

2024 Spring Fiat Lux

A Celebration of Florida Southern College
Student Scholarship and Research

April 19, 2024
12:00pm–6:00pm

Branscomb Auditorium
Honeyman Pavilion
Christoverson Humanities



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2024 Spring Fiat Lux

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Welcome!

Florida Southern College fosters an environment where students actively transition from being consumers of knowledge to becoming scholars who create new knowledge, insights, connections, and understanding. For over 20 years, our students have gathered at the end of each semester to present and discuss the scholarly work they have been doing in and beyond their courses.

The goal of Fiat Lux and the Fall Academic Showcase is twofold: to provide students a platform for their ideas, and to provide the wider community a window into the creative and intellectual energy that pervades our campus. Today's event provides a singular opportunity to publicly share the meaning and joy of scholarly inquiry.

We encourage you to take part in as many sessions as you can! Enjoy the conversation.

Schedule

12:00-12:20Welcome in Branscomb Auditorium	Dr. Carrie Ann Hall
	Preliminary Remarks	Provost Tracey Tedder
	National Fellowships and Awards	Dr. Rebecca Saulsbury Bravard
	Introduction of Emerge Scholars	Dr. Kristen Carter
	Ann and Grant Hansen Award.....	Dr. Carrie Ann Hall
12:20-1:20Gender and Research Across Disciplines: A Fiat Lux Keynote Event	
	Keynote Panel Introduction	
	Dr. Melanie R. Fowler	Assistant Professor of Education, Doctor of Education Program Coordinator
	Dr. Leilani Goodmon	Professor of Psychology, Chair of the Department of Social and Behavioral Sciences
	Dr. Krista Lewellyn	Associate Professor of Management, MBA Program Director
	Conclusion / Q&A	
	Summary Remarks.....	Associate Provost Roxanne Back
1:40-2:40Poster Presentations	Honeyman Pavilion
1:40-6:00Presentations	Christoverson Humanities

[Fiat Lux at Florida Southern College](#)

Gender and Research Across Disciplines: A Fiat Lux Keynote Event

Please join us for a panel discussion centered on navigating gender-inclusive practices in research, where Dr. Melanie R. Fowler, Dr. Leilani Goodmon, and Dr. Krista Lewellyn will explore critical areas of gender inclusive research practices including ensuring gender-inclusive language in publications and presentations, the role of language in shaping perceptions of gender in research, best practices for promoting gender-inclusive communication in academic settings, enhancing mentorship programs to support individuals of all genders, identifying and addressing unique mentorship needs for marginalized genders in academia, fostering a supportive environment for mentorship across genders within institutions, ethical considerations inherent in research on gender-related topics, navigating potential ethical dilemmas related to gender in research, and the responsibilities of researchers and institutions in addressing ethical concerns in gender research.

Don't miss this opportunity to gain valuable insights and contribute to the advancement of gender inclusivity in academia and research.

2024 Fiat Lux Presenters – By Last Name

Room	Time	First Name	Last Name	Major	Title
Christoverson 111	5:00-5:20	Brenda	Alvarez	Computer Science	Development of a Tool for Advising Collaboration
Christoverson 206	3:20-3:40	Shannyn	Barnett	Political Science	The Result of Deinstitutionalization: Where Do We Go from Here?
Christoverson 207	1:40-2:00	Joshua	Bass	Chemistry	Exploring Metal-Organic Frameworks and Drug Interactions Computationally: A Study of host-guest Interactions between Drug Molecules and Metal-Organic Frameworks
Christoverson 206	2:00-2:20	Abigail	Bennett	Political Science	Environmental Justice: Combating Discrimination
Christoverson 108	5:00-5:20	Ryan	Breitenbach	Biology	Recombinant Cloning of Annexin A2 to Assess Binding to Parkinson's Disease Linked Proteins
Christoverson 108	3:20-3:40	Sophia	Brice	Marine Biology	Can Anemones Fight Back? Predator-Prey Analysis of the Aeolid Nudibranch <i>Berghia stephanieae</i> and Glass Anemone <i>Exaiptasia diaphana</i>
Christoverson 208	2:40-3:00	Devan	Burke	Computer Science	Reinforcement of Mario's Basics
Honeyman Pavilion	1:40-2:40	Catherine	Caney	Exercise Science	Physical Activity and Mental Health
Christoverson 209	4:20-4:40	Mary "Amelia"	Cannon	Nursing	Mental Health and Coping in College Students by Major
Christoverson 206	5:20-5:40	Esteban	Cepero	Political Science	FARA Enforcement and U.S. – China Relations
Christoverson 207	2:00-2:20	Lucas	Clemens	Chemistry	Computational Study of a Zinc Metal-Organic Framework for Drug Delivery
Christoverson 108	2:20-2:40	Meghan	Collins	Biology	Assessment of a Public Playground for Antibiotic-Resistant Enterobacteriaceae
Christoverson 206	4:20-4:40	Adam	Cvik	Political Science	America's Transportation Future: Arguments for the Enhancement and Expansion of Public Mass Transit in the United States
Christoverson 111	3:00-3:20	Brinn	Dameron	Marine Biology	An Assessment of Vertebrate Populations and the Risk of Road Mortality Near Two Nature Reserves in Central Florida
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Christoverson 111	3:40-4:00	Amanda	Finnefrock	Marine Biology	Metagenomic Sequencing and Analysis of Bacteria and archaea from

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					Wild Cownose rays <i>Rhinoptera bonasus</i> in Tampa Bay, Florida
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Christoverson 111	5:20-5:40	Olivia	Gallagher	Environmental Studies	The Importance of Native Bee, Wasp, and Fly Species to Agriculture Within Florida and the Plan Needed to Conserve Them
Christoverson 206	4:40-5:00	Julianna	Gentile	Political Science	Enviornmental Disaster Policy
Christoverson 111	4:40-5:00	Abigail	Ghaly	Business Administration	Exploring the Intersection of Neuroscience and Criminal Responsibility
Christoverson 111	2:20-2:40	Joseph	Giannone	Art History and Museum Studies	As Above, So Below: Barnett Newman and the Sublime
Christoverson 111	2:40-3:00	Lily	Giliam	Biology	Investigating the Effect of Novel Visual Stimuli as a Form of Environmental Enrichment in Zoo-housed Psittacidae.
Christoverson 206	5:00-5:20	Thomas-Edward	Gotsch	Accounting	Navigating the Changing Landscape of Accounting: Technology, Cybersecurity, and the Human Touch
Christoverson 207	5:20-5:40	Elizabeth	Griffin	Biology	Classification and Analysis of Antibiotic Properties of Unknown Species of Chromobacterium
Honeyman Pavilion	1:40-2:40	Abbey	Hafler	Exercise Science	The Effectiveness of Virtual Reality in Neurocognitive Disorders
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Christoverson 206	2:40-3:00	Kylan	Hayes	Political Science	Narrating Race in The Birth of a Nation - 1915 & 2016
Christoverson 207	4:40-5:00	Michael	Hickey	Biochemistry and Molecular Biology	Targeting Metal-Organic Frameworks From Trefoil-Shaped Paraben Analogs for Potential Antifungal and Antimicrobial Properties for Controlled Release Applications
Christoverson 208	1:40-2:00	Douglas	Holmes	Business Administration	The Benefits of Capitalism and Limited Government
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Christoverson 207	5:00-5:20	Noelle	Jacob	Chemistry	The Use of a Metal-organic Framework to Detect the Presence of Illicit Drugs
Christoverson 207	4:20-4:40	Justin	Kelleher	Biochemistry and Molecular Biology	Synthesis of Novel Chelidonate Metal-Organic Frameworks for Synergistic Antibiotic Effect

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Christoverson 209	5:00-5:20	Wendy	Kiesewetter	Graphic Design	Case Study: Personal Branding in Graphic Design
Christoverson 208	5:00-5:20	Marisa	Kortright	Psychology	Impact of Therapy-Specific Education on Students' Attitudes
Honeyman Pavilion	1:40-2:40	Sofia	Kuklina	Biotechnology	ShK Sequence Diversity and Gene Expression Profiles Across Clownfish Hosting Sea Anemones Associating with Clownfish
Christoverson 209	2:40-3:00	Tedros	Lafalaise	Computer Science	AI in Sports: A Machine Learning Approach for Improving Video Analysis in Soccer
Christoverson 208	4:00-4:20	Aidan	Lee	Finance	Why Aren't College Students Investing?
Christoverson 208	2:20-2:40	Edward	Leonard	Computer Science	Using AI to Identify Firearms
Christoverson 207	2:40-3:00	Ashleigh	Lowery	Biology	An Evolutionary History of Opsins Within Underrepresented Daphnia Species
Christoverson 206	3:00-3:20	Erlinda	Loyola-Cervantes	Political Science	The Fight Against Greenhouse Gases at the Local Level
Honeyman Pavilion	1:40-2:40	Devin	Mantei	Dance	Nutrition Knowledge in Dancers
Christoverson 208	3:20-3:40	John	Martin	Accounting	Royalty Accounting and 360° Deals: Are Record Labels Still Needed?
Christoverson 108	3:40-4:00	Jaelyn	McFadden	Marine Biology	Maze Learning and Memory in the Atlantic Sand Fiddler Crab
Christoverson 209	4:00-4:20	Melanie	Mendieta	Political Science	History in Flames: The Burning of Sacred Mayan Texts by Friar Diego de Landa and the Continuous Violence Against Indigenous People in the Americas
Christoverson 209	2:00-2:20	Olivia	Migliorato	English	Why Should an Intersectional Shakespeare Exist?
Christoverson 111	3:20-3:40	Olivia	Miles	Marine Biology	How does Seasonality Affect External Parasitism in Freshwater Nile Tilapia <i>Oreochromis niloticus</i>
Christoverson 109	1:40-2:00 (presentation), 2:00 (full film production)	McKinley	Miller	Film	Shades of Autumn; An Interactive Film Screening
Christoverson 206	1:40-2:00	Valentina	Montoya	Communication	Twisted Perceptions of Homelessness in America: The Potential Impact Available through Podcasting
Christoverson 206	4:00-4:20	Valentina	Montoya	Communication	Identifying Intricacies of democracy for South American Countries & Potential Authoritarian Regimes
Honeyman Pavilion	1:40-2:40	Alexia	Mort	Criminology	Undergraduate Students' Opinions and Attitudes Towards Abortion

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Christoverson 108	1:40-2:00	Emma	Mussante	Sport Business Management	Fan Engagement and Experience in Minor League Baseball: A Case Study of The Lakeland Flying Tigers
Christoverson 108	3:00-3:20	Emily	Opalinski	Environmental Studies	Effects of Microplastics on the Venom, Reproduction, and Zooxanthellae of <i>Exaiptasia Anemone</i>
Christoverson 208	4:20-4:40	Alizee	Pelletier	Mathematics	Proposition of the Development of a Mathematical Model to Predict the Performances of a College Swimmer in Competition
Christoverson 208	4:40-5:00	Jack	Penrose	Business Administration	College Athletic Success and its Impact on Prospective Students: A College Choice Study
Christoverson 209	3:00-3:20	Anthony	Prancel	Computer Science	Parakeet: An AI Approach to Visualizing Moves in Chess
Christoverson 209	3:20-3:40	Alex	Richardson	Computer Science	Exoplanet Exploration with Machine Learning on Space-Based Surveys
Christoverson 208	3:00-3:20	Raymond	Riddell	Music: Performance	Monte Carlo Tree Search: A Guide to Winning Games You've Never Even Played
Christoverson 207	3:40-4:00	Sierra	Robertson	Marine Biology	Community Composition Comparison of Central Florida Lakes
Christoverson 209	1:40-2:00	Emery	Roth	English	Chokehold: A Window Into #BookTok and the Emergent Digital Literati
Honeyman Pavilion	1:40-2:40	Wyatt	Rudd	Marine Biology	Gene Expression Analysis Following the Establishment of Clownfish Association with an Atypical Host (<i>Stichodactyla helianthus</i>)
Christoverson 208	2:00-2:20	Jesse	Rutkowski	Accounting	Creating the Consummate Currency
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Christoverson 209	3:40-4:00	Demitra	Sejka	Spanish	Pelo y Agua en La Última Niebla/Hair and Water in La Última Niebla
Christoverson 108	5:20-5:40	Demitra	Sejka	English	"What Makes a Monster and What Makes a Man?": Physical Disability and Physiognomy in Long-19th Century Gothic Literature
Christoverson 207	3:20-3:40	Anna	Shafer	Chemistry	Development of Chitosan-Alginate-Antibiotic Complexes with Hemostatic Properties
Christoverson 208	5:20-5:40	Emi	Shannon	Music: Performance	The Effect of a Blue Mind Intervention on Well-Being
Christoverson 209	5:20-5:40	Sydney	Silva	Graphic Design	Philosophy of Photography and the Self Image

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Honeyman Pavilion	1:40-2:40	Jared	Squires	Psychology	The Effect of a Blue Mind Intervention on Well-Being
Christoverson 207	5:40-6:00	Prasamsa	Surapaneni	Biochemistry and Molecular Biology	An Evaluation of the Greener Synthesis of Stilbenes and their Inhibition and Potency Tendencies Against Epithelial Ovarian Cancer Cell Lines
Christoverson 108	4:40-5:00	Haley	Thomassy	Biology	Analysis of Outcomes of Infants with Neonatal HSV Based on Acyclovir Dosing Regimen
Honeyman Pavilion	1:40-2:40	Coral	Tolman	Marine Biology	How do Metabolism Genes Expression Levels Change Following Clownfish Association in Sea Anemones?
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Christoverson 108	4:20-4:40	Francisco	Vargas	Biotechnology	The Genetics of Anemone Sex Determination
Christoverson 111	1:40-2:00	Olivia	Walker	Elementary Education	Trauma Informed Instruction: A Qualitative Study Exploring Teacher Experiences
Honeyman Pavilion	1:40-2:40	Alia	Whiles	Integrative Biology	Devel-EYE-ment: A Comparative Analysis of Compound Eye Size Growth among Daphnia Species
Christoverson 108	4:00-4:20	Zaphillia	Yost	Marine Biology	Right Whale Zines: Exploring Zines as a Mode of Science Communication
Christoverson 207	3:00-3:20	Domenica	Zamora	Biochemistry and Molecular Biology	Controlled Release of Diclofenac and Ketorolac from a Gelatin-Based Hemostatic Polymer

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1:40-2:00	Emery	Roth	English	Chokehold: A Window Into #BookTok and the Emergent Digital Literati
2:00-2:20	Olivia	Migliorato	English	Why Should an Intersectional Shakespeare Exist?
2:20-2:40	Noah	Gabryluk	Computer Science	Chessentary: AI-Driven Move Evaluation and Commentary Generation in Chess
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4:20-4:40	Mary “Amelia”	Cannon	Nursing	Mental Health and Coping in College Students by Major
4:40-5:00	Brianna	Trecartin	Nursing	The Impact of Epidural Analgesia on Newborn Health.
5:00-5:20	Wendy	Kiesewetter	Graphic Design	Case Study: Personal Branding in Graphic Design
5:20-5:40	Sydney	Silva	Graphic Design	Philosophy of Photography and the Self Image

Presentations

In alphabetical order by presenter's last name.

2024 Fiat Lux Presentations

Student: Alvarez, Brenda

Major: Computer Science

Faculty Mentor: Christian Roberson

Presentation Time: 5:00-5:20

Presentation Type: Honors Proposal

Room: Christoverson 111

Title: Development of a Tool for Advising Collaboration

Abstract: Academic advising is a critical yet often stressful time for both students and faculty, as they struggle to maximize their brief advising time available due to challenges present—like unawareness of how to prepare beforehand and how to make their time together as effective as possible. This project aims to alleviate this stress by developing a collaborative website for both students and advisors to communicate effectively in preparation before advising time to make their brief time together as efficient as possible. The main feature of this website will be a platform for students and faculty to collaborate on creating a schedule for the upcoming semester that will effectively meet degree requirements, but will include other features such as progress checklists, a place for notes from their advising meeting as a reminder, and a way for advisors to communicate with each other in instances of dual majors. Ultimately, this project aims to make advising time as efficient and smooth as possible for both parties included for better outcomes in a student's academic life.

Student: Barnett, Shannyn

Major: Political Science

Faculty Mentor: R. Bruce Anderson

Presentation Time: 3:20-3:40

Presentation Type: Oral Presentation

Room: Christoverson 206

Title: The Result of Deinstitutionalization: Where Do We Go from Here?

Abstract: Deinstitutionalization refers to the policy reform that resulted in the closing of large state mental institutions, leading to people with mental illness having nowhere to receive psychiatric care. It is theorized that deinstitutionalization caused a rise in the mentally ill jail and prison population, for the government relied on jails and prisons to provide housing and care for those affected by the closing of these mental institutions. However, with the overcrowding experienced in the criminal justice system today, the government's reliance on both jails and prisons to provide psychiatric care for those with mental illness is no longer feasible or effective. By using numerous academic journals, studies, and data relating to the problem, this paper proposes and analyzes five different policy solutions to address the overwhelming amount of people with mental illness in the United States criminal justice system.

Student: Bass, Joshua

Major: Chemistry

Faculty Mentor: Jason Montgomery

Presentation Time: 1:40-2:00

Presentation Type: Honors Presentation

Room: Christoverson 207

Title: Exploring Metal-Organic Frameworks and Drug Interactions Computationally: A Study of host-guest Interactions between Drug Molecules and Metal-Organic Frameworks

Abstract: With a large concern in the drug industry being appropriate dosing and delivery locations, the ability for drugs to be efficiently loaded into a device for systematic delivery to the desired target is of

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growing importance. 1–3 Knowing some basic characteristics of the MOF in question, ((HOOC)2Ph)2-tbo-MOF), can help to foster further understanding of the interactions between the functionalized pore and a common drug molecule, acetaminophen. This drug is plentiful and cheap to access, thus making for an easy test of the MOF's capabilities. As such, following the previous successful synthesis of the MOF, its characteristics and host-guest interaction capabilities will be explored in depth via computational methods utilizing Gaussian-16 and Quantum Espresso with a range of basis sets and parameters for calculations. Taking into consideration the structural modifications made along the way, consistency is key to yield congruent results for comparison. As such, the resulting free energies for both the MOF and Acetaminophen, as gathered from Gaussian-16, are recorded as -42381.32 and -515.59 a.u. respectively, utilizing the B3LYP functional and Sto-3g basis set. In regards to Quantum Espresso, the converged structural energy of Acetaminophen with a 30 Å lattice parameter is -130.81 a.u. Future research directions are quite abundant, with the potential of exploring different MOF structures, different MOF-Drug interactions, gas absorption studies, and even structural quality characterizations such as those of band gap for conductance and colorimetric determinations.

Student: Bennett, Abigail

Major: Political Science

Faculty Mentor: R. Bruce Anderson

Presentation Time: 2:00-2:20

Presentation Type: Oral Presentation

Room: Christoverson 206

Title: Environmental Justice: Combating Discrimination

Abstract: In 1987, the United Church of Christ Commission found that residential communities in the United States with a presence of hazardous wastes tend to have greater percentages of minorities than communities without nearby hazardous wastes. This continues to be an issue today, as hazardous waste processing centers continue to be built disproportionately near communities of color. In this paper I will analyze the process of how companies choose where to build these processing centers and identify pertinent stakeholders. I will then research and develop several policy alternatives and select the most effective alternative, taking into consideration its political feasibility, following Bardach's model of policymaking.

Student: Breitenbach, Ryan

Major: Biology

Faculty Mentor: Susan Banks

Presentation Time: 5:00-5:20

Presentation Type: Honors Presentation

Room: Christoverson 108

Title: Recombinant Cloning of Annexin A2 to Assess Binding to Parkinson's Disease Linked Proteins

Abstract: Parkinson's Disease (PD) is a neurodegenerative disease physically characterized by motor disorders and the presence of accumulated misfolded protein aggregates in neurons. These protein aggregates are made up of a protein called alpha-synuclein, which is normally found at the synapse, a point of communication between two neurons, and at the nucleus. Alpha-synuclein is predicted to assist with membrane trafficking at the synapses and exocytosis of neurotransmitters to the postsynaptic neuron. These protein aggregates may alter their interactions with other proteins that function at the synapse, resulting in disruptions to neurotransmission. One such neuronal protein of interest, annexin

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A2, has been shown to bind to the plasma membrane and other proteins in a calcium-dependent manner at synapses. To better understand annexin A2 and the interactions it may have with alpha-synuclein through molecular experiments, annexin A2 protein is needed. Recombinant cloning is one technique that can be implemented to make more protein through inserting annexin A2's gene into a protein expression vector. The annexin A2 gene sequence was amplified using PCR and restriction digest techniques were used in a cloning process to insert the DNA into a protein expression plasmid. Validation of these cloning strategies was required to ensure the annexin A2 gene sequence is unaltered during this process. Cloning annexin A2 will help future lab experiments to map binding interactions, identify improved diagnostics, and potential therapeutics.

Student: Brice, Sophia

Major: Marine Biology

Faculty Mentor: Jason Macrander

Presentation Time: 3:20-3:40

Presentation Type: Honors Proposal

Room: Christoverson 108

Title: Can Anemones Fight Back? Predator-Prey Analysis of the Aeolid Nudibranch *Berghia stephanieae* and Glass Anemone *Exaiptasia diaphana*

Abstract: Many venomous animals are able to modify or adapt their venom repertoire in response to environmental cues or antagonistic interactions. *Berghia stephanieae* is a marine nudibranch, or sea slug, that feeds exclusively on the venomous sea anemone *Exaiptasia diaphana*. This predator-prey pair of marine invertebrates have emerged as model organisms for laboratory studies focused on predation, however, the impacts of the nudibranch's predation on the toxin or other gene expression of the sea anemone has yet to be thoroughly explored. In addition to being venomous, *E. diaphana* also hosts zooxanthellae similar to reef-building corals, but unlike corals, they can survive in a bleached state without these mutualistic symbionts. This project aims to address how predation influences both bleached and unbleached anemones by analyzing and comparing the gene expression profiles of anemones exposed to nudibranch predation, faux predation, and no predation at all. Using this approach, we hope to determine whether toxins or other genes are differentially expressed following multiple predation events. Beyond analyzing gene expression of the anemones, we will also quantify changes in nematocyst production to determine whether the anemones' cellular defenses respond to repeated predation over a period of 3 weeks. Overall, this project seeks to fill a critical knowledge gap in what is known about this unique predator-prey pair of model organisms, while also aiming to better understand how important reef-building organisms are able to defend themselves against predation as climate change continues to increase in our oceans and across the planet.

Student: Burke, Devan

Major: Computer Science

Faculty Mentor: Kyle Burke

Presentation Time: 2:40-3:00

Presentation Type: Honors Presentation

Room: Christoverson 208

Title: Reinforcement of Mario's Basics

Abstract: This project will dive deep into the application of reinforcement learning within the context of the iconic game Super Mario Bros. Reinforcement learning is a type of machine learning which tries

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to teach an agent through interacting with their environment, which in this case will be the levels of the game. The aim of this project is to develop an AI capable of beating the game as fast as possible.

Student: Cannon, Mary “Amelia”

Major: Nursing

Faculty Mentor: Jennie Florkey

Presentation Time: 4:20-4:40

Presentation Type: Honors Proposal

Room: Christoverson 209

Title: Mental Health and Coping in College Students by Major

Abstract: College is a time of transition and includes multivariate stressors such as finances, health, love, and relationships. Today’s college students are experiencing the highest rates of depression, anxiety, and suicidality of all time. This directly impacts academics with 74% of students reporting that emotional or mental difficulties hurt their academic performance at least one day in the last 4 weeks, and 55% indicating 3-6 or more days were impacted. Further, student’s reporting symptoms of depression varies by major. Approximately 40% of student’s majoring in nursing, 52.5% of Art students, and 31% of pre-medicine majors reported symptoms of depression during 2023. Purpose: The purpose of this study is to determine which undergraduate student majors have the highest rates of mental health concerns and which self-care measures are most effective in reducing those symptoms by major. Methods: We will perform a secondary data analysis of The Healthy Minds Study which includes over 530 colleges and universities, and more than 740,000 student respondents. Data was collected beginning in 2007 and has been collected yearly since 2009. In addition to basic demographic data with student major, variables of interest for this project include any symptoms of depression or anxiety, suicidal ideation and self-injury, binge drinking, eating concerns, and various measures of self-care and resilience. Results/Dissemination Plan: These results will be disseminated through Fiat Lux, conference presentation(s), and profession journal publication(s).

Student: Cepero, Esteban

Major: Political Science

Faculty Mentor: R. Bruce Anderson

Presentation Time: 5:20-5:40

Presentation Type: Oral Presentation

Room: Christoverson 206

Title: FARA Enforcement and U.S. – China Relations

Abstract: Foreign lobbying has been an increasing risk to national security as it can often promote conflicts of interest. Leading to a push for the Department of Justice to better utilize and interpret the 20th century Foreign Agents Registration Act (FARA) within today’s volatile political landscape. While enforcement has increased, there has been a clear distinction between agents operating under foreign entities who may be rivals or allies towards U.S national interests. Therefore, the purpose of this writing is to assess the linkage of FARA as an instrument for U.S foreign policy. To put forth the question: Has there been a clear politicization of FARA enforcement tied to U.S-China relations?

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Student: Clemens, Lucas

Major: Chemistry

Faculty Mentor: Jason Montgomery

Presentation Time: 2:00-2:20

Presentation Type: Honors Presentation

Room: Christoverson 207

Title: Computational Study of a Zinc Metal-Organic Framework for Drug Delivery

Abstract: While modern drug delivery relies on oral administration, certain NSAIDs are non-specific drugs which may lead to unwanted side-effects. Targeted drug delivery is achieved by encapsulating the desired NSAID in another compound that will increase its bioavailability and pharmacokinetics; Zinc hybrid materials show promise as metal-organic materials which can be combined with biologically prevalent ligands to create metal-organic frameworks (MOFs) which retain crystallinity in biological buffers for extended periods of time. The aim of this work is to computationally study the structure of a zinc metal-organic framework as a drug delivery vessel for ibuprofen by using both periodic and non-periodic calculations. Along with elucidating information about the structure of the MOF, its potential to be an effective vessel will be assessed using interaction energies.

Student: Collins, Meghan

Major: Biology

Faculty Mentor: Nancy Morvillo

Presentation Time: 2:20-2:40

Presentation Type: Honors Presentation

Room: Christoverson 108

Title: Assessment of a Public Playground for Antibiotic-Resistant Enterobacteriaceae

Abstract: Antibiotic resistance is a global problem where pathogenic bacteria re-emerge as substantial health threats. Enterobacteriaceae, a family of gram-negative bacteria primarily found in gastrointestinal tracts, can spread through contact with contaminated surfaces. This study assessed high-contact areas in a local playground for the presence of antibiotic-resistant Enterobacteriaceae. Over the course of 10 weeks, bacterial isolates were collected from playground equipment, and 14% were found to be gram-negative. 50 of these isolates were tested via Kirby-Bauer Disk Diffusion, with 12% resistant to a least 7 antibiotics and one isolate resistant to all 8 antibiotics. Logical Regression analysis revealed that Tetracycline and Kanamycin were the most effective antibiotics with the least amount of resistance. Sequencing of 8 resistant isolates for the 16S rRNA gene was completed for species identification. Two identified species were Enterobacterales, and several others were also identified as known pathogens. This study provides a model for testing public parks, which may be beneficial in the future to understand modes of transmission and enhance sanitary and prophylactic measures in the community.

Student: Cvik, Adam

Major: Political Science

Faculty Mentor: R. Bruce Anderson

Presentation Time: 4:20-4:40

Presentation Type: Oral Presentation

Room: Christoverson 206

Title: America's Transportation Future: Arguments for the Enhancement and Expansion of Public Mass Transit in the United States

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Abstract: My presentation will be a summary of a semester paper by the same title. I hope to answer the question of whether the U.S. should support the enhancement and expansion of public mass transit (PMT) while reducing private transit. In my presentation, I will ultimately take the position in favor of PMT, demonstrating that its enhancement and expansion would provide greater convenience for passengers and be more sustainable economically and environmentally in the long term.

Student: Dameron, Brinn

Major: Marine Biology

Faculty Mentor: Christy Wolovich

Presentation Time: 3:00-3:20

Presentation Type: Honors Proposal

Room: Christoverson 111

Title: An Assessment of Vertebrate Populations and the Risk of Road Mortality Near Two Nature Reserves in Central Florida

Abstract: Human animal conflict has increased with urbanization, resulting in a reduction of wildlife populations and biodiversity. Road mortalities are one of the most prevalent ways wildlife is negatively impacted by people. Vehicle collisions with large-bodied animals, such as deer, panther or alligators are often reported, but there is less data on the road mortalities of amphibians, reptiles, birds and smaller-bodied mammals. A greater understanding of the species that are disproportionately impacted would facilitate the proposal of mitigation strategies. I aim to survey amphibians and reptile populations between August and December 2024 using pitfall traps, funnel traps, and pvc pipe traps to understand the species richness and diversity along the edges of two nature reserves (Circle B Bar Reserve and Marshall Hampton Reserve) in Lakeland, FL. I will also assess the presence of other vertebrate species using camera traps. I will also survey roadkill along two adjacent roads to identify which vertebrate species are most likely to be hit by vehicles. The findings will be used to determine the species richness of vertebrates in these specific locations and their probability of being hit by vehicles. Ultimately, the data will help inform wildlife management and specific recommendations for ways to reduce road mortality will be proposed to local government officials.

Student: Davis, Janie

Major: Exercise Science

Collaborator: Stephanie Suarez

Faculty Mentor: Erica M. Marshall

Presentation Time: 2:40-3:00

Presentation Type: Oral Presentation

Room: Christoverson 108

Title: The Effects of Transcutaneous Vagus Nerve Stimulation on Vagal Measures in Individuals with Rheumatoid Arthritis

Abstract: BACKGROUND: Rheumatoid arthritis (RA) is an autoimmune disease that is known to attenuate vagal measures of heart rate variability (HRV) and augment blood pressure reactivity (BPR). Previous studies have suggested that transcutaneous vagus nerve stimulation (tVNS) may improve vagal measures of HRV and BPR, but this is unclear. PURPOSE: To explore effects of tVNS on HRV and BPR in women with RA. METHODS: Two women (age: 48±1 yrs) with a confirmed diagnosis of RA volunteered to participate. At baseline, participants completed self-assessments of vagal measures of HRV with a chest strap and mobile phone application for 10 days. After 10 days, participants attended

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the laboratory where a cold-water immersion test was administered to assess BPR (visit 2). Participants then completed an additional 10 days of daily HRV self-assessment in addition to 20 minutes of tVNS. After 10 days of tVNS usage, participants attended the laboratory where the BPR test was re-administered, and HRV data was collected. A Wilcoxin signed-rank test was used to examine the effect of tVNS on vagal measures of HRV and BPR. RESULTS: tVNS stimulation did not have any significant effects ($p>0.05$) on vagal measures of HRV or BPR. CONCLUSION: These data suggest that 10 days of tVNS does not significantly improve vagal measures of HRV or BPR. Future studies should explore the effects of tVNS on a larger population, and they should also assess changes in vagal measures of HRV and BPR across a duration that extends beyond ten days.

Student: den Boggende, Andrew

Major: Art History and Museum Studies

Faculty Mentor: Alex Rich

Presentation Time: 2:00-2:20

Presentation Type: Honors Presentation

Room: Christoverson 111

Title: Towards a New Institution: Metrics for the Modern Museum

Abstract: Throughout their history, museums have transformed drastically from elitist, stuffy institutions, to open forums for ideas and conversation. In recent times, museums, realizing that their existence was no longer guaranteed by public funding, needed a new source of income in order to remain solvent, and began competing more actively in a commercial marketplace for audience's attention. By catering to visitors' needs, museums became a more democratic space, fostering new relationships with the communities they serve. Despite this development in the museum world, and its importance in any modern museum's operations, proper metrics on museum performance are still largely inconclusive. This is largely due to museums' non-profit status, meaning they do not function like a traditional firm with a profit and loss mechanism dictating success. This thesis seeks to examine this problem more closely and provide a starting point for solutions in quantifying museum performance in hopes that today's museum staff will be able to better connect with the desires of their audiences. In the first section, we review the history of the museum concept from its inception to today. In the second section, we examine contemporary museum scholarship on nonprofit legal structure, museum governance, and the metrics staff engage with to ensure success. In the third section, we analyze the position of museum survey usage and propose a new survey catering to the value propositions and mission of the Polk Museum of Art in Lakeland, FL. This section also includes results from the proposed survey after a month in the field and their according policy implications with the PMoA.

Student: Finnefrock, Amanda

Major: Marine Biology

Faculty Mentors: Melanie Langford

Presentation Time: 3:40-4:00

Presentation Type: Honors Presentation

Room: Christoverson 111

Title: Metagenomic Sequencing and Analysis of Bacteria and Archaea from Wild Cownose Rays *Rhinoptera bonasus* in Tampa Bay, Florida

Abstract: The microbiome is defined as the bacteria, archaea, protists, and other microscopic life living on or in a host and acting as mutualists. To understand the role of commensal microbes is to understand

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host life processes; microbes play a valuable role in such areas as digestion and immune responses. While not much literature on the microbiome of elasmobranchs (sharks, rays, and other cartilaginous fishes) exists, there is a heavy bias towards sharks. There is much less literature concerning rays, and even less on cownose rays (*Rhinoptera bonasus*), which can be found in Florida waters. Many elasmobranch microbiome studies utilize fatal methods and fail to return a safe, live animal to its habitat. Here, we aim to collect swab samples from wild, live cownose rays in Tampa Bay, FL using minimally invasive techniques, extract bacterial and archaeal DNA from the samples in a laboratory setting, and use metagenomic sequencing data to examine relative abundance. This study is one of the first of its kind as there is no research on cownose rays in Tampa Bay, FL, the microbiome of wild cownose rays, or archaea in cownose rays. The results of this study may provide more insight into how bacteria and archaea interact with their hosts and how cownose rays may benefit from these symbionts.

Student: Gabryluk, Noah

Major: Computer Science

Collaborator: Riley Peters

Faculty Mentor: Matthew Eicholtz

Presentation Time: 2:20-2:40

Presentation Type: Oral Presentation

Room: Christoverson 209

Title: Chessentary: AI-Driven Move Evaluation and Commentary Generation in Chess

Abstract: Chess is a fascinating and complex game to dive into for AI research as there are countless scenarios that can occur in a single game. With the recently growing popularity of chess and AI chatbots such as ChatGPT, we want to use AI to see how beneficial a specific board state is for a player, and from there generate human-like commentary explaining why a move resulting in that specific board state results in the aforementioned quality. We want to create a neural network model that takes in a board state and a chess move as input and generates text using natural language processing that explains why that move was good or bad as output. We are looking to have our model generate commentary as if your friend who knows a lot about chess is at your side as you are playing, telling you if the move you just made was optimal or sub-par.

Student: Gallagher, Olivia

Major: Environmental Studies

Faculty Mentor: Eric Kjellmark

Presentation Time: 5:20-5:40

Presentation Type: Honors Proposal

Room: Christoverson 111

Title: The Importance of Native Bee, Wasp, and Fly Species to Agriculture Within Florida and the Plan Needed to Conserve Them

Abstract: This research project will initially be conducted on data collected on the frequency of certain species of native bees in addition to honey bees that are found pollinating our crops, and this data will be used to create a conservation plan. Due to the issues facing the citrus agriculture industry currently, and great decreases in bee populations, it will be important to collect this data on which native bees and honey bees are most crucial to pollinating different crops in Florida. Many farmers utilize honey bees for their groves, kept in bee boxes that are usually out of range when they spray for pesticides. However, it is very important to consider the native species that also contribute to pollination, and take measures to

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protect them. My research question is which species of native bees in addition to honey bees are great contributors to the pollination of crops, and how can we protect them?

Student: Gentile, Julianna

Major: Political Science

Faculty Mentor: R. Bruce Anderson

Presentation Time: 4:40-5:00

Presentation Type: Oral Presentation

Room: Christoverson 206

Title: Environmental Disaster Policy

Abstract: Florida is very vulnerable to natural disasters. Areas are left in tragedies after events such as floodings and hurricanes. Not only is this bad for the environment but for people as well. According to the National Centers for Environmental Information “the US has sustained 376 weather and climate disasters since 1980, and the cost for the damages was over \$2.655 trillion (National Centers for Environmental Information, 2024). This also has resulted in deaths and significant economic losses. To help this problem, the National Coordination on Adaptation and Resilience for Security Act is bipartisan and can help this problem (Lindsay, 2024). This provides a plan for communities that are in vulnerable areas. This act will help people come together during these hard times. When disasters happen we are all naturally in shock and have no idea what to do. This act will help put plans in place before and after these times. This is an upcoming act, and I have solutions on how this can be carried out. There are even more ways to make this policy even better.

Student: Ghaly, Abigail

Major: Business Administration

Faculty Mentor: Patrick L. Smith

Presentation Time: 4:40-5:00

Presentation Type: Honors Proposal

Room: Christoverson 111

Title: Exploring the Intersection of Neuroscience and Criminal Responsibility

Abstract: The intersection of neuroscience and criminal responsibility has garnered increasing attention in recent years. Advances in neuroscience have provided insights into the biological underpinnings of human behavior as they pertain to criminal actions. Understanding how neuroscience intersects with criminal responsibility is crucial for shaping legal and societal responses to criminal behavior. For instance, the functional magnetic resonance imaging (fMRI) techniques have provided insights into the structural and functional differences in the brains of individuals involved in criminal behavior. This technique, along with other forms of neurological assessment, continues to develop so the field can understand more about “the criminal mind.” This proposal aims to investigate the relationship between the ethical parameters within the criminal justice system and the most recent neurological techniques for assessment and intervention of criminal behavior. Based on the most recent literature in the field, the paper will also propose ethical dilemmas and legal analyses that will guide future research within these fields.

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Student: Giannone, Joseph

Major: Art History and Museum Studies

Faculty Mentor: Alex Rich

Presentation Time: 2:20-2:40

Presentation Type: Honors Proposal

Room: Christoverson 111

Title: As Above, So Below: Barnett Newman and the Sublime

Abstract: My presentation will be about the artwork of early 20th century abstract expressionist artist Barnett Newman. My presentation will specifically focus on the metaphysicality and sublimeness of his work. Metaphysicality meaning a study of our existence and reality, and sublimeness meaning something related to a higher level of thinking. To explain this, I will dive into multiple individual artworks and describe how they represent each of these adjectives and the broader contexts behind the meanings of the work. This formal analysis will be backed up by substantial research on Newman, his works, and his writings on his works.

Student: Giliam, Lily

Major: Biology

Faculty Mentor: Christy Wolovich

Presentation Time: 2:40-3:00

Presentation Type: Honors Proposal

Room: Christoverson 111

Title: Investigating the Effect of Novel Visual Stimuli as a Form of Environmental Enrichment in Zoo-housed Psittacidae.

Abstract: Environmental enrichment is used to manage captive animal welfare by changing and adding complexity to the environment in ways to evoke natural, species-specific behaviors. In zoos, avian species often receive little variability in their enrichment, leading to habituation and decreasing its positive welfare effect. Despite birds having keen eyesight, visual stimuli is not widely used as a form of enrichment and may have the potential to improve their welfare. Optical illusions, in particular, may provide a unique sensory experience. For example, the Rotating Snake (RS) motion illusion, reduces self-directed behaviors and increases attentive behaviors in zoo-housed mammals. I aim to investigate the effect of novel visual stimuli on the behavior of zoo-housed Psittacidae to determine whether this stimuli serves as an effective form of environmental enrichment. Over an eight week period, I will present zoo-housed macaws at the Brevard Zoo with novel visual enrichment and examine their self-directed, repetitive, and social behaviors. The macaws will receive paper enrichment as a control and two different experimental enrichments: RS motion illusion and motion light enrichment. If the visual stimuli is an effective form of enrichment, I expect an increase in natural behaviors (allopreening and time spent in contact with social partner) and a reduction in repetitive behaviors (feather pulling, pacing, and vocalizing loudly). My ultimate goal is to provide a recommendation for an effective enrichment plan for macaws in zoos. If successful, this type of visual enrichment could be more broadly applied to other zoo-housed species.

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Student: Gotsch, Thomas-Edward

Major: Accounting

Faculty Mentor: Celina Jozsi

Presentation Time: 5:00-5:20

Presentation Type: Honors Presentation

Room: Christoverson 206

Title: Navigating the Changing Landscape of Accounting: Technology, Cybersecurity, and the Human Touch

Abstract: Accounting firms face numerous security problems, from external information hacking to internal fraud and data leaking. It is well-established that advancement in technology and the increase in globalization has simultaneously increased the connectivity and production of accounting firms around the globe, but also led to significant hazards and threats accounting firms face, and how their adoption of cybersecurity and intelligence measures is a necessary action which has reduced fraud and company losses. This review aims to determine how these advancements in certain industry-specific technology have contributed to the rise in deception and theft from accounting companies, and how different security measure can mitigate these threats. Specifically, it investigates whether these cybersecurity improvements are successfully targeting threats arisen by increased accounting innovation. To test this study, common security measures and internal controls are examined to see if they are consistently proving to be reliable and effective against threats that accounting firms face, such as internal theft or external data leakage. The results illustrated a clear and positive relationship in the same direction than hypothesized: increases in cybersecurity have a measurable effect on company safety despite the increases in technology. These results suggest that as technology increases, and the ways that companies are able to be attacked and become victim for scams and theft, the larger role cybersecurity must play in the everyday life and safety of an accounting firm.

Student: Griffin, Elizabeth

Major: Biology

Faculty Mentor: Brittany Gasper

Presentation Time: 5:20-5:40

Presentation Type: Honors Proposal

Room: Christoverson 207

Title: Classification and Analysis of Antibiotic Properties of Unknown Species of Chromobacterium

Abstract: Antibiotic resistance is a growing issue. There are more resistant organisms now than ever before in history. Therefore, it is necessary to explore new antibiotics to be able to kill these bacteria. Majority of antibiotics are found in different bacterial and fungal species. These organisms are isolated and tested for antibiotic properties in the lab. A common source of antibiotic-producing organisms is in the soil. Samples are collected in hopes of finding new antibiotics from the soil bacteria. Soil samples were isolated from fertile tropical rainforest soil from the Volcanoes National Park on the big island of Hawaii. An organism from the Chromobacterium Genus was isolated. This organism was found to have antibiotic properties. This research examines physical and chemical properties of this unknown bacteria from the Chromobacterium Genus.

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Student: Hamlin, Gracie

Major: Studio Art

Faculty Mentor: William J. Otremsky

Presentation Time: 2:00-2:20

Presentation Type: Honors Proposal

Room: Christoverson 108

Title: Impact Cartography

Abstract: I will be presenting a proposed series of paintings that I plan to complete as my Studio Art Thesis my senior year. This series will be an exploration into how my life and the way I grew up has impacted myself as an individual. I plan to illustrate the hectic and near-nomadic lifestyle of my childhood through paintings of maps, effectively mapping out my life and showcasing how this has affected me personally and shaped me into who I am today. This series will consist of four to five, four foot by five foot paintings, each one representing different topographical locations that are important to me and my life. I plan to paint these maps looking used, old, and careworn, illustrating the fact that the more times you use an object, the more battered and ragged it becomes. This will help to symbolize the amount of times I have had to uproot my life and move to a different location.

Student: Hayes, Kylan

Major: Political Science

Faculty Mentor: R. Bruce Anderson

Presentation Time: 2:40-3:00

Presentation Type: Oral Presentation

Room: Christoverson 206

Title: Narrating Race in The Birth of a Nation - 1915 & 2016

Abstract: Without an understanding of our past, we are doomed to make the same mistakes in the future. An avid study of the past is important due to its ability to put situations and ideas into context. When it comes to the artistic portrayal of history, the context is key. Artistic expression creates the context for ideas to be understood, whether using film, photography, or play. The context of the Reconstruction Era and its affiliating racial tensions has been the subject of pop culture for over a century. The depictions of this era are epitomized in two films of the same name but contrasting narratives: The Birth of a Nation by J.W. Griffith (1915) and The Birth of a Nation by Jake Parker (2016). In this paper, we will first contextualize the reality of The Reconstruction Era. We will begin by discussing the Antebellum South and the institution of slavery. We will examine the factors around this period and its role in the rise of Nat Turner's rebellion, attempts at equality, and Jim Crow. We will then transition to a discussion on the cinematic interpretation of this context and its impact on racial tensions at the time. Both versions of The Birth of a Nation will be contextually analyzed, discussing their roles in the ongoing debate around racial tension. We will end by comparing the narrative context both films portrayed with a discussion of contemporary relevance. Finally, we will tie this into a broader discussion of the role artistic expression plays in shaping political narratives and culture.

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Student: Hickey, Michael

Major: Biochemistry and Molecular Biology

Faculty Mentor: Carmen Gauthier

Presentation Time: 4:40-5:00

Presentation Type: Honors Presentation

Room: Christoverson 207

Title: Targeting Metal-Organic Frameworks From Trefoil-Shaped Paraben Analogs for Potential Antifungal and Antimicrobial Properties for Controlled Release Applications

Abstract: Metal-organic frameworks (MOFs) combine the fields of inorganic and organic chemistry by utilizing a metal center in combination with bridging organic ligands. This combination forms a repeating scaffold unit which grows to form a macroscale crystalline structure. Due to the near infinite number of unique structures that can be formed, MOFs have high applicability in the field of delayed drug delivery. Utilizing specific transition metals or organic ligands in the structure can impart additional properties to the final product. Upon synthesis of the desired MOF, from a paraben-derived tritopic organic ligand coordinated cobalt, the final product is anticipated to have the ability to store and steadily release specific types of drug molecules (anti clotting agents) while maintaining the antimicrobial and antifungal properties seen in its reagents. The aim of this work is to successfully generate such a product and perform analysis in order to elucidate properties of the MOF. As a means of testing the properties of the MOF, various forms of analysis to be performed which include powder: X-ray diffraction (PXRD), infrared spectroscopy, nuclear magnetic resonance (NMR), and comparative analysis with previous research.

Student: Holmes, Douglas

Major: Business Administration

Faculty Mentor: Joseph Connors

Presentation Time: 1:40-2:00

Presentation Type: Honors Proposal

Room: Christoverson 208

Title: The Benefits of Capitalism and Limited Government

Abstract: In my presentation I will explore various economic and governmental systems prevalent across the globe. I will be using data as well as real world examples to tie together my ideas and opinions. Through my paper I hope to show others that capitalism and limited government allow for more prosperity as compared to other systems.

Student: Ingraham, Alexandria

Major: Biology

Faculty Mentor: Brittany Gasper

Presentation Time: 4:00-4:20

Presentation Type: Honors Presentation

Room: Christoverson 207

Title: Evaluating the effectiveness of oil pulling on bacterial biofilm formation on teeth.

Abstract: My presentation is about my research into oil pulling. Using my own baby teeth, I have created a biofilm containing streptococcus mutans, a common bacteria that contributes to tooth decay, and created a simulation of coconut oil pulling in my experiment. From there I am using a crystal violet staining method to quantify the amount of Streptococcus mutant remaining on the teeth and how effective the oil pulling was.

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Student: Jacob, Noelle

Major: Chemistry

Faculty Mentor: Carmen Gauthier

Presentation Time: 5:00-5:20

Presentation Type: Honors Presentation

Room: Christoverson 207

Title: The Use of a Metal-organic Framework to Detect the Presence of Illicit Drugs

Abstract: Many presumptive tests, such as the Scott Test, give false positives for over-the-counter medications. Therefore, finding alternatives to the Scott Test using a more sensitive method of detection for illicit drugs is of great interest. Metal-organic frameworks (MOFs) are ideal candidates for detecting smaller molecules due to their crystalline structure, high porosity, and active sites at the metal centers. Several MOFs were synthesized utilizing cobalt as the metal center and 1,3-adamantane dicarboxylic acid, isophthalic acid, or hydroxyisophthalic acid as the organic ligands. These MOFs were characterized using X-ray crystallography, infrared spectroscopy, and thermogravimetric analysis (TGA). Once each MOF was fully characterized, the sensing capabilities were tested against ammonia and dextromethorphan.

Student: Kelleher, Justin
Biology

Major: Biochemistry and Molecular

Faculty Mentor: Brittany Gasper

Presentation Time: 4:20-4:40

Presentation Type: Honors Presentation

Room: Christoverson 207

Title: Synthesis of Novel Chelidonate Metal-Organic Frameworks for Synergistic Antibiotic Effect

Abstract: Surgical site infections are a rampant issue in hospitals that cause patients to have to be readmitted and costs for both parties are significantly higher, with many additional health risks associated. Specifically for hernia mesh repairs, *E. coli* and *S. aureus* are common microorganisms that can lead to SSI and pose serious risk. The goal of this project is to synthesize and quantify the efficacy of metal-organic frameworks against the growth of these bacteria. This was performed using both zinc and copper MOFs, with a comparison of their impacts, in order to better understand the feasibility and benefits of these differing treatments. This provides a new perspective on the future of wound care and prevention of the creation of "Super Bugs".

Student: Kiesewetter, Wendy

Major: Graphic Design

Faculty Mentor: Samuel Romero

Presentation Time: 5:00-5:20

Presentation Type: Honors Presentation

Room: Christoverson 209

Title: Case Study: Personal Branding in Graphic Design

Abstract: Currently, a personal branding in the career sphere is what you wear to an interview. But what if the concept of personal branding was taken further? I have created a case study to explore how having an extensively designed personal brand, akin to a company's brand, can help someone get employed. I have accomplished this by designing brands for three individuals with different career goals, personalities, and identities.

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Student: Kortright, Marisa

Major: Psychology

Faculty Mentor: Elizabeth Gennari-Crosby

Presentation Time: 5:00-5:20

Presentation Type: Honors Presentation

Room: Christoverson 208

Title: Impact of Therapy-Specific Education on Students' Attitudes

Abstract: The research question being addressed in this study is whether therapy-specific education, on in-person and virtual reality exposure therapy, will have an impact on students' attitudes. The objective is to analyze this data through both gender and academic and club memberships.

Student: Lafalaise, Tedros

Major: Computer Science

Faculty Mentor: Matthew Eicholtz

Presentation Time: 2:40-3:00

Presentation Type: Honors Presentation

Room: Christoverson 209

Title: AI in Sports: A Machine Learning Approach for Improving Video Analysis in Soccer

Abstract: As A.I. (Artificial Intelligence) continues to grow in computational prowess, it has begun to see mainstream usage for both personal and industry use. One such industry that has benefited from this surge is data analysis. Data, in general, is the core of Artificial Intelligence, especially in its subfield of Machine Learning, in which it attempts to identify patterns on given information. Noting this, there is a major industry that could leverage a combination of M.L. (Machine Learning) and data analysis: sports. In order to continue improving their own performances, many teams and/or clubs typically analyze their previous outings as a barometer of how well they are playing. In the world of soccer, many professional outfits go as far as to hire data analysts to peruse over this data and relay information to the head coaches and tacticians. However, carrying out the analysis is much easier said than done; it can be a difficult and daunting task, especially if the medium is video. In this project, we explored the avenues of how M.L. models could aid in efficient analysis via real time player and action detection to provide comprehensive statistics for performance assessment.

Student: Lee, Aidan

Major: Finance

Faculty Mentor: Juan Pablo Gutierrez Pineda

Presentation Time: 4:00-4:20

Presentation Type: Honors Presentation

Room: Christoverson 208

Title: Why Aren't College Students Investing?

Abstract: With young people in college today, what is the driving factor to why they aren't investing today? Over the course of a couple of years ending the Florida Southern undergraduate program, I sought out to try and answer this question by testing the students here to see exactly what causes this phenomenon. Early hypotheses would suggest that this could be a lack of personal finance knowledge or a lack of interest in investing. There could be a variety of reasons, including a good chance that a college student is low on funds. Throughout the year, we have been talking to students and getting insight as to why students here aren't investing at all. We gave a questionnaire for students to answer, both in the business school as well as non-business majors. We then tracked the results and found various

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correlations between lack of investment knowledge among other variables to why students aren't investing. Throughout the course of this past year, we set out to find exactly what caused these issues and what the regressions tell us.

Student: Leonard, Edward

Major: Computer Science

Faculty Mentor: Kyle Burke

Presentation Time: 2:20-2:40

Presentation Type: Honors Proposal

Room: Christoverson 208

Title: Using AI to Identify Firearms

Abstract: This presentation will be explaining how I have used the AI vision model YOLO to identify a firearm-like objects in images as a proof of concept to identifying firearms. I will be explaining what I have done and what future steps I will take to structure an AI to detect firearms in live video.

Student: Lowery, Ashleigh

Major: Biology

Faculty Mentor: Christopher Brandon

Presentation Time: 2:40-3:00

Presentation Type: Honors Proposal

Room: Christoverson 207

Title: An Evolutionary History of Opsins Within Underrepresented Daphnia Species

Abstract: The water flea (genus *Daphnia*) is a freshwater crustacean found within lakes and rivers around the world. Despite their small size, *Daphnia* presents with a large amount of light-sensitive photoreceptors known as opsins. These receptors are commonly found within the eye of an organism, with the presence of opsins allowing for vision to occur. The function of some subclasses of opsins is unknown, and the investigation into how opsins have evolved may allow for a deeper understanding of these vital photoreceptors. Despite the abundance of opsins found in *Daphnia*, they only encompass a small part of studies investigating opsins and their evolution. Previous studies investigating the evolutionary history of opsins within *Daphnia* have primarily focused on a few common species within the genus, such as *D.pulex* and *D.magna*. In the course of my research, I hope to use bioinformatics to investigate the evolutionary history of opsins within underrepresented species of *Daphnia*, and to add these species to the larger phylogenetic tree that has been created by these previous studies.

Student: Loyola-Cervantes, Erlinda

Major: Political Science

Faculty Mentor: R. Bruce Anderson

Presentation Time: 3:00-3:20

Presentation Type: Oral Presentation

Room: Christoverson 206

Title: The Fight Against Greenhouse Gases at the Local Level

Abstract: This study will examine the need to address the climate change issue at hand. In recent years, the discussion of combatting climate change has become a priority, particularly through the reduction of greenhouse gases and emissions. The research will focus specifically on local governments. Local governments play an important role in reducing greenhouse gas emissions. They have the opportunity to

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implement policy and undertake initiatives that can drastically change the trends noted in greenhouse gases and emissions presently. This area has been selected because of its narrower scope. By focusing on a lower level of government, the effects of policy and initiatives can be more easily noted and changes in greenhouse gas emissions can be attributed to said policies and initiatives. This area has also been selected because it is at this level of government where policy passed to address the issue at hand is more feasible. I hypothesize that action and policy taken at the local level of government will have a greater impact on the mitigation of greenhouse gases and their emissions. I suspect that action at the local level of government will be more effective because these governments will be addressing a broad issue but with a narrower approach that is conducive to action. As I investigate the impact of policy and action at the local government level, I hope to identify the keyways in which policy at the local government level yields itself to positive contributions in the fight to reduce greenhouse gases and their emissions.

Student: Martin, John

Major: Accounting

Faculty Mentor: Cindy Hardin

Presentation Time: 3:20-3:40

Presentation Type: Honors Presentation

Room: Christoverson 208

Title: Royalty Accounting and 360° Deals: Are Record Labels Still Needed?

Abstract: The connection artists have with their record label represents one of the most important relationships in the recording industry. This relationship, in recent years, has come to encompass nearly all professional activities an artist participates in. Unfortunately, these record label deals, known as 360-degree contracts, can lead to a power imbalance that limits artists' creative and financial freedoms. This project will be structured under a traditional research paper that brings together specific artist anecdotes, case law, and scholarly literature to reach a conclusion and propose potential solutions. The project looks at several different areas, such as the function of fiduciary relationships in the music industry, defining an employee versus an independent contractor, how labels'™ royalty accounting practices harm artists, and the ways the internet and technological advancements can be used to restore artists' autonomy. The current nature of music royalty audits and the rights artists have with respect to these audits will also be analyzed. I hope to ultimately address the genuine need for record labels in an industry increasingly dominated by digital platforms.

Student: McFadden, Jaclyn

Major: Marine Biology

Faculty Mentor: Jason Macrander

Presentation Time: 3:40-4:00

Presentation Type: Honors Proposal

Room: Christoverson 108

Title: Maze Learning and Memory in the Atlantic Sand Fiddler Crab

Abstract: The Atlantic sand fiddler crab, *Leptuca pugilator*, is abundant on the east coast of the United States, inhabiting complex intertidal zones and burrowing in the sand for protection. Throughout the day each crab will leave their individual burrows in search of mates or food, but how these species are able to navigate complex heterogeneous environments and recall the path back is yet to be explored. I aim to determine the capacity for spatial learning in *L. pugilator* by testing the crabs in two complex mazes.

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Conditioned individuals will learn the route of a maze over six weeks, with food at the endpoint for motivation. After a one week pause, the crabs will be tested again, this time without food to determine if they recalled the route. The time to complete the maze and the number of wrong turns will be recorded. Naive crabs with no maze exposure will then be tested in the same maze, and compared with the conditioned crabs. At the same time, the conditioned crabs will be run through a second maze with a different layout and compared to the naive crabs for the second maze. This will reveal whether the ability to navigate complex heterogeneous landscapes is an attribute that can be developed through repeated exposure, which can tell us more about how these creatures navigate their environment.

Student: Mendieta, Melanie

Major: Political Science

Faculty Mentors: Anna Caney and Melissa Garr

Presentation Time: 4:00-4:20

Presentation Type: Honors Proposal

Room: Christoverson 209

Title: History in Flames: The Burning of Sacred Mayan Texts by Friar Diego de Landa and the Continuous Violence Against Indigenous People in the Americas

Abstract: This presentation delves into the historical event of the burning of sacred Mayan texts and other cultural artifacts by Spanish Bishop Diego de Landa in 1562, this act of cultural genocide was part of a broader campaign of violence and oppression carried out by European colonizers against indigenous populations across the Americas. The burning of the Mayan texts represented an attempt to erase the rich cultural heritage and history of the Maya civilization. This act of cultural violence was emblematic of the larger subjugation and exploitation of indigenous peoples that has persisted for centuries since the European colonization of the Americas. From the genocidal policies of colonial powers to the ongoing marginalization and oppression of indigenous communities today, the legacy of this colonial violence continues to shape the lives of native peoples across the continent. Examining this history is crucial to understanding the deep-seated inequities that indigenous populations face and to working towards true reconciliation and justice.

Student: Migliorato, Olivia

Major: English

Faculty Mentor: Catherine R. Eskin

Presentation Time: 2:00-2:20

Presentation Type: Honors Proposal

Room: Christoverson 209

Title: Why Should an Intersectional Shakespeare Exist?

Abstract: Until the past decade, the discussion of the intersectionality of race and gender in Shakespeare has been avoided by Shakespeare scholars. Race itself has been especially controversial, with most scholars agreeing that viewing Shakespeare's works through the lens of racism was anachronistic and inappropriate to its historical context. However, recent scholarship views Shakespeare's works through the lenses of race and gender, providing a better understanding of the plays' dramaturgical realities. Through the critical lenses of feminist and post-colonial theory, contemporary scholars can better address the imbalance of representation. My project will look into the intersectionality displayed in two of his "race plays," Antony & Cleopatra (c. 1606) and Titus Andronicus (c. 1590), primarily focusing on Cleopatra and Aaron from their respective texts. Exploring

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primary and scholarly texts, I will provide perspective on the long-term effects of racialized casting, representation, and marketability.

Student: Miles, Olivia

Major: Marine Biology

Faculty Mentors: Allison Durland and Gabriel Langford

Presentation Time: 3:20-3:40

Presentation Type: Honors Proposal

Room: Christoverson 111

Title: How does Seasonality Affect External Parasitism in Freshwater Nile Tilapia *Oreochromis niloticus*

Abstract: The effects of parasites on freshwater ecosystems can be very harmful to the hosts, the ecosystem and population dynamics, and the economy. Ectoparasites that live on freshwater hosts, such as Nile Tilapia *Oreochromis niloticus*, can cause many damaging effects such as gill inflammation, respiratory diseases, lesions, and death. All these consequences can lead to complicated population dynamics as the hosts do not behave normally within the ecosystem and also cannot be used in fisheries and for food for the growing economy. Seasonality has a large impact on the transmission of ectoparasites between hosts and can increase infection rates in the dry season of an area. As climate change continues, dry seasons are becoming longer leading to higher infection rates by ectoparasites in many freshwater ecosystems. Invasive species have a direct impact on ecosystems, such as disrupting the natural niches and causing extinctions of native plants and animals. As well as impacting the ecosystem, invasive species can also introduce parasites into the ecosystem which can be damaging for the native species. As these issues arise, it is becoming increasingly evident that there is a lack of knowledge in this area of science and the need for more research on this issue. The goal of this study is to understand how changes in abiotic factors due to seasonality changes the prevalence of external parasites and population dynamics within an ecosystem.

Student: Miller, McKinley

Major: Film

Faculty Mentor: Samuel Romero

Presentation Time: 1:40-2:00, 2:00

Presentation Type: Honors Presentation

Room: Christoverson 109

Title: Shades of Autumn; An Interactive Film Screening

Abstract: This project is an interactive film that allows the viewer to make choices on behalf of the main character that effects her mental state and wellness and effects the choices that she's able to make in the future.

Student: Montoya, Valentina

Major: Communication

Faculty Mentor: Mike Trice

Presentation Time: 1:40-2:00

Presentation Type: Honors Presentation

Room: Christoverson 206

Title: Twisted Perceptions of Homelessness in America: The Potential Impact Available through Podcasting

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Abstract: Podcasts are a relatively new form of mass media communication that gained momentum over the past decade. In hopes of bringing attention to the lives of those who have experienced homelessness, this honors project was centered around sharing experiences of that life through a series of episodes in the form of a podcast show. To understand the importance of providing a space for these voices, this research project establishes the problems within the United States and the statistical numbers of homelessness nationwide. Because podcasts are available to anyone with a mobile device, people can highlight the vast capability of storytelling and exposure of such media. Overall, the efforts of this project pushed for the advancement of communication for an underrepresented population of society but also highlighted the discrepancies and difficulties in reaching these individuals.

Student: Montoya, Valentina

Major: Communication

Faculty Mentor: R. Bruce Anderson

Presentation Time: 4:00-4:20

Presentation Type: Oral Presentation

Room: Christoverson 206

Title: Identifying Intricacies of Democracy for South American Countries & Potential Authoritarian Regimes

Abstract: Countries around the world are susceptible to the dangers of an authoritarian regime, and if the historical context is any example, the South American region is not exempt from these political challenges to democracy. In order to understand what countries exemplified authoritarian structures within the past three decades, this presentation attempts to aid in our understanding of how certain South American Countries are susceptible to these regimes.

Student: Mussante, Emma

Major: Sport Business Management

Faculty Mentors: Nick Nugent and Matt Bernthal

Presentation Time: 1:40-2:00

Presentation Type: Honors Proposal

Room: Christoverson 108

Title: Fan Engagement and Experience in Minor League Baseball: A Case Study of The Lakeland Flying Tigers

Abstract: This study will investigate the captivating nature of minor league baseball through the lens of fan experience and engagement, narrowing in on strategies used by minor league teams to attract and retain fans. With a particular focus on The Lakeland Flying Tigers, the single A affiliate of the Detroit Tigers, the research will dive into the methods used to connect with fans and improve their overall enjoyment of the sport. I will be using a combination of qualitative interviews with key personnel as well as quantitative analyses of factors such as revenue and attendance data. This study seeks to reveal the intricate relationship between fan engagement initiatives and the success of minor league baseball teams. By giving insight to the approaches adopted by The Lakeland Flying Tigers, and their impact on the community, this research will offer valuable insights for professionals in the field of sports management, marketers, and other enthusiasts alike.

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Student: Opalinski, Emily

Major: Environmental Studies

Faculty Mentor: Jason Macrander

Presentation Time: 3:00-3:20

Presentation Type: Honors Proposal

Room: Christoverson 108

Title: Effects of Microplastics on the Venom, Reproduction, and Zooxanthelae of *Exaiptasia Anemone*

Abstract: My project is looking at the effects of microplastics on *Exaiptasia sea anemone*. Specifically, the project will be researching how the microplastics affect zooxanthelae, venom, and reproduction of the anemone.

Student: Pelletier, Alizee

Major: Mathematics

Faculty Mentor: Susan Serrano-Hauer

Presentation Time: 4:20-4:40

Presentation Type: Honors Proposal

Room: Christoverson 208

Title: Proposition of the Development of a Mathematical Model to Predict the Performances of a College Swimmer in Competition.

Abstract: In this proposal we will present the methods and the beginning of the research that will allow us to create a mathematical model that will predict the performance of a swimmer in college. The prediction of sport is very common, and it is sometimes very accurate. Some researchers have been made about swimming to predict some time drops during the competition on an international level. Here we would like to focus on college swimming and take in consideration the fact that the athlete are students as well and a lot of factors like stress, seasons schedule, exams periods, breaks. We will conduct some surveys with the swimmers of Florida southern college (mostly juniors and seniors) to collect some information such as sleep, nutrition, fitness, mental health and other. With all the data, we will use statistics and probability to predict the performance and times of the swimmers at certain periods of the year.

Student: Penrose, Jack

Major: Business Administration

Faculty Mentor: Shankar Ghimire

Presentation Time: 4:40-5:00

Presentation Type: Honors Proposal

Room: Christoverson 208

Title: College Athletic Success and its Impact on Prospective Students: A College Choice Study

Abstract: Every year thousands of high school students in the U.S. apply to different colleges and universities across the country. But what factors impact their decisions to choose those schools? This paper examines several factors that might impact that decision. These factors include the cost of the school, the perceived quality, the graduation rate, and the amount of financial aid available among other traditional college choice factors. However, this paper looks specifically at how college athletic performance affects those prospective students. College football will be used as a proxy for college athletics as it is the largest and most viewed sport among college athletics. Performance level will be measured using three different variables: winning percentage, offensive proficiency, and defensive proficiency. The sample consists of about 50 schools that make up the FCS of NCAA D-1 football from

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2009 – 2019. The primary method used in this study is a fixed effect model where the dependent variable is the number of applications the school receives, and the main independent variable is the level of performance. There are three main models comparing each type of performance and its impact on the number of applications. The results are not what one might first expect. The study finds that for schools belonging to the FCS conference, the winning percentage of that school's football team has no statistical significance and the number of applications the school receives. However, the team's offensive proficiency, meaning how many points they score in a season is found to be significant in impacting the number of applications received. This implies that one possible way for a school to increase the number of applications it receives is to invest more in its football team, specifically on the offensive side of the ball.

Student: Prancel, Anthony

Major: Computer Science

Collaborator: Tedros Lafalaise

Faculty Mentor: Matthew Eicholtz

Presentation Time: 3:00-3:20

Presentation Type: Oral Presentation

Room: Christoverson 209

Title: Parakeet: An AI Approach to Visualizing Moves in Chess

Abstract: The game of chess has always been an enticing area for AI research due to its simple rules, juxtaposed with the complexity of strategic thought that it necessitates. It requires players to anticipate, understand, and intuit how certain piece combinations impact their chances of winning, and thus it is an active area of work for AI researchers due to the complexity that demonstrates what intelligent agents ought to be able to accomplish. Our research, in light of these mental capacities, is to take a visual approach to understanding. We are aimed at discovering whether an AI model can learn meaningful insights about how to play chess, purely by exposing it to many images of diverse board states. We accomplish this by using a U-Net architecture to train our model to create a mask for a given unseen board state as a way for the model to select a starting and ending square for a given piece and then using further processing to identify the consequence of a decision. Present findings indicate that, we may be training the model to find all valid moves on a board as opposed to finding specific moves for a specific piece. As we delve deeper into our research, we will be refining the iterative process the underlies our methodology to further illuminate interesting insights and challenges in our field.

Student: Richardson, Alex

Major: Computer Science

Faculty Mentor: Matthew Eicholtz

Presentation Time: 3:20-3:40

Presentation Type: Honors Proposal

Room: Christoverson 209

Title: Exoplanet Exploration with Machine Learning on Space-Based Surveys

Abstract: Within the last decade, we have seen a dramatic increase in the use of artificial intelligence, or AI, in both daily life and scientific application. An example of this is the integration of machine learning into the field of astronomy, particularly aimed at enhancing exoplanet detection and analysis. The exploration of exoplanets is entering a new era with the application of machine learning models to the detection process. Currently, there are over 5,000 validated exoplanets between space and ground-

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based missions, with over 4,000 candidates awaiting validation. While computing tools help astronomers streamline collection and compile data, exoplanet candidates must still be manually validated. Incorporating AI into the detection process not only accelerates the screening of potential planets for candidacy but also contributes a significant stride toward leveraging AI for candidate validation. In this study, we investigate the robustness and generalization capabilities of machine learning models applied to exoplanet data. Leveraging datasets from space-based transit and radial velocity detection techniques, we examine the performance of machine learning models across KEPLER, TESS, and JWST datasets in order to determine which features are most important for automated exoplanet detection in space-based surveys. Our analysis also delves into the adaptability of models trained on one dataset when applied to others of the same detection type, further investigating the importance of various features and overall model generalization capabilities. This study will contribute to advancing our understanding of the applications of AI to handling large quantities of exoplanet data and laying the groundwork for more resilient and versatile models in future exoplanet research endeavors.

Student: Riddell, Raymond

Major: Music: Performance

Faculty Mentor: Kyle Burke

Presentation Time: 3:00-3:20

Presentation Type: Oral Presentation

Room: Christoverson 208

Title: Monte Carlo Tree Search: A Guide to Winning Games You've Never Even Played

Abstract: I will be presenting on Monte Carlo Tree Search, an aheuristic search algorithm commonly used in decision making, most notable in board games. I will present on both the abstract, discussing the algorithm and the math behind it, as well as the practical, more specifically my implementation for Dr. Burke's combinatorial games website.

Student: Robertson, Sierra

Major: Marine Biology

Faculty Mentor: Allison Durland

Presentation Time: 3:40-4:00

Presentation Type: Honors Presentation

Room: Christoverson 207

Title: Community Composition Comparison of Central Florida Lakes

Abstract: Florida is known as a hotspot for invasive and nonnative species, including fish. These species negatively impact the surrounding habitat and can pose major economic issues when threatening native fisheries. Typically, invasive and nonnative species are generalists and less susceptible to anthropogenic disturbances than native species. Community composition studies review and analyze the members of a specific community and compare that data with other communities. These studies are imperative for invasive species management. This study analyzed the community compositions of six freshwater lakes in Central Florida and compared them based on the lakes' level of urbanization. Three urban and three rural lakes in the Lakeland area were analyzed in this study. Lakes were classified as "urban" if the lakes were surrounded by residential development, electrical power plants, and major vehicle transport routes. Lakes classified as "rural" had minimal adjacent residential development, were associated with nature preserves, and were not associated with major transportation routes. Sampling

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was conducted via seine once a month from September through February. Fish were identified to the species, measured, and weighed before being released back into their original habitat with exceptions of invasive fishes. Statistical analysis was conducted with diversity indexes and nested ANOVAs to evaluate any statistical significance in fish communities between the two lake types. Based on preliminary data, we have identified over 2600 fishes in total with 80 being classified as nonnative. These nonnative species have included two individuals of the *Pterygoplichthys* species and 78 individuals of the *Oreochromis* species. *Oreochromis* species and one *Ptyerygoplichthys* were found at the rural Banana Lake while an additional *Ptyerygoplichthys* was found at the urban Lake Hunter. While it was hypothesized that urban lakes would have more nonnative fish, there appears to be other factors that drive the presence of nonnative fishes in the lakes sampled. With the gear type used, this study was limited to shallow waters near shore. In these areas, native fish were far more abundant than nonnative fish, which might be a sign of good health for these lakes.

Student: Roth, Emery

Major: English

Faculty Mentor: Catherine R. Eskin

Presentation Time: 1:40-2:00

Presentation Type: Honors Presentation

Room: Christoverson 209

Title: Chokehold: A Window Into #BookTok and the Emergent Digital Literati

Abstract: #BookTok refers to the digital literary subculture native to TikTok, a short-form online video platform that experienced an exponential increase in growth and engagement in 2020 as a result of the COVID-19 pandemic. BookTok is populated primarily by users in their teens and twenties (Generation Z), who prioritize open, emotional reactions to given works, often punctuated by trending background audio. The virality achieved by this format, a variation of reader-response criticism, translates directly to sales, with BookTok having emerged as one of the commanding forces of the bookselling industry. In “Chokehold: A Window Into Generation Z and the Digital Literati,” I anthologize BookTok in an attempt to reduce the distance—real or perceived—between academia and popular contemporary literature, between notions of artistic and commercial viability. Through a selection of books championed by the powerful community #BookTok describes, “Chokehold” examines the origins and impact of this singular literary phenomenon, and navigates both the positive and problematic aspects of anthologizing.

Student: Rutkowski, Jesse

Major: Accounting

Faculty Mentor: Joseph Connors

Presentation Time: 2:00-2:20

Presentation Type: Honors Presentation

Room: Christoverson 208

Title: Creating the Consummate Currency

Abstract: World currencies- strengths, weaknesses, failures. Finding and creating the perfect currency that used strengths and avoids weaknesses. Creating a currency that can efficiently and effectively measure transfer, savings, and distribution of wealth.

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Student: Sammons, Emma

Major: Business Administration

Faculty Mentor: R. Bruce Anderson

Presentation Time: 3:40-4:00

Presentation Type: Honors Proposal

Room: Christoverson 206

Title: Considerations of the American Civil Jury System

Abstract: The American legal system has many parts and pieces deeply entrenched into it, some that are far reaching over time constraints and others that need to be adjusted. One facet of the legal system that is constantly debated is the jury system and its involvement in our civil cases. Experts in the field have many different opinions and this paper will attempt to explore and diagnose solutions or adjustments that must be made. The study exists to identify problems with large scale American civil jury trial cases based on case law, expert opinions, economic briefs and statistics in order to discover plausible solutions that produce an outcome utilizing both legal and economic considerations. I am anticipating that more knowledgeable juries will come to decisions that are more considerate of economic and legal natures. Further exploration of the research and practical usage are discussed.

Student: Scott, Shelby

Major: Marine Biology

Faculty Mentors: Ashley Bowers-Macrandner and Jason Macrandner

Presentation Time: 2:20-2:40

Presentation Type: Honors Proposal

Room: Christoverson 207

Title: The Effects of Predicted Climate Change Temperature and pH Conditions on *Exaiptasia pallida* Symbiont Densities

Abstract: The natural world has been impacted by human activities for millenia, but the effects humans have had on the Earth have been severely exacerbated since the Industrial Revolution, where new technology drove an incredible rise in carbon emissions. Unfortunately, the earth's oceans, which act as carbon sinks, have struggled to match the rate at which carbon dioxide is being produced. As a results, a global crisis has been observed, termed "Ocean Acidification." Ocean Acification has been described to affect both the biotic and abiotic components of the oceans, particularly the fragile ecosystems that are coral reefs. As these ecosystems are increasingly affected by anthropogenic climate change, a phenomenon known as "coral bleaching" has been observed, where these sensitive organisms expel their symbionts, Zooxanthellae. This expulsion often leads to coral and symbiont death, and bleaching rates are utilized to determine the health of a reef and the conditions it may be exposed to. Here, Cnidarian *Exaptasia pallida* is studied under current and predicated anthropogenic climate change conditions to understand the rate and conditions at which their symbionts are expelled, and the consequences this may have to the organism.

Student: Sejka, Demitra

Major: Spanish

Faculty Mentor: Melissa Garr

Presentation Time: 3:40-4:00

Presentation Type: Oral Presentation

Room: Christoverson 209

Title: Pelo y Agua en La Última Niebla/Hair and Water in La Última Niebla

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Abstract: My presentation is about the symbolism of hair and water in the Spanish-language novel *La Última Niebla* by María Luisa Bombal. In the story, both hair and water are used to portray the narrator's sexuality. I will use feminist theory to analyze the concept of female agency as it applies to the story.

Student: Sejka, Demitra

Major: English

Faculty Mentor: Erica H. Bernheim

Presentation Time: 5:20-5:40

Presentation Type: Honors Presentation

Room: Christoverson 108

Title: "What Makes a Monster and What Makes a Man?": Physical Disability and Physiognomy in Long-19th Century Gothic Literature

Abstract: In my presentation, I refer to long-19th century literature, laws, and sociological history to analyze the experience of people with disabilities during the time. I use disability theory as it applies to Mary Shelley's *Frankenstein* and Gaston Leroux's *Phantom of the Opera* in order to demonstrate that during the long 19th century, the portrayal of complex antagonists with physical disabilities pushes readers to question people with disabilities' perceived monstrosity and in turn, their own.

Student: Shafer, Anna

Major: Chemistry

Faculty Mentor: Shameka Shelby

Presentation Time: 3:20-3:40

Presentation Type: Honors Presentation

Room: Christoverson 207

Title: Development of Chitosan-Alginate-Antibiotic Complexes with Hemostatic Properties

Abstract: Hemostatic agents are widely utilized in the medical field due to their ability to reduce bleeding and induce blood clotting in a wound. The compound chitosan serves as an effective hemostat due to its charged amino functional groups that are able to interact with the anions present on the surfaces of red blood cells. Polymers containing chitosan are typically very rigid and therefore have limitations to their wound healing capabilities. To address the rigidity of chitosan, it can be combined with alginate and an antibiotic to produce a more flexible compound. A mixture such as this has the ability to absorb fluid in a wound to promote healing and provide antibiotic release to decrease infection. Thus, conjugates containing alginate, chitosan, and an antibiotic were generated in the presence of 1-Ethyl-3-(3-dimethylaminopropyl)carbodiimide to induce crosslinking between the amino and carboxyl functional groups of these compounds. Preliminary data has shown that conjugates chitosan, alginate, and either vancomycin or gentamicin were successfully generated. These conjugates display a gelatinous structure that can serve as an effective topical wound dressing. Further analysis of these complexes will provide information on whether linking alginate with chitosan and an antibiotic develops a polymer that is more effective in surgical wound dressings.

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Student: Shannon, Emi

Major: Music: Performance

Faculty Mentor: Leilani Goodmon

Presentation Time: 5:20-5:40

Presentation Type: Honors Proposal

Room: Christoverson 208

Title: The Effect of a Blue Mind Intervention on Well-Being

Abstract: Being in, around, and under the water can make you happier, more connected, and better at what you do (Nichols, 2014). Specifically, water exposure leads to a semi-meditative state called the “Blue Mind.” Additionally, natural sounds are beneficial for cognitive functioning (Febriandirza et al., 2017) and natural sounds (e.g. babbling brook) are associated with low levels of auditory stress (Heo et al., 2017). The current purpose was to determine if exposure to water scene videos with musical accompaniment or natural water sounds improved the well-being of college students. Students were divided into one of three groups: control, water-inspired music, and natural water sounds. All groups completed several baseline questionnaires designed to assess mental well-being prior to the treatment phase of the experiment. During the treatment phase, the experimental group viewed three videos at the beginning of class for two consecutive weeks with water-inspired music or natural water sounds in the background. The control group was not exposed to any of the videos. Upon completion of the treatment, both groups completed post treatment measures of well-being. Consistent with the hypotheses, participants in both treatment conditions experienced significant increases in grit, happiness, and satisfaction with life. Thus the results reveal that Blue Mind interventions that include watching videos of water scenes with either water-inspired music or water-based natural sounds can improve the well-being of college students.

Student: Silva, Sydney

Major: Graphic Design

Faculty Mentor: Samuel Romero

Presentation Time: 5:20-5:40

Presentation Type: Oral Presentation

Room: Christoverson 209

Title: Philosophy of Photography and the Self Image

Abstract: It’s about the philosophy of photography and how we as a society use photography as a way to change the image of ourselves therefore changing how we view ourselves for example; or “aesthetic” our body image and the way we view other people, and how this takes away from reality.

Student: Smith, Mikayla

Major: Business Administration

Faculty Mentor: Cindy Hardin

Presentation Time: 3:40-4:00

Presentation Type: Honors Proposal

Room: Christoverson 208

Title: A Look at Walt Disney’s Influence in Animation

Abstract: Walter Elias Disney made many advancements in several areas of business and entertainment, but it all started with his love for animation. Despite all the trials and tribulations that Walt encountered, he endured and has produced many famous films with technology that were groundbreaking. From Steamboat Willie, the first cartoon that had sound, to Snow White and the Seven Dwarfs, the first

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animated feature with full color and sound, Walt has had a heavy hand in animation becoming what we know it as today. Based on the research conducted, this thesis will discuss the successes and failures that Walt experienced all throughout his career in animation. From there, it will analyze his strategies and perseverance and conclude with key takeaways that can be used in every encounter, personal or professional.

Student: Surapaneni, Prasamsa

Major: Biochemistry and Molecular Biology

Faculty Mentor: Deborah Bromfield Lee

Presentation Time: 5:40-6:00

Presentation Type: Honors Presentation

Room: Christoverson 207

Title: An Evaluation of the Greener Synthesis of Stilbenes and their Inhibition and Potency Tendencies Against Epithelial Ovarian Cancer Cell Lines

Abstract: Ovarian cancer is the fifth leading cause of cancer among women and is the most frequent type of cancer in the female reproductive system. Women have a one in seventy-eight chance of getting ovarian cancer, which significantly increases the need to find a potential treatment. Stilbenes are a leading potential treatment for ovarian cancer; about four hundred naturally occurring stilbenes can be extracted from plant material. These can also be synthesized through the Wittig reaction, which was developed by George Wittig in 1954. Since then, many variations of the reaction that incorporate green principles have been developed, such as using safer solvents with water, safer synthesis with green bases, and solid support methods. The antioxidant studies proved that 3-nitro-2-[(E/Z)-2-(4-nitrophenyl)ethenyl]phenol (stilbene 1) and 1-bromo-4-[(E)-2-(4-nitrophenyl)ethenyl]benzene (stilbene 10) showed potential antioxidant activity at 50%. Out of the stilbenes, 1-bromo-4-[(E)-2-(4-nitrophenyl)ethenyl]benzene proved to have the best inhibitory constant and binding energy. Potency and Inhibition studies still need to be conducted on SKOV3 and OVCAR3 to build up on the computational studies that were done.

Student: Thomassy, Haley

Major: Biology

Faculty Mentor: Susan Banks

Presentation Time: 4:40-5:00

Presentation Type: Honors Proposal

Room: Christoverson 108

Title: Analysis of Outcomes of Infants with Neonatal HSV Based on Acyclovir Dosing Regimen

Abstract: Neonatal Herpes Simplex Virus (HSV) occurs frequently in deliveries as there are around 1,500 cases per year in the United States. Infants who contract HSV are at risk of experiencing negative neurologic outcomes and developmental delays in the future. Acyclovir is an antiviral medication that is the first line of therapy for treating neonatal HSV and was approved by the FDA in 1998. Studies have shown that improved outcomes for neonates with HSV is associated with administration of higher doses of acyclovir according to their postmenstrual age (PMA). However, despite advancements in knowledge on pharmacokinetic (PK) and pharmacodynamic (PD) properties of acyclovir use in neonates, morbidity and mortality rates have not been thoroughly analyzed in these cohorts. Additionally, discrepant dosing strategies are used in clinical practice, and impact of dosing strategy on outcomes has not been well assessed. In this cohort study, I will be analyzing data containing outcomes of premature infants born at

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22 to 28 weeks gestational age (GA) with HSV that were treated with various acyclovir dosages according to PopPK guidelines. My study will have two aims. First, to determine overall morbidity and mortality of neonatal HSV in this premature infant population. Second, to determine if administration of acyclovir doses based on PopPK recommended guidelines, compared to doses either above or below recommended guidelines, leads to better outcomes for infants with HSV. This research will help establish clear, universally practiced acyclovir dosing guidelines which are dependent on treatment outcomes of neonates with HSV.

Student: Trecartin, Brianna

Major: Nursing

Faculty Mentor: Christy Skelly

Presentation Time: 4:40-5:00

Presentation Type: Oral Presentation

Room: Christoverson 209

Title: The Impact of Epidural Analgesia on Newborn Health.

Abstract: The inclination of a comfortable birthing experience has led to the widespread use of numerous pain relief methods to ease the laboring process. Due to this trend, the use of epidural analgesia has gained increasing popularity among future mothers. This integrative literature review will cover how epidural analgesia (EA) in laboring women impacts fetal health compared to a non-medicated birth. Overall, the use of epidural analgesia (EA) has a negative impact on the newborn during and after delivery. The administration of an epidural analgesic has an increased risk of instrumental delivery, prolonged labor, and a higher risk of NICU admission for the newborn. Prolonged labor results in possible decreased oxygenation or circulation to the newborn. The results of this systematic review may be beneficial in clinical practice, or to prompt additional research to provide insight into the gaps of knowledge addressed in the literature.

Student: Valdes, Jessica

Major: Political Science

Faculty Mentor: R. Bruce Anderson

Presentation Time: 2:20-2:40

Presentation Type: Oral Presentation

Room: Christoverson 206

Title: The Dangers of Hyperpolarization in Politics

Abstract: If hyperpolarization is on the rise in the United States, then our government's ability to function will continue to decrease. In this presentation I will examine the effects of hyperpolarization in order to show that their effects hamper our government's ability to carry out its function. I will discuss the decrease of the political center and how this affects foreign and domestic policy.

Student: Vargas, Francisco

Major: Biotechnology

Faculty Mentor: Jason Macrander

Presentation Time: 4:20-4:40

Presentation Type: Honors Proposal

Room: Christoverson 108

Title: The Genetics of Anemone Sex Determination

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Abstract: *Nematostella vectensis*, otherwise known as the starlet sea anemone, is an important model organism for a variety of fields. Not much is known about how this species's sex is determined however. This project would aim to uncover the underlying genetic or epigenetic mechanisms of sex determination in *Nematostella*, by analyzing how genes thought to pertain to sex determination are expressed.

Student: Walker, Olivia

Major: Elementary Education

Faculty Mentor: Lori Rakes

Presentation Time: 1:40-2:00

Presentation Type: Honors Presentation

Room: Christoverson 111

Title: Trauma Informed Instruction: A Qualitative Study Exploring Teacher Experiences

Abstract: This case study explores teachers who implement trauma-informed instruction to students' emotional and behavioral needs. How can teachers assist these students? This proposal discusses learning differences that children may face due to trauma and ways to provide support for these students. Typically, teachers who deliver trauma-informed instruction participate in professional development and are formally trained to handle the severe emotional outbursts and extreme behaviors that might occur in the classroom.

Student: Yost, Zaphillia

Major: Marine Biology

Faculty Mentor: Jason Macrander

Presentation Time: 4:00-4:20

Presentation Type: Honors Presentation

Room: Christoverson 108

Title: Right Whale Zines: Exploring Zines as a Mode of Science Communication

Abstract: The North Atlantic right whale (*Eubalaena glacialis*) is a critically endangered species found along the eastern seaboard of the United States. The major drivers of their decline are vessel strikes and entanglement in fishing gear. Currently, the right whale population sits at just under 350 individuals, a number that has been declining after the population peaked at 480 individuals in 2011. Preventing the extinction of endangered species requires the implementation of proper conservation management strategies and public awareness of the issue. Science communication connects scientists with the public through a variety of media to share important knowledge and raise awareness. Zines are small pamphlets created on topics the author is passionate about. Although zines historically have been used to spread awareness of different social issues, it is emerging as a new mode of science communication. My project explores zines as a method of science communication to increase public awareness of North Atlantic right whales and the threats they face.

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Student: Zamora, Domenica

Major: Biochemistry and Molecular Biology

Faculty Mentors: Deborah Bromfield Lee and Shameka Shelby

Presentation Time: 3:00-3:20

Presentation Type: Oral Presentation

Room: Christoverson 207

Title: Controlled Release of Diclofenac and Ketorolac from a Gelatin-Based Hemostatic Polymer

Abstract: Nonsteroidal anti-inflammatory drugs (NSAIDs) are effective in reducing inflammation and managing pain following surgical procedures, yet the high doses required for oral usage often lead to adverse effects. Local treatment of wounds with NSAIDs has been shown to serve as an effective alternative to oral treatments that involve high doses. To develop an effective drug delivery system for the local treatment of inflammation, gelatin, a hemostatic agent that aids in wound healing, was combined with NSAIDs diclofenac or ketorolac. Conjugates were generated utilizing gelatin type B as the hemostatic agent, 1-Ethyl-3-(3-dimethylaminopropyl) carbodiimide (EDC) as cross-linking agent, and ketorolac or diclofenac as the target NSAIDs. Drug release was monitored over two weeks and analyzed via UV-Vis spectrophotometry to determine the concentrations of NSAID released from the conjugates. Preliminary findings suggest that both diclofenac-eluting and ketorolac-eluting hemostats were successfully synthesized. Both diclofenac and ketorolac exhibited gradual and sustained release from the hemostatic agents, indicating these polymers' potential for prolonged analgesic effects. The proposed controlled release system holds the promise of optimizing therapeutic outcomes while minimizing the risks associated with high-dose NSAID administration.

Poster Presentations

In alphabetical order by presenter's last name.

All poster presentations take place in Honeyman Pavilion between 1:40pm and 2:40pm.

2024 Fiat Lux Poster Presentations

Student: Caney, Catherine

Major: Exercise Science

Collaborator: Kylee Long

Faculty Mentor: Charles Allen

Title: Physical Activity and Mental Health

Abstract: Mental health problems can negatively impact thinking, mood, and behavior, leading to mental illness. Mental illness can pilot changes in behavior associated with distress and executive dysfunction, resulting in both short-term and long-term adverse consequences. Mental illness can affect anyone despite age, identity, or cultural background. Treatment options can include: psychotherapy, pharmacological intervention, hospitalization, and exercise intervention. Among persons with mental illnesses (PwMI), prescribed programs of exercise and activity have emerged as successful treatment strategies to combat symptoms. The primary focus of this review of literature is the effects of exercise on mental health symptoms and psychological barriers to exercise. Both aerobic exercise and anaerobic exercise have improved symptoms associated with a variety of mental illnesses such as depression, anxiety, and post-traumatic stress disorder (PTSD). Furthermore, improvements in self-efficacy caused by exercise have also displayed diminished symptom severity and treatment maintenance. Exercise considerations and modifications should be made for PwMI to safely and successfully practice exercise and improve their mental health variables. Adverse effects from medication and need for social support are examples of barriers that should be considered when working with PwMI. No universally superior exercise modality for improving symptoms in mental health disorders has been presented. Modality, frequency, and intensity of exercise should be individualized, as these factors may determine treatment effectiveness.

Student: Hafler, Abbey

Major: Exercise Science

Faculty Mentor: Patrick Smith

Title: The Effectiveness of Virtual Reality in Neurocognitive Disorders

Abstract: Virtual reality (VR) has emerged as an innovative technology to enhance cognitive and psychological benefits of various neurocognitive disorders. With this new technology, there has been growing research that has explored the benefits of VR therapy for improving neurocognitive disorders such as traumatic brain injuries (TBIs), strokes, and neurodegenerative disorders. The purpose of this review was to analyze the effectiveness of VR therapy on cognitive abilities in patients with different neurocognitive disorders. The literature has evaluated improvements in abilities like attention processes, executive function, learning processes, memory function, speech, and visuospatial abilities through various testing measures. VR therapy has positively impacted the recovery of cognitive functions in patients with neurocognitive disorders. Therefore, VR is an effective measure in improving cognitive functioning and the quality of life (QoL) in patients with neurocognitive disorders. Future directions could investigate the neurological changes within the brain that are affected during VR therapy in patients with cognitive impairments.

2024 Fiat Lux Poster Presentations

Student: Kuklina, Sofia

Major: Biotechnology

Collaborators: Coral Tolman and Wyatt Rudd

Faculty Mentor: Jason Macrander

Title: ShK Sequence Diversity and Gene Expression Profiles Across Clownfish Hosting Sea Anemones Associating with Clownfish

Abstract: Neurotoxins play a crucial role in the self-defense and prey capture mechanisms of sea anemones. ShK, originally discovered in the Caribbean sea anemone *Stichodactyla helianthus*, inhibits voltage-gated potassium ion channels during prey interactions. Synthetic derivatives have since been developed for human pharmaceutical trials targeting autoimmune diseases. Sea anemones, with their diverse symbionts, present a unique avenue for animal-derived pharmaceuticals. Clownfish, which host sea anemones, are of particular interest due to their mutualistic relationship, offering protection against predators while receiving essential nutrients. However, little is known about the co-evolution of neurotoxins and gene regulation during symbiotic interactions. Exploring the potential to expand pharmaceutical applications of ShK-like neurotoxins is promising in treating autoimmune diseases. To address this we conducted clownfish association experiments and quantified changes and overall diversity and expression of in ShK-like genes. Our analysis revealed that ShK-like toxin diversity within the clownfish hosting *S. haddoni* was much higher than *S. helianthus*, but *H. crispa* (a distantly related clownfish hosting anemone) lacked notable ShK-like toxins. These results provide some insight into how the ShK protein has evolved across clownfish hosting anemones and prompts the necessity for further exploration to use these organisms in the development of marine derived therapeutics.

Student: Mantei, Devin

Major: Dance

Faculty Mentors: Erin LaSala Phillips and Charles Allen

Title: Nutrition Knowledge in Dancers

Abstract: Dance is an aesthetic based sport in which dancers aspire to have an ideal thin body and tend to have low levels of nutritional knowledge which often results in health issues and injuries.

OBJECTIVE: The purpose of this study is to identify the level of general nutrition and sports nutrition knowledge of dance majors and minors at Florida Southern College. **METHODS:** Participants (n=26) completed a 74-question questionnaire adapted from the General and Sport Nutrition Knowledge Questionnaire (GeSNK). Questions consisted of true/false statements about nutrition areas such as macro- and micronutrients, hydration, and energy. **RESULTS:** The results of the questionnaire found that the dancers as a whole have poor nutrition knowledge. Only 4 out of the 26 participants had adequate nutrition knowledge (over 80% accuracy). Results also showed that the dancers were not answering the questions wrong, they were simply stating “i don’t know”. **CONCLUSIONS:** Dance students showed very poor nutrition knowledge on average. However, they were not misinformed, they just did not know the correct information. Knowledge could be improved through more nutrition interventions or a specified nutrition class implemented into the FSC Dance curriculum.

2024 Fiat Lux Poster Presentations

Student: Mort, Alexia

Major: Criminology

Collaborators: Kelly Klaren and Morgan Gregg

Faculty Mentor: Chastity Blankenship

Title: Undergraduate Students' Opinions and Attitudes Towards Abortion

Abstract: The research conducted is an examination of the various opinions and attitudes of undergraduate students as it relates to abortion and recent legislation changes. Abortion and any legislation surrounding it will always be relevant in American society. For example, the recent rave about *Roe v. Wade*. This experiment delves deeper into how gender, the desire to have children, and college student status affect people's attitudes toward abortion. This study focuses on variables that are not typically considered as it pertains to abortion. The researchers want to "put a spin" on the default variables when examining abortion, like religion and political affiliation. The study will also consider how conflict theory may affect societal norms and how legislation affects different groups of people. The researchers wanted to investigate whether: males and females will report equal levels of attitudes toward abortion, those more likely to be pro-choice do not want children, the majority of students will report having a pro-choice stance, and the majority of students will report not being supportive of legislation. There are both demographic and abortion statement questions used. The researchers utilize both a Likert scale and an "abortion scale" that they created to measure the results. Multiple chi square tests and a multiple regression test are ran to analyze the data. Researchers are able to easily tie in available and applicable literature to their findings for the audience to better understand the larger scope and purpose of the study.

Student: Rudd, Wyatt

Major: Marine Biology

Collaborators: Coral Tolman and Sofia Kuklina

Faculty Mentor: Jason Macrander

Title: Gene Expression Analysis Following the Establishment of Clownfish Association with an Atypical Host (*Stichodactyla helianthus*)

Abstract: Mutualistic symbiosis sees two distinct organisms coexisting in close proximity benefiting one another. This mutualistic interaction is especially unique in clownfish hosting anemones because they are the only venomous organisms that co-evolved to live with potential food rather than kill it. This symbiotic link has independently evolved three times within Cnidaria, indicating that given the right conditions, this beneficial association could evolve multiple times if conditions are right. For this study we used *Stichodactyla helianthus*, a Caribbean species known to host clownfish controlled environments like aquaria, to examine how toxin gene expression may shift as an atypical hosting anemone acquires a clownfish symbiont. RNA extraction, sequencing, transcriptome assembly, and gene quantification data were used from anemone tentacles prior to association, 12 hours, and 48+ hours post-association. BLAST results identified 1,695 toxin candidate transcripts. Notably, 48 toxin candidates exhibited a >2-fold decrease in gene expression post-association, including prominent venom components like cytolytic pore-forming toxins. Conversely, 8 toxin gene candidates increased expression, albeit modestly, particularly cysteine-rich neurotoxins. These findings underscore the potential influence of clownfish on toxin gene expression, particularly in establishing associations with atypical hosts, suggesting symbiont association as a vital ecological mechanism regulating toxin expression for mutualistic associations.

2024 Fiat Lux Poster Presentations

Student: Squires, Jared

Major: Psychology

Collaborator: Emi Shannon

Faculty Mentor: Leilani Goodmon

Title: The Effect of a Blue Mind Intervention on Well-Being

Abstract: Being in, around, and under the water can make you happier, more connected, and better at what you do (Nichols, 2014). Specifically, water exposure leads to a semi-meditative state called the “Blue Mind.” Additionally, natural sounds are beneficial for cognitive functioning (Febriandirza et al., 2017) and natural sounds (e.g. babbling brook) are associated with low levels of auditory stress (Heo et al., 2017). The current purpose was to determine if exposure to water scene videos with musical accompaniment or natural water sounds improved the well-being of college students. Students were divided into one of three groups: control, water-inspired music, and natural water sounds. All groups completed several baseline questionnaires designed to assess mental well-being prior to the treatment phase of the experiment. During the treatment phase, the experimental group viewed three videos at the beginning of class for two consecutive weeks with water-inspired music or natural water sounds in the background. The control group was not exposed to any of the videos. Upon completion of the treatment, both groups completed post treatment measures of well-being. Consistent with the hypotheses, participants in both treatment conditions experienced significant increases in grit, happiness, and satisfaction with life. Thus the results reveal that Blue Mind interventions that include watching videos of water scenes with either water-inspired music or water-based natural sounds can improve the well-being of college students.

Student: Tolman, Coral

Major: Marine Biology

Collaborators: Sofia Kuklina and Wyatt Rudd

Faculty Mentor: Jason Macrander

Title: How do Metabolism Genes Expression Levels Change Following Clownfish Association in Sea Anemones?

Abstract: Mutualistic associations between clownfish and sea anemones stand as iconic examples of symbiotic relationships within marine ecosystems and beyond. To delve into the intricacies of this relationship and identify molecular pathways triggered by this association, we employed a comparative transcriptomic approach to investigate host gene expression profiles within sea anemones at 12 and 48+ hours post-establishment of clownfish associations across three sea anemone species. Following transcriptome assembly and quantification, we used BLAST to identify transcripts corresponding to the Metabolic Processes [GO:0008152] gene ontology group. We recovered a fraction of the originally differentially transcripts to match proteins in the Metabolic Processes databases, with a higher proportion (6.7% to 13.8%) of the Cnidarian BLAST hits being recovered than the dinoflagellate database (1.1% to 4.8%). Many of these transcripts mapped back to the same Uniprot entries for all three species, identifying 1,156 IDs associated with Cnidarian Metabolic Processes and 66 IDs associated with Dinoflagellate Metabolic Processes, representing approximately 1.7% and 0.22% of the original databases, respectively. Our results offer valuable insights into the metabolic adaptations occurring in sea anemones upon association with symbiotic clownfish, shedding light on broader metabolic processes within anthozoans.

2024 Fiat Lux Poster Presentations

Student: Whiles, Alia

Major: Integrative Biology

Faculty Mentor: Christopher Brandon

Title: Devel-EYE-ment: A Comparative Analysis of Compound Eye Size Growth Among Daphnia Species

Abstract: Eye size is an important determinant of visual function. The freshwater microcrustacean, Daphnia, possesses a single compound eye that may aid in resource location, navigation, and orientation within the water column. In addition, the compound eye may be a target of visual predators as the dark pigmentation of the eye stands out against the transparent carapace of Daphnia. Thus, the size of the compound eye in Daphnia may be important for both visual and non-visual reasons. Daphnia grow indeterminately throughout their lifespan, where their eye size growth is correlated to increases in body size. To better understand the nature of eye size variation in Daphnia, it is worthwhile to investigate how the eye size may vary throughout its lifespan. In this study, we examine the growth patterns of the compound eye across a few species of Daphnia. Our results demonstrate some variation in growth patterns across Daphnia species. In addition, our results show that, overall, Daphnia invest more in eye growth relative to body size before the first instar, whereas the relative size of the eye remains constant after the first instar. Our findings draw a more complete picture of eye size variation in Daphnia that may give a broader understanding to former and future studies on eye size variation in Daphnia, and potentially other indeterminately growing species.

Notes:

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