area. Roots were grown in soil collected from the rhizosphere of two different plant species from both sites in both sites. There was no significant difference in the presence of arbuscules, hyphae, or spores per root segment between sites or plant species. There were more vesicles counted in the roots of both plant species in both soils than those grown in Heart Island Soil. Plant species and their specific interactions with different fungal species may also play a role in determining the abundance of vesicles.

**Music**

**Sara Pyburn** (Dr. Lynn Musco & Dr. Jessica Speak) Clarinet

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Joni Hanze, piano

*Solo de Concours* Henri Rabaud

(1873-1949)

*Winter Fantasy* (2019) Eric Mandat

*Pocket Size Sonata No. 1* Alec Templeton

I. Improvisation (1909-1963)

II. Modal Blues

III. In Rhythm

**Nidia Guevara-Nolasco** (Jane Christeson) Mezzo-Soprano

nguevaranolasco@stetson.edu

Joni Hanze, piano

Iris, Hence Away George Frideric Handel

from *Semele*  (1685-1759)

*Hermit Songs*, Op. 29 Samuel Barber

VIII. The Monk and His Cat (1910-1981)

X. The Desire for Hermitage

Pioggia Ottorino Respighi

Nebbie (1879-1936)

*Zigeunerlieder*, Op.103 Johannes Brahms

VII. Komt dir manchaml in den Sinn (1833-1897)

VIII. Rote Abentwolken ziehen

Psyché Emile Paladihle

Sonnet de Pétrarque (1844-1926)

**Maria Almonte** (Jane Christeson) Mezzo-soprano

mjalmonte@stetson.edu

Joni Hanze, piano

“Che farò senza Euridice?” Christoph Willibald Gluck

from *Orfeo ed Euridice* (1714-1787)

Die Nacht Richard Strauss

Zueignung (1864-1949)

Otchevo? Pyotr Ilyich Tchaikovsky

Net, tolko tot, kto znal (1840-1893)

Voyage à Paris Francis Poulenc

Les chemins de l'amour (1899-1963)

City Called Heaven Hall Johnson

Honor, Honor (1888-1970)

**Diana Quintero** (Routa Kroumovitch-Gomez) Violin

dquintero@stetson.edu

Dr. Kristie Born, piano

*Sonata no. 1 in G minor, BWV 1001* Johann Sebastian Bach

1. Adagio (1685-1750)

*Symphonie Espagnole op. 21*  Édouard Lalo

IV. Andante (1823-1892)

*Violin Sonata in G minor*  Claude Debussy

I. Allegro vivo (1862-1918)

II. Intermède: fantasque et léger

III. Finale: très animé

**Peter Lorenzo** (Dashiell Waterbury) Tenor

plorenzo@stetson.edu

Joni Hanze, piano

Sound Fame thy brazen trumpet Henry Purcell

Why should men quarrel? (1659-1695)

Arr. B. Britten

Die Forelle Franz Schubert Nacht und Träume (1797-1828)

*5 Mélodies populaires grecques*  Maurice Ravel

1. Chanson de la mariée (1875-1937)
2. Là-bas, vers l'église
3. Quel galant m'est comparable
4. Chanson des cueilleuses de lentisques
5. Tout gai!

*Cinco Canciones populares Argentinas* Albert Ginestera

II. Triste (1916-1983)

IV. Arrorró

**Izzy Barbato** (Dr. Karen Coker-Merritt) Soprano

ibarbato@stetson.edu

Hannah Sun, piano

“Che Fiero Momento” Christoph Willibald Gluck

from *Orfeo ed Euridice* (1714-1787)

Je ne t'aime pas Kurt Weill

Youkali (1900-1950)

White in the Moon (1990) Jake Heggie

*Chants d’Auvergne* Joseph Canteloube

Series I, II. Baïlèro (1879-1957)

Series III, V. Malurous qu'o uno fenno

Ich bin der Welt abhanden gekommen Gustav Mahler

(1860-1911)

**Joseph Parr** (Dr. Boyd Jones)  Organ

jparr@stetson.edu

*Fantasia and Fugue in G Minor*, BWV 542 Johann Sebastian Bach

(1685-1750)

*Vom Himmel kam der Engel schar,* BWV 607 Johann Sebastian Bach

(1685-1750)

*Allegretto* Florence Price

(1887-1953)

*Adoration* Florence Price

(1887-1953)

*Introduction and Passacaglia in D Minor*, WoO IV/6 Max Reger

(1873-1916)

**Stetson Undergraduate Research Committee:**

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* Dr. Elizabeth Skomp, Dean, College of Arts & Sciences
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