

2022 Spring Fiat Lux

A Celebration of Florida Southern College
Student Scholarship and Research

Thursday, April 21, 2022
1:00pm–6:00pm



Sponsored by the Florida Southern College Chapter of the Honor Society of Phi Kappa Phi

This page intentionally left blank.

2022 Spring Fiat Lux

A Celebration of Florida Southern College Student Scholarship and Research

April 21, 2022

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. Especially during an academic year still impacted by COVID-19, today's event provides a singular opportunity to publicly share the meaning and joy of scholarly inquiry.

Fiat Lux begins at 1:00 in the Fiat Lux Hub. Participants can access the Hub throughout the event by clicking the Fiat Lux Hub Zoom link. Presentations and poster presentations will be hosted in Zoom breakout rooms as indicated in the program. These rooms can be accessed once Fiat Lux begins. To move from room to room, simply return to the Hub and connect to another presentation.

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

Schedule

1:00-1:20	Welcome	Dr. Roxanne Back
	Preliminary Remarks	Provost Brad Hollingshead
	National Fellowships and Awards	Dr. Rebecca Saulsbury Bravard
	Introduction of Emerge Scholars	Associate Provost Tracey Tedder
	Fiat Lux Hub, Click to Join	
1:20-5:20	Presentations	Breakout Rooms 1-9
	Click to Join Hub, then connect to Breakout Rooms	
5:20-5:40	Poster Presentations	Breakout Rooms 1-9
	Click to Join Hub, then connect to Breakout Rooms	
5:40	Closing Remarks	Dr. Carrie Ann Hall
	Fiat Lux Hub, Click to Join	

Fiat Lux at Florida Southern College

<https://www.flsouthern.edu/events-center/special/fiat-lux.aspx>

2022 Fiat Lux Presentation Schedule

	Honors Senior Projects			Honors Proposals			Presentations		
	Room 1	Room 2	Room 3	Room 4	Room 5	Room 6	Room 7	Room 8	Room 9
1:20	Catherine Fox	Emalisse Fernandez	Hikaru Nagoshi	Natalie Leah	Morgan Misener	Brock Wilson	Stephen Roth	Linda Erlanson	Katherine Lynch
1:40	Stephanie Burnette	Rachel Breitenbach	Meaghan Lake	M. R. Steed	Jill Kinster	Ibraheem Cazalas	Alexandra Mahnke	Josie Brown	Kevin Medina
2:00	Alivia Baxmann	Gabrielle Risko	Lea Schiefele	Katharine Wall	Mary Clapp	Earlexa Cheyenne Charles	Daniela Rincon Garcia	Jessica Davis	Ashutos Sahay
2:20	Madeleine Schabes	Benjamin Marusko	Eva Francey	Amber Schmidt	Brianna Savage	Earlexa Cheyenne Charles	Grace Keene	Brayden Lacefield	Sergio Trevino-Rios
2:40	John Prescott	Connor Bligh	Jadin Dewith	Evan Hydock	Katrina Schell	Ashlynn Honma	Morgan Jarrett	Michelle Milter	Madison Conner
3:00	Brayden Lacefield	Zoe Potter	Alayna Goll	Carter Kruse	Victoria Kellar	Holt Ragsdale	Valentina Montoya	Prasamsa Surapaneni	Earlexa Cheyenne Charles
3:20	Grace Sill	Jack Wilkens	Ryan Vassalotti	Peyton McCain	Emmelyne McGovern	Isabel Augustine	McKinley Miller	Emily Giddens	Emily Eidenschink
3:40	Giselle Soto	Nathan Hallmark	Corinna Robinson	Abigail Tarleton	Naomi Lewis	Alanya Nardone	Noelle Jacob	Lauren Lassiter	Danielle Deckard
4:00	Jessica Davis	Kristi Bono	William Draper	Lawton Bauer	Amanda Gregoite	Anna Lyons	Sydney Budt	Simran Kinker	Jollice Boyd
4:20	Lauren Lassiter	Molly Cole	Macey Tipton	Nathalie Moreno	Rowan Marshall	Chris-Ann Ricketts	Emma Nieves	John Koch	Chloe Potts
4:40	Amy Wieleba	Lillee Izadi	Isabel Arcusa	Kendall Uslan	Hailee Schalwig	Camryn Willett	Nicholas Picarella	Natasha Gomez	Alexandra Potter
5:00	Erin Cagle	Kira Freijo		Annalise Eisold	Kaitlyn Scirica	Cameron Simpson	Olivia Stamper	Stephen Kurek	

Poster presentation question and answer sessions will begin at 5:20. See pages 71-75 for the full poster presentation schedule with links to pre-recorded presentations. Posters will be presented by:

Joshua Boyer	Room 1
Gianna Del Monte	Room 2
Brookelyn Hammack	Room 3
Madison Meares	Room 4
Olivia Schalk	Room 5
Steven Zet	Room 6

2022 Fiat Lux Presenters – By Last Name

Room	Time	First Name	Last Name	Major	Title
Room 3	4:40-5:00	Isabel	Arcusa	Biology	Behavioral Responses to Conspecific Urine Cues in Socially Monogamous Owl Monkeys (<i>Aotus nancymaae</i>)
Room 6	3:20-3:40	Isabel	Augustine	Chemistry	The Development and Comparison of the Greener Synthesis of Vegetable Oil Based Polymers
Room 4	4:00-4:20	Lawton	Bauer	Political Science	Superman Isn't Real: A Critical Analysis of the Expectations Levied Upon the United Nations
Room 1	2:00-2:20	Alivia	Baxmann	Chemistry	The Design and Construction of an Affordable Raman Spectrometer
Room 2	2:40-3:00	Connor	Bligh	Economics and Finance	The Economic Impact of COVID-19 Lockdowns on US States
Room 2	4:00-4:20	Kristi	Bono	Economics and Finance	A Study of Behavioral Economic Incentives in Climate Policy
Room 9	4:00-4:20	Jollice	Boyd	Political Science	Reducing the Disproportionate Rates of Homelessness for Black People in D.C.
Room 2	1:40-2:00	Rachel	Breitenbach	Biology	The Importance of Auditory, Olfactory, and Visual Cues for Insect Foraging in Owl Monkeys (<i>Aotus nancymaae</i>)
Room 8	1:40-2:00	Josie	Brown	Political Science	Health Care and the Pandemic
Room 7	4:00-4:20	Sydney	Budt	Political Science	An Analysis of COVID-19 & Air Pollution: A Complex Relationship
Room 1	1:40-2:00	Stephanie	Burnette	Marine Biology	Social Buffering in a Social Fish (Zebrafish <i>Danio rerio</i>)
Room 1	5:00-5:20	Erin	Cagle	Exercise Science	Effectiveness of the FIFA 11+ Warm-Up in Improving Lower Extremity Biomechanics and Change of Direction Performance
Room 6	1:40-2:00	Ibraheem	Cazalas	Computer Science	MocsIDE: An Open-Source and Scalable Online IDE and Auto-Grader for Computer Science Education
Room 6	2:00-2:20	Earlexa Cheyenne	Charles	Spanish	In the Time of the Butterflies
Room 6	2:20-2:40	Earlexa Cheyenne	Charles	Spanish	United States Immigration Laws in Respect to Hispanic Families

2022 Fiat Lux Presenters – By Last Name

Room 9	3:00-3:20	Earlexa Cheyenne	Charles	Political Science	COVID-19 Unemployment Rates in the United States
Room 5	2:00-2:20	Mary	Clapp	Communication	How Can Employee Engagement Be Increased?
Room 2	4:20-4:40	Molly	Cole	Nursing	Impacts of Pediatric and Adolescent Chronic Non-Cancer Pain on Parents
Room 9	2:40-3:00	Madison	Conner	Exercise Science	The Effects of the AIRWAAV Performance Mouthpiece and Clenching on Bat Swing Velocity
Room 8	2:00-2:20	Jessica	Davis	Political Science	Source Confidentiality Violations in the United States: Is it a Solvable Problem?
Room 1	4:00-4:20	Jessica	Davis	Political Science	Politics in the Lone Star State: How Have They Changed, and Why?
Room 9	3:40-4:00	Danielle	Deckard	Spanish	Roma, a Realistic Perspective
Room 3	2:40-3:00	Jadin	Dewith	Exercise Science	What is the Relationship Between Pitch Count, Strength, and Pain for Division II Collegiate Softball Pitchers?
Room 3	4:00-4:20	William	Draper	Accounting	An Examination of ESG Reporting in the Modern World
Room 9	3:20-3:40	Emily	Eidenschink	Exercise Science	Profiling the NCAA D-2 Athlete
Room 4	5:00-5:20	Annalise	Eisold	Accounting	The Effects of Covid-19 on the Marketing of Live Ticketed Music Entertainment: How Have Politics and Policies Affected the Industry During the Pandemic?
Room 8	1:20-1:40	Linda	Erlanson	Biochemistry and Molecular Biology	Investigating Zinc Metal Organic Materials with the Potential Application of Drug Delivery
Room 2	1:20-1:40	Emalisse	Fernandez	Nursing	Overlooked and Underdiagnosed: Paternal Postpartum Depression
Room 1	1:20-1:40	Catherine	Fox	Marine Biology	Identifying the Skin and Gut Microbiome of Two Shark Species in Tampa Bay, Florida
Room 3	2:20-2:40	Eva	Francey	Psychology	It's a Cis World: Effect of Gender Identity, Social Media/Physical Presentation, and Type of Employment Status on Likelihood of Being Promoted/Hired

2022 Fiat Lux Presenters – By Last Name

Room 2	5:00-5:20	Kira	Freijo	Psychology	Conceal, Don't Reveal: The Effect of LGBTQ+ College Students Hiding Their Identity
Room 8	3:20-3:40	Emily	Giddens	Business Administration	Health: At What Cost
Room 3	3:00-3:20	Alayna	Goll	Exercise Science	Nutrition Knowledge and Dietary Habits in Female Collegiate Cross Country Runners
Room 8	4:40-5:00	Natasha	Gomez	Political Science	Restoring Refuge: U.S. Mental Health Care for Asylum-Seekers & Refugees
Room 5	4:00-4:20	Amanda	Gregoire	Biology	Influence of Size, Sex, and Location on Parasite Load of Invasive Tilapia in Five Lakeland Lakes
Room 2	3:40-4:00	Nathan	Hallmark	Applied Mathematics and Statistics	On the Difference of Two Numbers Raised to the Same Exponent
Room 6	2:40-3:00	Ashlynn	Honma	Biochemistry and Molecular Biology	The Development of a Novel and Biological Chitosan Hemostat to Treat Postoperative Oral Surgery Patients
Room 4	2:40-3:00	Evan	Hydock	Political Science	The Ethics of Targeted Killings
Room 2	4:40-5:00	Lillee	Izadi	Biology	Identifying the Functional Properties of Arthropsin in Daphnia
Room 7	3:40-4:00	Noelle	Jacob	Chemistry	ENG 2023: The Revision Process of Literary Work
Room 7	2:40-3:00	Morgan	Jarrett	Marine Biology	Do pH Variable Habitats Provide Refuge for the Florida Stone Crab from Coastal Acidification?
Room 7	2:20-2:40	Grace	Keene	Psychology	How One "Big Five" Trait Fits into the Business Environment
Room 5	3:00-3:20	Victoria	Kellar	Biochemistry and Molecular Biology	NSAID-Releasing Hemostatic Gelatin for Post-Surgical Applications
Room 8	4:00-4:20	Simran	Kinker	Political Science	The U.S Pharmaceutical Industry: Policy Analysis of Rising Drug Prices and Excessive Profits
Room 5	1:40-2:00	Jill	Kinstler	Biology	Determining the Presence of Antibiotic Resistance Genes and Capability of Spread in the

2022 Fiat Lux Presenters – By Last Name

					Commercially Available Probiotic Streptococcus Thermophilus
Room 8	4:20-4:40	John	Koch	Political Science	Flooding in New England: A Triple Threat
Room 4	3:00-3:20	Carter	Kruse	Accounting	The Need for Financial Literacy Education in High Schools
Room 8	5:00-5:20	Stephen	Kurek	Political Science	Reinventing Airhub Travel to Fit America's Future
Room 8	2:20-2:40	Brayden	Lacefield	Political Science	Dollar'd To Death: Stopping Financial Exploitation
Room 1	3:00-3:20	Brayden	Lacefield	Political Science	It Gets In Your Blood: Inside the Secret Brotherhood of Moonshining
Room 3	1:40-2:00	Meaghan	Lake	Biology	Functional or Just Plain Pretty? A Reevaluation of Bacterial Pigment Activity
Room 8	3:40-4:00	Lauren	Lassiter	Political Science	Voting Access in Georgia
Room 1	4:20-4:40	Lauren	Lassiter	Political Science	Destruction of Cultural Sites: A Historical Analysis
Room 4	1:20-1:40	Natalie	Leah	Studio Art	The Relationship Between Character and Design
Room 5	3:40-4:00	Naomi	Lewis	Accounting	Overtourism in Japan: Achieving Profitable, but Sustainable Tourism
Room 9	1:20-1:40	Katherine	Lynch	Political Science	Cyber-Security
Room 6	4:00-4:20	Anna	Lyons	Chemistry	Synthesis of Cortisol Derivatives and Computational Evaluation of a Cortisol Derivative Library Against Glucocorticoid Receptor
Room 7	1:40-2:00	Alexandra	Mahnke	Exercise Science	Exploration of Pilates as an Exercise Intervention to Improve Balance in Multiple Sclerosis Patients
Room 5	4:20-4:40	Rowan	Marshall	Marine Biology	Science Communication Through a Blog: A Case Study with the Journal of Integrative and Comparative Biology
Room 2	2:20-2:40	Benjamin	Marusko	Biology	Analysis of Metal-Organic Framework Stability, Antimicrobial Properties, and Dental Applications

2022 Fiat Lux Presenters – By Last Name

Room 4	3:20-3:40	Peyton	McCain	Marine Biology	Spatial Ecology of the Striped Mud Turtle in a Central Florida Perched Wetland
Room 5	3:20-3:40	Emmelyne	McGovern	Chemistry	Use of Protein Immunochemistry in the Visualization of Latent Fingerprints
Room 9	1:40-2:00	Kevin	Medina	Political Science	Puerto Rico: Rise In Unemployment Rates
Room 7	3:20-3:40	McKinley	Miller	Film	A Film Student's Experience in Creative Writing
Room 8	2:40-3:00	Michelle	Milner	Political Science	The Fake News Epidemic: The Government's Role in Bursting The Social Media Bubble
Room 5	1:20-1:40	Morgan	Misener	Biology	Exploring the Influence of a Preventative Shoulder Strengthening Program on Collegiate Swimmers' Shoulder Function
Room 7	3:00-3:20	Valentina	Montoya	Political Science	Inspiration for Writing from Important Poets
Room 4	4:20-4:40	Nathalie	Moreno	English	The Growing Need for Subjective Journalism in Modern Perception of Violence
Room 3	1:20-1:40	Hikaru	Nagoshi	Political Science	The Global Shortage of Semiconductors and the Fragility of the U.S. Supply Chain
Room 6	3:40-4:00	Alanya	Nardone	Biochemistry and Molecular Biology	An Evaluation of the Greener Synthesis of Stilbenes and Their Inhibition and Potency Tendencies Against Epithelial Ovarian Cancer Cell Lines
Room 7	4:20-4:40	Emma	Nieves	Exercise Science	The Effects of the AIRWAAV Performance Mouthpiece on Countermovement Vertical Jump Height
Room 7	4:40-5:00	Nicholas	Picarella	Biology	The Effects of Maximal Jaw Clenching and a Performance Mouthpiece on Net Concentric Impulse During the Vertical Jump Assessment
Room 9	4:40-5:00	Alexandra	Potter	Political Science	Disparities in Maternal Mortality Rates: How Do We address Racism in Healthcare?

2022 Fiat Lux Presenters – By Last Name

Room 2	3:00-3:20	Zoe	Potter	Marine Biology	Complex Environmental Enrichment in Brown Anoles (<i>Anolis sagrei</i>): Increasing Resilience to Improve Welfare
Room 9	4:20-4:40	Chloe	Potts	Marine Biology	Do pH Variable Habitats Provide Refuge for the Florida Stone Crab from Coastal Acidification?
Room 1	2:40-3:00	John	Prescott	Political Science	Semi Truck Situation
Room 6	3:00-3:20	Holt	Ragsdale	Chemistry	Electronic Properties of Metal Organic Frameworks towards CO ₂ Adsorption
Room 6	4:20-4:40	Chris-Ann	Ricketts	Chemistry	Controlled Release of Diclofenac from a Gelatin-Hemostatic Agent for Application in Postoperative Patients
Room 7	2:00-2:20	Daniela	Rincon Garcia	Exercise Science	Alterations in Vagal Measures of Linear Heart Rate Variability Following High Load and Blood Flow Restriction Exercise
Room 2	2:00-2:20	Gabrielle	Risko	Biology	Scent Marking and the Possible Implications for Mate Guarding in Owl Monkeys (<i>Aotus nancymaae</i>)
Room 3	3:40-4:00	Corinna	Robinson	English	Traces of Hellenism and Perpetual Hope: Religious Faith in Greek American Return Narratives
Room 7	1:20-1:40	Stephen	Roth	Biology	The Effects of a Weightlifting Belt on Concentric Movement Velocity During the Deadlift Exercise
Room 9	2:00-2:20	Ashutos	Sahay	Political Science	The Working Homeless
Room 5	2:20-2:40	Brianna	Savage	Nursing	Isolation Correlation of NICU Parents and Infants Following COVID-19 Pandemic
Room 1	2:20-2:40	Madeleine	Schabes	Chemistry	Quantifying the “Golden Ratio” of Hyper-Palatable Foods: What Makes Junk Food so Addictive?
Room 5	4:40-5:00	Hailee	Schalwig	Environmental Studies	Environmental Education: The Role of Outdoor Learning, Eco-Art, and Demographic Variables in EE Success
Room 5	2:40-3:00	Katrina	Schell	Religion	The Drama of Scripture and Shaping Christian Theology: An Interpretation of Love

2022 Fiat Lux Presenters – By Last Name

Room 3	2:00-2:20	Lea	Schiefele	History	Aktion T4: Causes and Consequence
Room 4	2:20-2:40	Amber	Schmidt	Music	Clash of Cultures: An Insight into Tuvan Throat Singing in the Cultural Context of the Wider World
Room 5	5:00-5:20	Kaitlyn	Scirica	Accounting	The Other Side of Paradise: An Analysis of the Environmental Reporting of Public Companies in the United States
Room 1	3:20-3:40	Grace	Sill	Religion	Are You My Mother: Redefining Adoptive Relationships Through a Comparative Study of Western-Christian and Neo-Confucian Ethics
Room 6	5:00-5:20	Cameron	Simpson	Political Science	Flooding in New Orleans: A National Problem
Room 1	3:40-4:00	Giselle	Soto	Biology	Demonstrating the Antibacterial Properties of Essential Oils Against Antibiotic Resistant Bacteria
Room 7	5:00-5:20	Olivia	Stamper	Political Science	Affordable Healthcare: Not So Affordable
Room 4	1:40-2:00	M. R.	Steed	Psychology	Too Young To Know It Gets Better: Elevating and Providing Hope for Young Caregivers
Room 8	3:00-3:20	Prasamsa	Surapaneni	Biochemistry and Molecular Biology	The Design of Zinc Metal-Organic Materials for Biomedical Applications—Drug Delivery
Room 4	3:40-4:00	Abigail	Tarleton	Marine Biology	Is Reef Safe Sunscreen Really Safe?
Room 3	4:20-4:40	Macey	Tipton	Accounting	The Concerning Reality of Special Purpose Acquisition Companies
Room 9	2:20-2:40	Sergio	Trevino-Rios	Political Science	New Slavery
Room 4	4:40-5:00	Kendall	Uslan	English	Labeled: A Personal Exploration of Gender Theory
Room 3	3:20-3:40	Ryan	Vassalotti	Biology	An Inquiry into the Synthesis of Zinc/Chelidonate-based MOFs and Their Potential Uses in the Prevention of Hernia Mesh Infections
Room 4	2:00-2:20	Katharine	Wall	Chemistry	Improving the Wittig Reaction Through Solid Support Synthesis to Create a Teaching Lab

2022 Fiat Lux Presenters – By Last Name

Room 1	4:40-5:00	Amy	Wieleba	Nursing	Needs of Children During the Parental Death Experience
Room 2	3:20-3:40	Jack	Wilkins	Psychology	Sexism, Harassment, & Attraction: Studying the Effects of Various Factors on Workplace Discrimination
Room 6	4:40-5:00	Camryn	Willett	Chemistry	Caffeine Decreases Cell Growth and Proliferation through the Akt/GSK3/mTOR Pathway
Room 6	1:20-1:40	Brock	Wilson	Computer Science	Moc Lots: Finding Parking Using Computer Vision

2022 Fiat Lux Presentations – By Room

Room 1

1:20-1:40	Catherine	Fox	Marine Biology	Identifying the Skin and Gut Microbiome of Two Shark Species in Tampa Bay, Florida
1:40-2:00	Stephanie	Burnette	Marine Biology	Social Buffering in a Social Fish (Zebrafish <i>Danio rerio</i>)
2:00-2:20	Alivia	Baxmann	Chemistry	The Design and Construction of an Affordable Raman Spectrometer
2:20-2:40	Madeleine	Schabes	Chemistry	Quantifying the “Golden Ratio” of Hyper-Palatable Foods: What Makes Junk Food so Addictive?
2:40-3:00	John	Prescott	Political Science	Semi Truck Situation
3:00-3:20	Brayden	Lacefield	Political Science	It Gets In Your Blood: Inside the Secret Brotherhood of Moonshining
3:20-3:40	Grace	Sill	Religion	Are You My Mother: Redefining Adoptive Relationships Through a Comparative Study of Western-Christian and Neo-Confucian Ethics
3:40-4:00	Giselle	Soto	Biology	Demonstrating the Antibacterial Properties of Essential Oils Against Antibiotic Resistant Bacteria
4:00-4:20	Jessica	Davis	Political Science	Politics in the Lone Star State: How Have They Changed, and Why?
4:20-4:40	Lauren	Lassiter	Political Science	Destruction of Cultural Sites: A Historical Analysis
4:40-5:00	Amy	Wieleba	Nursing	Needs of Children During the Parental Death Experience
5:00-5:20	Erin	Cagle	Exercise Science	Effectiveness of the FIFA 11+ Warm-Up in Improving Lower Extremity Biomechanics and Change of Direction Performance

Room 2

1:20-1:40	Emalisse	Fernandez	Nursing	Overlooked and Underdiagnosed: Paternal Postpartum Depression
1:40-2:00	Rachel	Breitenbach	Biology	The Importance of Auditory, Olfactory, and Visual Cues for Insect Foraging in Owl Monkeys (<i>Aotus nancymae</i>)

2022 Fiat Lux Presentations – By Room

2:00-2:20	Gabrielle	Risko	Biology	Scent Marking and the Possible Implications for Mate Guarding in Owl Monkeys (<i>Aotus nancymae</i>)
2:20-2:40	Benjamin	Marusko	Biology	Analysis of Metal-Organic Framework Stability, Antimicrobial Properties, and Dental Applications
2:40-3:00	Connor	Bligh	Economics and Finance	The Economic Impact of COVID-19 Lockdowns on US States
3:00-3:20	Zoe	Potter	Marine Biology	Complex Environmental Enrichment in Brown Anoles (<i>Anolis sagrei</i>): Increasing Resilience to Improve Welfare
3:20-3:40	Jack	Wilkens	Psychology	Sexism, Harassment, & Attraction: Studying the Effects of Various Factors on Workplace Discrimination
3:40-4:00	Nathan	Hallmark	Applied Mathematics and Statistics	On the Difference of Two Numbers Raised to the Same Exponent
4:00-4:20	Kristi	Bono	Economics and Finance	A Study of Behavioral Economic Incentives in Climate Policy
4:20-4:40	Molly	Cole	Nursing	Impacts of Pediatric and Adolescent Chronic Non-Cancer Pain on Parents
4:40-5:00	Lillee	Izadi	Biology	Identifying the Functional Properties of Arthropsin in <i>Daphnia</i>
5:00-5:20	Kira	Freijo	Psychology	Conceal, Don't Reveal: The Effect of LGBTQ+ College Students Hiding Their Identity

Room 3

1:20-1:40	Hikaru	Nagoshi	Political Science	The Global Shortage of Semiconductors and the Fragility of the U.S. Supply Chain
1:40-2:00	Meaghan	Lake	Biology	Functional or Just Plain Pretty? A Reevaluation of Bacterial Pigment Activity
2:00-2:20	Lea	Schiefele	History	Aktion T4: Causes and Consequence
2:20-2:40	Eva	Francey	Psychology	It's a Cis World: Effect of Gender Identity, Social Media/Physical Presentation, and Type of Employment Status on Likelihood of Being Promoted/Hired
2:40-3:00	Jadin	Dewith	Exercise Science	What is the Relationship Between Pitch Count, Strength, and Pain for Division II Collegiate Softball Pitchers?

2022 Fiat Lux Presentations – By Room

3:00-3:20	Alayna	Goll	Exercise Science	Nutrition Knowledge and Dietary Habits in Female Collegiate Cross Country Runners
3:20-3:40	Ryan	Vassalotti	Biology	An Inquiry into the Synthesis of Zinc/Chelidonate-based MOFs and Their Potential Uses in the Prevention of Hernia Mesh Infections
3:40-4:00	Corinna	Robinson	English	Traces of Hellenism and Perpetual Hope: Religious Faith in Greek American Return Narratives
4:00-4:20	William	Draper	Accounting	An Examination of ESG Reporting in the Modern World
4:20-4:40	Macey	Tipton	Accounting	The Concerning Reality of Special Purpose Acquisition Companies
4:40-5:00	Isabel	Arcusa	Biology	Behavioral Responses to Conspecific Urine Cues in Socially Monogamous Owl Monkeys (<i>Aotus nancymae</i>)

Room 4

1:20-1:40	Natalie	Leah	Studio Art	The Relationship Between Character and Design
1:40-2:00	M. R.	Steed	Psychology	Too Young To Know It Gets Better: Elevating and Providing Hope for Young Caregivers
2:00-2:20	Katharine	Wall	Chemistry	Improving the Wittig Reaction Through Solid Support Synthesis to Create a Teaching Lab
2:20-2:40	Amber	Schmidt	Music	Clash of Cultures: An Insight into Tuvan Throat Singing in the Cultural Context of the Wider World
2:40-3:00	Evan	Hydock	Political Science	The Ethics of Targeted Killings
3:00-3:20	Carter	Kruse	Accounting	The Need for Financial Literacy Education in High Schools
3:20-3:40	Peyton	McCain	Marine Biology	Spatial Ecology of the Striped Mud Turtle in a Central Florida Perched Wetland
3:40-4:00	Abigail	Tarleton	Marine Biology	Is Reef Safe Sunscreen Really Safe?
4:00-4:20	Lawton	Bauer	Political Science	Superman Isn't Real: A Critical Analysis of the Expectations Levied Upon the United Nations

2022 Fiat Lux Presentations – By Room

4:20-4:40	Nathalie	Moreno	English	The Growing Need for Subjective Journalism in Modern Perception of Violence
4:40-5:00	Kendall	Uslan	English	Labeled: A Personal Exploration of Gender Theory
5:00-5:20	Annalise	Eisold	Accounting	The Effects of Covid-19 on the Marketing of Live Ticketed Music Entertainment: How Have Politics and Policies Affected the Industry During the Pandemic?

Room 5

1:20-1:40	Morgan	Misenar	Biology	Exploring the Influence of a Preventative Shoulder Strengthening Program on Collegiate Swimmers' Shoulder Function
1:40-2:00	Jill	Kinstler	Biology	Determining the Presence of Antibiotic Resistance Genes and Capability of Spread in the Commercially Available Probiotic Streptococcus Thermophilus
2:00-2:20	Mary	Clapp	Communication	How Can Employee Engagement Be Increased?
2:20-2:40	Brianna	Savage	Nursing	Isolation Correlation of NICU Parents and Infants Following COVID-19 Pandemic
2:40-3:00	Katrina	Schell	Religion	The Drama of Scripture and Shaping Christian Theology: An Interpretation of Love
3:00-3:20	Victoria	Kellar	Biochemistry and Molecular Biology	NSAID-Releasing Hemostatic Gelatin for Post-Surgical Applications
3:20-3:40	Emmelyne	McGovern	Chemistry	Use of Protein Immunochemistry in the Visualization of Latent Fingerprints
3:40-4:00	Naomi	Lewis	Accounting	Overtourism in Japan: Achieving Profitable, but Sustainable Tourism
4:00-4:20	Amanda	Gregoire	Biology	Influence of Size, Sex, and Location on Parasite Load of Invasive Tilapia in Five Lakeland Lakes
4:20-4:40	Rowan	Marshall	Marine Biology	Science Communication Through a Blog: A Case Study with the Journal of Integrative and Comparative Biology

2022 Fiat Lux Presentations – By Room

4:40-5:00	Hailee	Schalwig	Environmental Studies	Environmental Education: The Role of Outdoor Learning, Eco-Art, and Demographic Variables in EE Success
5:00-5:20	Kaitlyn	Scirica	Accounting	The Other Side of Paradise: An Analysis of the Environmental Reporting of Public Companies in the United States

Room 6

1:20-1:40	Brock	Wilson	Computer Science	Moc Lots: Finding Parking Using Computer Vision
1:40-2:00	Ibraheem	Cazalas	Computer Science	MocsIDE: An Open-Source and Scalable Online IDE and Auto-Grader for Computer Science Education
2:00-2:20	Earlexa Cheyenne	Charles	Spanish	In the Time of the Butterflies
2:20-2:40	Earlexa Cheyenne	Charles	Spanish	United States Immigration Laws in Respect to Hispanic Families
2:40-3:00	Ashlynn	Honma	Biochemistry and Molecular Biology	The Development of a Novel and Biological Chitosan Hemostat to Treat Postoperative Oral Surgery Patients
3:00-3:20	Holt	Ragsdale	Chemistry	Electronic Properties of Metal Organic Frameworks towards CO ₂ Adsorption
3:20-3:40	Isabel	Augustine	Chemistry	The Development and Comparison of the Greener Synthesis of Vegetable Oil Based Polymers
3:40-4:00	Alanya	Nardone	Biochemistry and Molecular Biology	An Evaluation of the Greener Synthesis of Stilbenes and Their Inhibition and Potency Tendencies Against Epithelial Ovarian Cancer Cell Lines
4:00-4:20	Anna	Lyons	Chemistry	Synthesis of Cortisol Derivatives and Computational Evaluation of a Cortisol Derivative Library Against Glucocorticoid Receptor
4:20-4:40	Chris-Ann	Ricketts	Chemistry	Controlled Release of Diclofenac from a Gelatin-Hemostatic Agent for Application in Postoperative Patients
4:40-5:00	Camryn	Willett	Chemistry	Caffeine Decreases Cell Growth and Proliferation through the Akt/GSK3/mTOR Pathway

2022 Fiat Lux Presentations – By Room

5:00-5:20	Cameron	Simpson	Political Science	Flooding in New Orleans: A National Problem
-----------	---------	---------	-------------------	---

Room 7

1:20-1:40	Stephen	Roth	Biology	The Effects of a Weightlifting Belt on Concentric Movement Velocity During the Deadlift Exercise
1:40-2:00	Alexandra	Mahnke	Exercise Science	Exploration of Pilates as an Exercise Intervention to Improve Balance in Multiple Sclerosis Patients
2:00-2:20	Daniela	Rincon Garcia	Exercise Science	Alterations in Vagal Measures of Linear Heart Rate Variability Following High Load and Blood Flow Restriction Exercise
2:20-2:40	Grace	Keene	Psychology	How One “Big Five” Trait Fits into the Business Environment
2:40-3:00	Morgan	Jarrett	Marine Biology	Do pH Variable Habitats Provide Refuge for the Florida Stone Crab from Coastal Acidification?
3:00-3:20	Valentina	Montoya	Political Science	Inspiration for Writing from Important Poets
3:20-3:40	McKinley	Miller	Film	A Film Student’s Experience in Creative Writing
3:40-4:00	Noelle	Jacob	Chemistry	ENG 2023: The Revision Process of Literary Work
4:00-4:20	Sydney	Budt	Political Science	An Analysis of COVID-19 & Air Pollution: A Complex Relationship
4:20-4:40	Emma	Nieves	Exercise Science	The Effects of the AIRWAAV Performance Mouthpiece on Countermovement Vertical Jump Height
4:40-5:00	Nicholas	Picarella	Biology	The Effects of Maximal Jaw Clenching and a Performance Mouthpiece on Net Concentric Impulse During the Vertical Jump Assessment
5:00-5:20	Olivia	Stamper	Political Science	Affordable Healthcare: Not So Affordable

2022 Fiat Lux Presentations – By Room

Room 8

1:20-1:40	Linda	Erlanson	Biochemistry and Molecular Biology	Investigating Zinc Metal Organic Materials with the Potential Application of Drug Delivery
1:40-2:00	Josie	Brown	Political Science	Health Care and the Pandemic
2:00-2:20	Jessica	Davis	Political Science	Source Confidentiality Violations in the United States: Is it a solvable problem?
2:20-2:40	Brayden	Lacefield	Political Science	Dollar'd To Death: Stopping Financial Exploitation
2:40-3:00	Michelle	Milner	Political Science	The Fake News Epidemic: The Government's Role in Bursting The Social Media Bubble
3:00-3:20	Prasamsa	Surapaneni	Biochemistry and Molecular Biology	The Design of Zinc Metal-Organic Materials for Biomedical Applications—Drug Delivery
3:20-3:40	Emily	Giddens	Business Administration	Health: At What Cost
3:40-4:00	Lauren	Lassiter	Political Science	Voting Access in Georgia
4:00-4:20	Simran	Kinker	Political Science	The U.S Pharmaceutical Industry: Policy Analysis of Rising Drug Prices and Excessive Profits
4:20-4:40	John	Koch	Political Science	Flooding in New England: A Triple Threat
4:40-5:00	Natasha	Gomez	Political Science	Restoring Refuge: U.S. Mental Health Care for Asylum-Seekers & Refugees
5:00-5:20	Stephen	Kurek	Political Science	Reinventing Airhub Travel to Fit America's Future

Room 9

1:20-1:40	Katherine	Lynch	Political Science	Cyber-Security
1:40-2:00	Kevin	Medina	Political Science	Puerto Rico: Rise In Unemployment Rates
2:00-2:20	Ashutos	Sahay	Political Science	The Working Homeless
2:20-2:40	Sergio	Trevino-Rios	Political Science	New Slavery
2:40-3:00	Madison	Conner	Exercise Science	The Effects of the AIRWAAV Performance Mouthpiece and Clenching on Bat Swing Velocity
3:00-3:20	Earlexa Cheyenne	Charles	Political Science	COVID-19 Unemployment Rates in the United States

2022 Fiat Lux Presentations – By Room

3:20-3:40	Emily	Eidenschink	Exercise Science	Profiling the NCAA D-2 Athlete
3:40-4:00	Danielle	Deckard	Spanish	Roma, a Realistic Perspective
4:00-4:20	Jollice	Boyd	Political Science	Reducing the Disproportionate Rates of Homelessness for Black People in D.C.
4:20-4:40	Chloe	Potts	Marine Biology	Do pH Variable Habitats Provide Refuge for the Florida Stone Crab from Coastal Acidification?
4:40-5:00	Alexandra	Potter	Political Science	Disparities in Maternal Mortality Rates: How Do We address Racism in Healthcare?

Presentations

In alphabetical order by presenter's last name.

2022 Fiat Lux Presentations

Student: Arcusa, Isabel

Major: Biology

Faculty Mentor: Christy Wolovich

Presentation Time: 4:40-5:00

Presentation Type: Senior Project

Room: Room 3

Title: Behavioral Responses to Conspecific Urine Cues in Socially Monogamous Owl Monkeys (*Aotus nancymaae*)

Abstract: Socially monogamous mammals often exhibit mate-guarding either to prevent their mates from engaging in extra-pair copulations or to prevent mate desertion. Maintaining close proximity is a common form of mate-guarding, but research on socially monogamous species suggests that chemosensory behaviors (e.g. scent marking, urination, urine washing, urine drinking) also facilitates mate-guarding. Although there is support for chemical mate-guarding in monogamous reptiles and invertebrates, evidence in mammals, particularly primates, is mixed. Socially monogamous owl monkeys (*Aotus* spp.) serve as an excellent model for studying olfactory communication in primates because they are nocturnal and exhibit an array of behaviors associated with chemosignaling and reception. To determine if owl monkeys exhibit chemical mate-guarding, we observed ten male-female pairs of captive *Aotus nancymaae* at the DuMond Conservancy and scored their behavioral responses to urinary cues. We conducted a series of experimental trials in which either unfamiliar male urine, unfamiliar female urine, or saline (control) were presented to the owl monkeys. Males had higher rates of scent marking than females and marked most often in the presence of male urinary cues. Rates of scent marking by females did not vary across treatments. Additional analyses revealed that pair-mates spent more time in close proximity when males scent marked at high rates, but that both sexes were equally responsible for maintaining close proximity to one another. Our findings demonstrate that sex differences in scent marking behavior in a pair-living primate may reflect a form of chemical mate-guarding and act a mechanism for preserving social monogamy.

Student: Augustine, Isabel

Major: Chemistry

Faculty Mentor: Deborah Bromfield Lee

Presentation Time: 3:20-3:40

Presentation Type: Oral Presentation

Room: Room 6

Title: The Development and Comparison of the Greener Synthesis of Vegetable Oil Based Polymers

Abstract: With the increased attention on plastic pollution, there is a push to create solutions, one being banning plastics. In reality, though the pollution is serious, polymers (including their plasticizers, stabilizers, and lubricants) play an important role in our day-to-day lives from food and transportation to medicines and construction. It is important to figure out methods to reduce plastic pollution, therefore an alternative approach is to consider the cradle-to-grave implications of the products and Green Chemistry principles in the design of polymers. This research utilized Green Chemistry Principles including the use of renewable feedstocks, less hazardous synthesis, and biodegradability. In this project, we have epoxidized soybean oil, which was then cross-linked with various materials. The use of soybean oil incorporates renewable materials and focuses on materials designed for degradation. We have examined and compared various greener epoxidation methods to determine the most efficient methods. Additionally, we explored linking methods with different small bi-functional molecules using varying ratios of linking molecule to epoxide to cross-link the compound, which was then either cured into a

2022 Fiat Lux Presentations

polymer resin or used as a plasticizer to more traditional polymers. All epoxide reactions were evaluated by NMR and IR, while the physical properties of the cross-linked materials were evaluated in addition to IR and NMR analysis. Continuation of this work could include further examination of other linking methods, molecules, and ratios, and continuing to explore the possible applications of the materials produced including as a plasticizer, as well as possibly evaluating different sustainable vegetable oil starting materials.

Student: Bauer, Lawton

Major: Political Science

Faculty Mentor: Kelly McHugh

Presentation Time: 4:00-4:20

Presentation Type: Honors Proposal

Room: Room 4

Title: Superman Isn't Real: A Critical Analysis of the Expectations Levied upon the United Nations

Abstract: The United Nations (UN) is often asked to provide solutions to the world's problems, be they social, political, environmental, humanitarian, or militaristic. However, some view the UN as a flawed institution, one that cannot live up to the expectations placed upon it. This paper explores those expectations, why the UN was originally created and what actions it undertakes, and what the UN does and does not experience success in. Through this exploration, I argue that the expectations levied upon the United Nations are unrealistic and too ambitious for the organization as currently constituted. This paper also compares the different reform efforts that have been proposed during the UN's tenure, and argues that most reforms are too narrowly focused or politically infeasible without a significant change in the international political landscape. Finally, alternatives that can supplement the UN's shortcomings are discussed.

Student: Baxmann, Alivia

Major: Chemistry

Faculty Mentor: An-Phong Le

Presentation Time: 2:00-2:20

Presentation Type: Senior Project

Room: Room 1

Title: The Design and Construction of an Affordable Raman Spectrometer

Abstract: Raman spectroscopy is capable of identifying unknown substances in a fast and non-destructive manner and has found a wide range of uses, such as identifying hydrogen peroxide-based explosives, characterizing chocolate, and verifying gemstone identity. Commercial Raman spectrometers can easily cost tens of thousands of dollars and building a low cost version would enable more widespread adoption of this technique and make additional analytical applications feasible. The basic parts have been assembled with the aid of a 3D printer. Preliminary results will be discussed as well as possible future uses of the project.

2022 Fiat Lux Presentations

Student: Bligh, Connor

Major: Economics and Finance

Faculty Mentor: Joseph Connors

Presentation Time: 2:40-3:00

Presentation Type: Senior Project

Room: Room 2

Title: The Economic Impact of COVID-19 Lockdowns on US States

Abstract: This paper aims to provide an in-depth study on the economic impact of COVID-19 lockdowns on specific US states, which has not been completed to this specificity before. Economic impact studies are used to help make both local and state policy decisions. These policy decisions are vitally important to ensure future pandemics can be effectively handled. This paper will include data about several economic and health statistics for each state in the hopes that it will help shape public policy for pandemics in the foreseeable future.

Student: Bono, Kristi

Major: Economics and Finance

Faculty Mentor: Joseph Connors

Presentation Time: 4:00-4:20

Presentation Type: Senior Project

Room: Room 2

Title: A Study of Behavioral Economic Incentives in Climate Policy

Abstract: As environmental concerns are pushed to the forefront of political debate, many policies have been introduced with emphasis on traditional economic theory. However, this assumes that “rational individuals” will be concerned with the long-term safety of our planet, and that they will be willing to economically disadvantage themselves today in order to invest in the next generation. In practice, behavioral economics shows that these types of policies rarely achieve their stated goal of helping to reduce environmental impacts, and this calls for a new approach that relies instead on providing economic incentives in order to “nudge” people toward environmentally-friendly choices. The following qualitative research analyzes multi-level government perspectives on environmental nudge policies and develops a strategy on how these tactics could best fit in to existing political structures in the United States.

Student: Boyd, Jollice

Major: Political Science

Faculty Mentor: R. Bruce Anderson

Presentation Time: 4:00-4:20

Presentation Type: Oral Presentation

Room: Room 9

Title: Reducing the Disproportionate Rates of Homelessness for Black People in D.C.

Abstract: African Americans make up an average of 13% of America’s population and yet they make up 39% of people experiencing homelessness in the U.S. In Washington, D.C., our nation’s capital, this disparity is even more evident. This paper analyzes why homelessness negatively impacts African Americans at disproportionate rates and looks to erase this disparity by using D.C. as a case study. Homelessness is a social issue that needs to be fixed but it cannot be properly addressed without specifically addressing the populations it affects.

2022 Fiat Lux Presentations

Student: Breitenbach, Rachel
Faculty Mentor: Christy Wolovich
Presentation Time: 1:40-2:00
Room: Room 2

Major: Biology
Presentation Type: Senior Project

Title: The Importance of Auditory, Olfactory, and Visual Cues for Insect Foraging in Owl Monkeys (*Aotus nancymaae*)

Abstract: Nocturnal animals have developed unique sensory adaptations to detect environmental cues at night. Owl monkeys (*Aotus* spp.) are the only nocturnal platyrrhines, and evidence suggests they reverted back to nocturnality after diverging from a diurnal primate ancestor. They are omnivorous and have visual, olfactory, and auditory adaptations enabling them to forage for a variety of food items under low-light conditions. This study investigated which sensory systems (audition, olfaction, vision) captive owl monkeys (*Aotus nancymaae*) rely upon most when foraging for insects. We hypothesized that the monkeys would utilize a mixture of different cues to forage, but that they would rely most upon visual cues. We used choice experiments, presenting one experimental sensory box (containing specific insect cues) and one control box (a matched control stimulus) to 23 owl monkeys (one singly-housed male and 11 male-female pairs). We scored the monkeys' behavioral responses and analyzed these behaviors using generalized linear models. The owl monkeys approached experimental boxes, spent more time near experimental boxes, and had higher rates of sneezing and trilling during trials in which they had access to all cues simultaneously and during trials presenting olfactory cues only. They did not exhibit foraging-related behaviors during trials presenting only visual or auditory cues. Male owl monkeys appeared to be less neophobic than females because males were quicker to approach sensory boxes. These results contribute to knowledge about *Aotus* sensory ecology, indicating that owl monkeys rely upon a mixture of sensory cues, but primarily rely on olfactory cues, when foraging for insects.

Student: Brown, Josie
Faculty Mentor: R. Bruce Anderson
Presentation Time: 1:40-2:00
Room: Room 8

Major: Political Science
Presentation Type: Oral Presentation

Title: Health Care and the Pandemic

Abstract: This paper acknowledges the current pandemic crisis and the effects it has had on society in regards to health care. Currently seeking health care is a cautious event; many people do not want to seek the care they need simply because of the risk of contracting the virus. Through policy solutions we seek to appease those fears and provide healthcare to those who need it. Many factors go into this problem, including the strain that the healthcare system is already under, the issue of holding off on medical treatment as well as the risk involved with seeking medical treatment. By providing information to potential patients, they can decide for themselves whether or not they should seek medical attention. Current policy functions of the emergency protocol put in place to combat the effects of the pandemic. It allows for fast reaction and more accessible healthcare to those who weren't able to get care before. The Critical Care Protocol is another helpful tool that allows medical professionals to instantly see those who are high-risk and then take precautions to reduce that risk as much as possible. Telehealth is an option that we have been dwelling on for a few years now, with some development and widespread implementation it can become a tool that medical professional use for many years to come.

2022 Fiat Lux Presentations

Student: Budt, Sydney

Major: Political Science

Faculty Mentor: R. Bruce Anderson

Presentation Time: 4:00-4:20

Presentation Type: Oral Presentation

Room: Room 7

Title: An Analysis of COVID-19 & Air Pollution: A Complex Relationship

Abstract: For some time now the world has been experiencing the health crisis since the outbreak of the COVID-19 pandemic. The topic of having “cleaning the air” is now more important than ever since the health basically depends on it. With the entire world impacted, research shows many are still being hit harder than others. This research analysis is looking to answers and possible solutions to the messy relationship of air pollution and COVID-19. Effects of air pollution are detrimental as is, Petroni et al., found that having exposure to harmful air pollutants (HAPs), is indeed associated with the nine percent increase within the COVID-19 mortality rates. Not only do the two share a strong association with one another, the polluted air has already been identified as the pre-existing medical conditions that increase the chances death/health issues stemming from exposure to the COVID-19 Infection. Levels of air pollution that meet the current federal air quality “standards” can still be extremely harmful to one’s health, especially with prolonged exposure. The Environmental Protection Agency (EPA) top crisis covered in the 2020 policy brief revealed the fact that air pollution is killing Americans. And not just a few people, more than 68,000 people experienced premature deaths from air pollution in 2018. On top of that 25,000 of those deaths came from PM2.5, and the pollution was generated by the agriculture sectors and general transportation (EPA, 2020). Another recent study conducted by Zhou et al., found that there were over 20,000 additional coronavirus infections, and up to 750 deaths which were linked to having exposure to high levels of PM2.5. The reason for there being such high PM2.5 levels are due to the 2020 wildfires that occurred across.

Student: Burnette, Stephanie

Major: Marine Biology

Faculty Mentors: Ashley Bowers-Macrande and Allison Durland Donahou

Presentation Time: 1:40-2:00

Presentation Type: Senior Project

Room: Room 1

Title: Social Buffering in a Social Fish (Zebrafish *Danio rerio*)

Abstract: Social buffering is a phenomenon observed in social animals where the presence of a member from the same species alleviates the stress response by reducing the amount of stress an animal experiences and helping them to recover faster. Social buffering has been observed across vertebrate taxa, from primates, to birds, to fish. Zebrafish *Danio rerio* are a shoaling species – they are a group living fish that form social bonds with other members. To test how familiarity within a group plays a role in social buffering, I exposed 18 zebrafish to a stressor in three treatments: in pairs of new companions, individually, and in pairs where the fish are familiar with each other. After administering the stressor, chasing with a net, I observed the behavior of the fish for 20 minutes, and I scored four stress-related behaviors: erratic swimming, freezing, reduced exploration, and shoaling cohesion. The results will, hopefully, give us insight into whether familiarity with conspecifics affects social buffering.

2022 Fiat Lux Presentations

Student: Cagle, Erin

Major: Exercise Science

Faculty Mentor: Charles Allen

Presentation Time: 5:00-5:20

Presentation Type: Senior Project

Room: Room 1

Title: Effectiveness of the FIFA 11+ Warm-Up in Improving Lower Extremity Biomechanics and Change of Direction Performance

Abstract: The prevention of anterior cruciate ligament (ACL) injury and the enhancement of sports performance are two common goals when working with athletes, and lower extremity biomechanics have been identified as modifiable factors for both. There is an abundance of research identifying the factors associated with ACL injury prevention and performance improvement, and there are various injury prevention programs (IPP) developed to correct faulty biomechanical movement patterns. While previous research has established the efficacy of these IPPs in reducing injury rates, it remains unclear if IPPs have positive effects on athletic performance. Specifically, there is little research that investigates the role of IPPs in improving ability to perform a change of direction (COD) task. Therefore, the purpose of this study was to determine if participation in an IPP could reduce the rate of injury and improve performance of a COD task. Twelve Division II collegiate, female soccer players participated in this study (six treatment, six control), with COD time and biomechanics, Landing Error Scoring System (LESS) assessment, and vertical jump ground reaction forces (GRFs) measured pre and post intervention. Results found that there was a main effect for time across multiple variables and improvement in left knee valgus angle in the control group from pre to post were statistically significant ($p=0.034$). For all other variables there was no significance across intervention or the combination of intervention and time. Therefore, further studies with larger samples should be conducted to improve understanding of the topic.

Student: Cazalas, Ibraheem

Major: Computer Science

Collaborators: Max Barlow and Stephen (Chase) Robinson

Faculty Mentor: Jonathan Cazalas

Presentation Time: 1:40-2:00

Presentation Type: Oral Presentation

Room: Room 6

Title: MocsIDE: An Open-Source and Scalable Online IDE and Auto-Grader for Computer Science Education

Abstract: Programming is learned through practice, with said practice in introductory programming courses often translating to a prohibitively large number of assignments, increasing the grading workload for faculty and/or teaching assistants. In short, this is unsustainable. Several publishers and a few notable companies have provided meritable auto-grading solutions, although most are plagued with problems including minimal problem sets, limited customization options, high cost, and at times even a disconnect with the pedagogical needs of academia. This poster presents our newly-developed web application, MocsIDE, an open-source and scalable online IDE and auto-grader for computer science education. Results indicate a positive user experience from students and instructors alike, with cost savings, ease of use, and code collaboration highlighted as key features.

2022 Fiat Lux Presentations

Student: Charles, Earlexa Cheyenne
Faculty Mentor: R. Bruce Anderson
Presentation Time: 3:00-3:20
Room: Room 9

Major: Political Science
Presentation Type: Oral Presentation

Title: COVID-19 Unemployment Rates in the United States

Abstract: I researched the connection between unemployment rates and COVID-19 cases in the United States. The spread of the Corona Virus has left national economies and businesses counting the costs, as governments struggle with new lockdown measures to tackle the spread of the virus. In relation to COVID cases, many people from countries all over the world have lost their jobs and/or seen their incomes cut. Unemployment rates have increased across major economies worldwide and since have maintained this higher rate for the past two years. Research shows the employment rate's peak in 2020 was in a direct connection to the global pandemic of COVID-19. Many countries including the United States showed a continuation of the steady economic recovery from the COVID-19 pandemic since April of 2020. I found that trends of the United States unemployment rate are continuing to decrease but suddenly increase whenever a new variant and information about the variant is released. In my research I produced alternatives to combat the problem of unemployment in relationship to COVID-19 within the United States.

Student: Charles, Earlexa Cheyenne
Faculty Mentor: Melissa Garr
Presentation Time: 2:00-2:20
Room: Room 6

Major: Spanish
Presentation Type: Oral Presentation

Title: In the Time of the Butterflies

Abstract: In the Time of The Butterflies by Julia Alvarez is a detailed reconstruction of the tragic murders of the three Mirabal sisters; Maria Teresa Mirabal de Guzman, Dr. Minerva Mirabal de Tavarez, and Patria Mercedes Mirabal de Gonzalez. These murders are shown from many different perspectives and narrated by a myriad of characters. This narrative strategy suggests the collective identity of Dominicans, as Alvarez documents how the Dominican people resisted a dictatorship of silence, torture, and brutal assassinations orchestrated by General Rafael Leonidas Trujillo Molina. The novel was later adapted into a film where it visually portrays the story of the four Mirabal sisters. My research focuses on two scenes from both the film and the movie, the scene at Trujillo's ball and the tragic death scene. The purpose of my project is to analyze the character's perspectives from the novel and the film.

2022 Fiat Lux Presentations

Student: Charles, Earlexa Cheyenne

Major: Spanish

Faculty Mentor: Melissa Garr

Presentation Time: 2:20-2:40

Presentation Type: Oral Presentation

Room: Room 6

Title: United States Immigration Laws in Respect to Hispanic Families

Abstract: Although there is considerable diversity in migration stories, many Mexican and Central American families are exposed to tremendous amounts of stress and trauma in their home country, including poverty, drug-related violence, and limited educational opportunities. Unfortunately, this stress and trauma often continues upon settling in the U.S. and arguably exacerbates the impact of cumulative distress and negative well-being. For example, Latino immigrant families can be impacted by structural and interpersonal discrimination, fear, and barred access to opportunities (e.g. healthcare, education) regardless of documentation status. Current estimates reveal that the Latino population is the largest minority group in the U.S., with 19 million foreign-born individuals from Latin America. It is only over the course of four centuries, with the spread of formal and substantive citizenship among the domestic population, a hardening distinction between citizen and alien, and the rise of a powerful centralized state, that the uniquely disabled legal subject we recognize today as the immigrant has emerged. With hands-on experience at Espinoza Law Offices and analyzing the text *Making Foreigners* by Kunal M. Parker, I have advanced new ways of understanding the relationship between foreignness and subordination of the hispanic culture over the long span of American history.

Student: Clapp, Mary

Major: Communication

Faculty Mentor: Cara Mackie

Presentation Time: 2:00-2:20

Presentation Type: Honors Proposal

Room: Room 5

Title: How Can Employee Engagement Be Increased?

Abstract: Recently, it has been a pivotal time for employers and managers who are looking to fully engage their employees with each other and in the tasks at hand. This significant time has been created by the emphasis on technological advances combined with the recent pandemic. The workplace has been greatly affected, leaving employers wondering how to best connect with employees to ensure engagement and productivity. Employees can be motivated if intentional interventions and methods are used. The main takeaway is that employees need to be invested in the company's purpose, and aligned with its values to have the natural response of engagement flow. Other tools may be used to help spur it along, but this seems to be the most naturally occurring way to see engagement increase. With this in mind, I want to research ways for employers to effectively engage Gen Z. I plan to research through an interviewing process with members of the professional workplace as well as a group of Gen Z employees.

2022 Fiat Lux Presentations

Student: Cole, Molly

Major: Nursing

Faculty Mentor: Judy Risko

Presentation Time: 4:20-4:40

Presentation Type: Senior Project

Room: Room 2

Title: Impacts of Pediatric and Adolescent Chronic Non-Cancer Pain on Parents

Abstract: Background: Pediatric and adolescent chronic non-cancer pain (PCNCP) not only impacts the patient's own life, it may affect their family members' lives also. Parents face a variety of challenges in having a child dealing with chronic pain. These may include financial impacts, decreased personal time, and negative mental and physical health effects. Aims: This research was being conducted to identify commonly faced parental impairments in functioning and the most difficult aspects of parenting a child with PCNCP. Methods: This study was a retrospective data review design utilizing qualitative analysis. Parental data was collected through electronic pre- appointment surveys at Johns Hopkins All Children's Hospital. Surveys were completed prior the child's initial appointment at the Pediatric Pain Clinic or at the Pediatric Psychology Clinic. Qualitative analysis of data obtained through open-ended survey questions was conducted by a team of three researchers. Results: Themes identified in the qualitative data included: Pain Central: The Hub, Juggling Life, Suffering Side by Side, Unrealized Dreams, and Gettin' it Under Control. Conclusion: It is important to identify specific impacts PCNCP has on parents in order to inform treatment, educate clinicians to better support parents, and to improve patient and family care outcomes.

Student: Conner, Madison

Major: Exercise Science

Collaborators: Stephen Roth, Emma Nieves, and Nick Picarella

Faculty Mentor: Charles Allen

Presentation Time: 2:40-3:00

Presentation Type: Oral Presentation

Room: Room 9

Title: The Effects of the AIRWAAV Performance Mouthpiece and Clenching on Bat Swing Velocity

Abstract: The purpose of this study was to examine the effects of the AIRWAAV performance mouthpiece (MP) on BSV. Ten softball and six baseball athletes volunteered as participants in this research. Prior to data collection, participants provided written informed consent and were fitted with the MP according to manufacturer specifications. Participants were provided a one-week familiarization period in which athletes wore the MP for all sport and conditioning activities. Data collection began with a general warmup, followed by a series of practice swings. Then participants completed five maximal effort swings targeting a ball on a tee under four experimental conditions: jaw clench with MP, jaw clench without MP, jaw relaxed with MP, and jaw relaxed without MP. Swing attempts were separated by a 30-second rest period, and a 2-minute rest period separated experimental conditions. BSV was recorded using an inertial measurement unit (Zepp Sensor, Zepp Labs, Inc.). The device was recalibrated between each experimental condition, and all recorded trials were averaged for analysis. A 2x2 (MP x clench) repeated measured ANOVA was used to determine differences between experimental conditions. There was a statistically significant main effect for jaw clenching in which clenching led to increased BSV. While clenching with the MP led to better performance than clenching without the MP, this difference was not statistically significant. Jaw clenching is an effective strategy to produce CAP

2022 Fiat Lux Presentations

and improve BSV. It may be beneficial to implement an oral appliance such as the AIRWAAV mouthpiece to facilitate a stronger clench and produce greater CAP.

Student: Davis, Jessica

Major: Political Science

Faculty Mentor: R. Bruce Anderson

Presentation Time: 2:00-2:20

Presentation Type: Oral Presentation

Room: Room 8

Title: Source Confidentiality Violations in the United States: Is it a solvable problem?

Abstract: Freedom of the press is one of the cornerstones of the United States Constitution; It was created by the founding fathers to ensure freedom and authentic information for the public. Source confidentiality is an issue that affects the world of journalism and is a constant fear of many journalists when writing large scale stories about sensitive topics. This has been a problem for quite some time now, especially with global tensions rising. Journalists fear being subpoenaed by a court to testify and reveal their confidential sources. These stories hold a great deal of public interest, and at times can lead to information that would be helpful in a legitimate investigation either on the state or federal level. There has been extensive research from several scholars on this topic, mainly in the field of law, addressing whether there should be a form of journalistic privilege under the law when it comes to court ordered testimonies. In this analysis, I will be examining potential solutions to this problem, including writing legislation, creating educational options as well as major changes to the Constitution. These options will be analyzed using a cost-benefit-risk analysis and eventually come to a final, concrete alternative that will be the optimal policy solution for this problem given what is presented.

Student: Davis, Jessica

Major: Political Science

Faculty Mentor: R. Bruce Anderson

Presentation Time: 4:00-4:20

Presentation Type: Senior Project

Room: Room 1

Title: Politics in the Lone Star State: How Have They Changed, and Why?

Abstract: The political spectrum, throughout American history, has always been fluid - never concrete; though most people in their respective parties share common core beliefs, they do not all entirely agree. Therefore, it is fair to say that the same goes for divisions between parties within the states. Both Democrats and Republicans have different beliefs once one crosses state borders. Not only this, but political issues are also changing with time and altered demographics. It can be seen within each individual state that not only are some people changing how they vote, but new voters are constantly entering the fray, sometimes upsetting what had been a relatively solid balance. There are also voters who may not have been regulars at the polls, who are attracted to vote on issues that affect them. Taking the 2020 election as an example, many states have changed the way that they have voted in recent years. One of the most prominent exemplars of this is the political alignment (or realignment) in Texas. Texas has typically been described as a solidly conservative – and therefore Republican state. Though Texas may have been won by the Republican party as was expected, it can also be seen through voting numbers that a solid right-wing vote may not always be the case. This analysis will be addressing the

2022 Fiat Lux Presentations

shifts in voting patterns of both existing and new voters, and the reasons for why this seemingly strong conservative state may be taking strides towards the left.

Student: Deckard, Danielle

Major: Spanish

Faculty Mentor: Melissa Garr

Presentation Time: 3:40-4:00

Presentation Type: Oral Presentation

Room: Room 9

Title: Roma, a Realistic Perspective

Abstract: Set in 1970s Mexico, Roma, centers on the life of an indigenous Mexican woman working as a housemaid for a middle class white family. The author and producer of the film, Alfonso Cuarón, made choices in film style as well as imagery and symbols to reflect different socio-political injustices of the time. Some examples include; the use of black and white, the everpresent silence from the protagonist, and the dynamic within the family. Cuarón's goal is that viewers will not only be touched by the story but that they will have a better understanding of the racism, classism, and sexism that wades through Mexican culture and history.

Student: Dewith, Jadin

Major: Exercise Science

Faculty Mentor: Sara Terrell

Presentation Time: 2:40-3:00

Presentation Type: Senior Project

Room: Room 3

Title: What is the Relationship Between Pitch Count, Strength, and Pain for Division II Collegiate Softball Pitchers?

Abstract: Collegiate fastpitch softball pitchers utilize an underhand pitching technique which creates high shoulder stress. Injury prevention measures, such as pitch counts, are missing in softball. Higher pitch counts may reduce strength, increase pain, inhibit proper mechanics, and contribute to higher injury risk. Yet, there is a paucity of research exploring monitoring intervention measures within Division II softball pitchers. The purpose of this study was to assess changes in isometric strength, pitch count, self-reported pain, and open and closed kinetic chain functional test performance in Division II softball pitchers at three time points: off-season, pre-season, and in season. Early monitoring strategies indicated reductions in pitching side isometric strength in key muscles that support pitching technique from off-season to pre-season measurements, but in season measurements did not continue this decline. Athletes improved performance in three functional tests but demonstrated reduced muscle endurance of the posterior chain from off-season to pre-season. These patterns continued to be seen during the competitive season.

2022 Fiat Lux Presentations

Student: Draper, William

Major: Accounting

Faculty Mentor: Celina Jozsi

Presentation Time: 4:00-4:20

Presentation Type: Senior Project

Room: Room 3

Title: An Examination of ESG Reporting in the Modern World

Abstract: ESG is the analysis of a company's environmental, social, and governance impact on itself, the surrounding community, its industry, and world. The analysis of environmental, social, and governance (ESG) factors in a company's financial statements has grown in importance to potential investors. These non-financial aspects, and standards of how to report them or account for them, are generating many questions for accounting regulators, like the Financial Accounting Standards Board (FASB) and the Security Exchange Commission (SEC). This paper will examine the benefits and issues with ESG reporting. This will be done by taking a view at how the rest of the world is handling ESG reporting through a comparison between the SEC and the International Accounting Standards Board (IASB), examining the steps that the major accounting firms are taking towards ESG reporting, and discussing the effectiveness, ineffectiveness, criticisms, and those counter arguments. This will lead to a final discussion on the real-life application of future ESG reporting and whether it should be reported in a current standard financial statement or be separately disclosed in an ancillary financial statement.

Student: Eidenschink, Emily

Major: Exercise Science

Faculty Mentor: Charles Allen

Presentation Time: 3:20-3:40

Presentation Type: Oral Presentation

Room: Room 9

Title: Profiling the NCAA D-2 Athlete

Abstract: Measurements of muscular strength, muscular power, speed, and agility are important metrics for any sports team. These measurements aid in the comparison of teams and the creation of exercise plans by strength and conditioning coaches (SCCs). There is an abundance of data pertaining to these metrics for NCAA D-I athletes due to their high performance levels. However, there is little to no published performance data for NCAA D-2 athletes like those at Florida Southern College (FSC). The purpose of our research is to aid in the creation of normative data for NCAA D-2 athletes and exercise plans by our SCCs by collecting and analyzing the performance data of all sports teams at FSC. Exercise science faculty received IRB approval and athlete consent to collect performance data during the 2019-2020 and 2020-2021 academic years. All athletes underwent performance testing administered by their SCC at the end of their sport-specific offseason. Performance tests included: jump and sprint tests, upper and lower body strength tests, and measures of height and weight. During the summer of 2021, performance data was organized and analyzed. Comparison of athlete data from FSC to NCAA D-1 data shows that FSC athletes are more comparable to D-1 athletes in lower body strength than upper body strength. Additionally, FSC athletes proved to have higher vertical jump scores than D-1 athletes. The results of our data analysis suggest that FSC SCCs work to improve upper body strength of their athletes.

2022 Fiat Lux Presentations

Student: Eisold, Annalise

Major: Accounting

Faculty Mentors: Matt Bernthal and Eric Harris

Presentation Time: 5:00-5:20

Presentation Type: Honors Proposal

Room: Room 4

Title: The Effects of Covid-19 on the Marketing of Live Ticketed Music Entertainment: How Have Politics and Policies Affected the Industry During the Pandemic?

Abstract: The COVID-19 pandemic has led to both temporary and long-lasting changes in every aspect of our lives. One industry that has been severely impacted by the pandemic is live ticketed music entertainment. Live music events are an essential part of our culture and the political ramifications of the pandemic have affected the process of re-opening these events in many ways. Government restrictions, regulations issued by venues, and the personal preferences of the artists have created numerous challenges for venues, artists, and fans. This study explores the impact of political factors, among other things, on how different locations, artists, and fans have handled issues surrounding the live music industry during the pandemic. It also explores how the politicization of COVID-19 has had behavioral and attitudinal effects on music fans, including affecting their attitude toward certain artists. Even as the pandemic seemingly wanes, its effects on the music industry are likely to have an impact for years to come.

Student: Erlanson, Linda

Major: Biochemistry and Molecular Biology

Faculty Mentor: Carmen Gauthier

Presentation Time: 1:20-1:40

Presentation Type: Oral Presentation

Room: Room 8

Title: Investigating Zinc Metal Organic Materials with the Potential Application of Drug Delivery

Abstract: Metal Organic Materials (MOMs) are formed by metal ions and organic linkers and can be 1, 2, or 3 dimensional structures. These MOMs are open networks with permanent porosity, and have a wide range of applications from drug delivery to gas storage for energy purposes. This research will discuss the synthesis and characterization of MOMs using various zinc salts and terephthalic acid/2-aminoterephthalic acid in an attempt to synthesize compounds similar to MOF-5 reported in the literature.

Student: Fernandez, Emalisse

Major: Nursing

Faculty Mentor: Christy Skelly

Presentation Time: 1:20-1:40

Presentation Type: Senior Project

Room: Room 2

Title: Overlooked and Underdiagnosed: Paternal Postpartum Depression

Abstract: Postpartum depression (PPD) is a large focus of care in the medical field, especially related to women's health, but there is little research related to men. Most studies thus far have focused on the mother, leaving paternal PPD underscreened and underdiagnosed, even when it is significantly higher in men whose partners are also suffering from postpartum depression. To date, there is a limited number of findings and studies in the United States related to paternal PPD, and there is no specific screening tool

2022 Fiat Lux Presentations

or set of criteria targeted towards diagnosing it. An extensive literature review of 15 studies was conducted on paternal postpartum depression, its signs and symptoms, screening tools, prevalence, impact, and implications for healthcare practices. An adaptive twelve-question survey was also created to collect medical professionals' screening methods, follow-up procedures, and knowledge about paternal PPD. The survey was distributed utilizing the convenience sample methodology via social media platforms. This study aimed to survey the current screening practices of medical professionals who provide direct care to children up to one year of age and their parents. 106 valid responses were recorded. One participant reported screening practices were currently in place for fathers in the postpartum period. In addition, 10 participants indicated they did not believe paternal postpartum depression was a significant disorder and 72 individuals revealed they were not taught about paternal PPD at all during their time in their educational program. These findings indicate a gap in current education and screening practices regarding paternal postpartum depression.

Student: Fox, Catherine

Major: Marine Biology

Faculty Mentor: Melanie Langford

Presentation Time: 1:20-1:40

Presentation Type: Senior Project

Room: Room 1

Title: Identifying the Skin and Gut Microbiome of Two Shark Species in Tampa Bay, Florida

Abstract: A microbiome is composed of a microbial community, including bacteria, archaea, fungi, and algae, occupying a defined habitat and includes the microbial structures, DNA, and other properties of the microorganisms. Shark microbiomes may hold the key to understanding some unique processes and abilities, such as the ability to digest large amounts of seagrass as observed in bonnetheads *Sphyrna tiburo*, and the capacity to recover quickly from skin injuries as documented in blacktip reef sharks *Carcharhinus melanopterus*. Previous microbiome studies in sharks have been limited to a few specific anatomical locations including the skin, gills, teeth, and gut. Gut microbiome studies often require dissection of dead sharks, but our study is one of the first to identify microbial species from the gut and skin of live, wild sharks using minimally invasive techniques. We collected microbial samples from the skin and cloaca of 4 bonnetheads *Sphyrna tiburo* and 25 bull sharks *Carcharhinus leucas* from June-August of 2021 in Tampa Bay, though we were limited from late June to early July due to an unexpectedly severe red tide event. We then used culture-independent techniques to identify microbial species present by performing DNA extraction and sending off the samples for metagenomic sequencing. This study is one of the first to identify microbial communities collected via cloacal and skin swabs in these three species. Our results provide a baseline of information that may give us a better understanding of how the microbiome affects processes unique to sharks, contributing to the growing body of knowledge involving host-microbiome interactions.

2022 Fiat Lux Presentations

Student: Francey, Eva

Major: Psychology

Faculty Mentor: Leilani Goodmon

Presentation Time: 2:20-2:40

Presentation Type: Senior Project

Room: Room 3

Title: It's a Cis World: Effect of Gender Identity, Social Media/Physical Presentation, and Type of Employment Status on Likelihood of Being Promoted/Hired

Abstract: Current literature suggests that learned stereotypes may contribute to the development of certain attitudes/preferences toward gender conformity and nonconformity, where gender conformity is more praised/accepted (Boyce & Herd, 2003; Brescoll et al, 2010; Dozier, 2017; Embry, 2008; Heilman, 2012; McDowell, 2015; Ritter & Yoder, 2004; Swim et al, 2019). Additionally, regarding LGBTQ+ literature, there is some research on LGBTQ+ discrimination within the workplace and transgender discrimination overall (Tabaac et al, 2018; Harrison & Michelson, 2019; Losty & O'Connor, 2018; Waite, 2020; Priola et al, 2014; Dietert & Dentice, 2009; Van Borm & Baert, 2018; Mizcock et al, 2018; Schilt & Connell, 2007). However, there is a gap regarding nonbinary research, specifically in the workplace. The current study formed a 2 x 3 x 3 between-subjects factorial design with type of employment status (decision to hire, decision to promote), social media/physical presentation (stereotypically masculine, stereotypically feminine, and androgynous), and gender identity (cis female, cis male, and nonbinary) as the between-subjects factors and likelihood of being hired or promoted as the dependent variable. With these measures, I analyzed participants' perception of the hireability or promotability of the job candidate based on their resume or performance appraisal respectively (with the contents of their social media as supplementary material in the promotion or hiring process).

Student: Freijo, Kira

Major: Psychology

Faculty Mentor: Melanie Fowler

Presentation Time: 5:00-5:20

Presentation Type: Senior Project

Room: Room 2

Title: Conceal, Don't Reveal: The Effect of LGBTQ+ College Students Hiding Their Identity

Abstract: A concealable stigmatized identity (CSI) is an identity that has been stigmatized historically, but is not immediately visible to others, and therefore can be concealed (Quinn & Earnshaw, 2013). Many people with CSIs are motivated to conceal their identity to avoid stigma, but this action is significantly associated with higher levels of depression and generalized anxiety, reduced positive affect, and increased negative affect (Feinstein et al., 2020; Mohr et al., 2019). College students are under a lot of stress in general (Saleh, Camart, & Romo, 2017) and college students with CSIs experience additional stressors which can negatively affect their college experiences. This study researched the relationship between concealment factors of LGBTQ+ college students and their academic performance and college involvement. Information will be presented about LGBTQ+ college students and their level of outness, experience with discrimination, amount of internalized stigma, academic performance, and involvement at their college.

2022 Fiat Lux Presentations

Student: Giddens, Emily

Major: Business Administration

Faculty Mentor: R. Bruce Anderson

Presentation Time: 3:20-3:40

Presentation Type: Oral Presentation

Room: Room 8

Title: Health: At What Cost

Abstract: U.S Healthcare costs have continued to increase in recent years making it next to impossible for Americans to receive the treatment they need. In 2019 one in four Americans expressed having difficulty paying for medical expenses (Kff.org, Kearney, 2021) while a recent study indicates that 44% of Americans refused to see a physician when sick or injured within the last year due to the cost of treatment. When healthcare cannot be afforded, individuals go on being ill, which has dire economic and social consequences. Society and the economy alike are bearing the weight of an unwell population for a sole reason: cost. Combating rising healthcare costs through policy initiatives is of the utmost importance if the United States is to achieve a healthier populace. Whether this is achieved through universal healthcare or public health initiatives, some form of economical and timebound healthcare reform is required.

Student: Goll, Alayna

Major: Exercise Science

Faculty Mentor: Sara Terrell

Presentation Time: 3:00-3:20

Presentation Type: Senior Project

Room: Room 3

Title: Nutrition Knowledge and Dietary Habits in Female Collegiate Cross Country Runners

Abstract: Introduction: High dietary quality is important for athletic populations because it may reduce nutritional deficiencies. Female cross country runners are often at risk for deficiencies in key nutrients, such as iron and calcium. Athletes' nutrition knowledge has been shown to influence their selection of higher quality foods. However, the relationship between nutrition knowledge and dietary practices in female collegiate cross country runners remains unclear. Purpose: To explore the relationship between sports nutrition knowledge and dietary behavior in collegiate female runners. Methods: Female cross country athletes (n=13) from Florida Southern College completed a 30-item sports nutrition knowledge questionnaire, testing their knowledge of the following: energy intake, macronutrients, and micronutrients. Participants then recorded their food intake for 3 non-consecutive days (within a 1-week time frame). Results were entered into an online dietary tracker, which sorted daily food intake into different nutrient categories. Trends observed within athletes' nutrition knowledge and dietary habits were analyzed. Results: Preliminary results indicate athletes scored at an average (75%) level in sports nutrition competencies, with better understanding of macronutrients versus micronutrients. The food log analysis indicated the majority of runners' diets were deficient in several key nutrients. Conclusions: Athletes minimally achieved the standard for adequate nutrition. Nutrient intake appeared low for most nutrients, regardless of knowledge. These nutrient deficits may impair performance and exacerbate injury risk. Future studies may explore educational interventions that facilitate better dietary practices in athletes.

2022 Fiat Lux Presentations

Student: Gomez, Natasha

Major: Political Science

Faculty Mentor: R. Bruce Anderson

Presentation Time: 4:40-5:00

Presentation Type: Oral Presentation

Room: Room 8

Title: Restoring Refuge: U.S. Mental Health Care for Asylum-Seekers & Refugees

Abstract: Abstract: This paper explores the lack of mandated U.S. immigration health policies that address mental health needs among asylum-seekers and refugees. As assessed, improper mental health support hinders the ability of migrants to prosper in their resettled American homes. These groups of migrants contribute positively to society. Still, they cannot reach their full potential due to the ineffective mental health screenings and corresponding treatment that impede their quality of life. The United States legally permits the admissions of asylum-seekers and refugees into the country as a form of humanitarian aid to those who exhibit the inability and unwillingness to return to their native soil due to well-founded fear of persecution. The oppression asylum-seekers and refugees experience is commonly rooted in one's race, religion, nationality, social membership, or political opinion. In pursuit of sanctuary, asylum-seekers and refugees are exposed to various stress factors that negatively impact their mental health and overall well-being. Asylum-seekers and refugees face life-threatening challenges throughout the migration process at multiple stages: pre-migration, migration travel and transit, post-migration, integration, and settlement. These migrants lack access to U.S. mental health services and struggle to receive a continuing form of care. The recommended policy response and implementation to this growing crisis are discussed. Keywords: asylum-seekers, refugee, mental health, trauma, protection.

Student: Gregoire, Amanda

Major: Biology

Faculty Mentors: Allison Durland Donahou and Gabriel Langford

Presentation Time: 4:00-4:20

Presentation Type: Honors Proposal

Room: Room 5

Title: Influence of Size, Sex, and Location on Parasite Load of Invasive Tilapia in Five Lakeland Lakes

Abstract: Parasite load in freshwater fish can often be an indicator of water quality and ecosystem health. Invasive freshwater tilapia species in Lakeland serve as hosts to numerous types of parasite. By removing and dissecting fish from different locations in Lakeland, parasite load and species distribution can be analyzed and potentially correlated to size and sex of the host fish, providing insight into conditions in freshwater locations and possible preventative measures.

Student: Hallmark, Nathan

Major: Applied Mathematics and Statistics

Faculty Mentor: Jason Elsinger

Presentation Time: 3:40-4:00

Presentation Type: Senior Project

Room: Room 2

Title: On the Difference of Two Numbers Raised to the Same Exponent

Abstract: In mathematics, systems are often complex, requiring great amounts of work to fully solve. To combat this, mathematicians often employ the strategy of imposing constraints on the system. This work uses this strategy in relation to the difference of two numbers raised to the same power. The two

2022 Fiat Lux Presentations

base numbers are given the constraint of only having a difference of one, leading to the formulas that describe the resulting patterns. One of the more popular topics that arise from this is the use of Pascal's Triangle to highlight patterns among appearing binomial coefficients. The formulas resulting from this work can be applied to several topics in number theory problems, including the sum of three cubes, congrua, and Pythagorean triples, as well as Mersenne Primes. In addition to preliminary applications, some of the pure mathematics needed to prove these formulas, including combinatorics and mathematical induction, are discussed. In order better visualize the work, Minecraft is used as a way to display the simplest cases. Finally, as an overarching theme, this research exemplifies what mathematicians can do with a single pattern and unquenchable curiosity.

Student: Honma, Ashlynn

Major: Biochemistry and Molecular Biology

Faculty Mentor: Shameka Shelby

Presentation Time: 2:40-3:00

Presentation Type: Oral Presentation

Room: Room 6

Title: The Development of a Novel and Biological Chitosan Hemostat to Treat Postoperative Oral Surgery Patients

Abstract: Wisdom tooth extractions account for more than half of the most performed oral surgeries on adults. Nearly one-fifth of this population will suffer from postoperative complications including excessive bleeding, infection or dry socket. Current postoperative treatments including stitches and gauze are insufficient at addressing many of these common complications. Therefore, there exists a need for the development of a novel hemostatic agent that can mitigate the scope of impact of these issues. This research aims to develop a novel chitosan hemostatic agent that is integrated with the antibiotic, Ciprofloxacin, using EDC cross-linking due to its efficient reaction time under room temperature. It is expected that the product will be a semi-solid polymer that can potentially be injected into the empty tooth socket in order to absorb excessive bleeding, protect exposed bone, and actively prevent and treat oral infection post operation while still maintaining structural stability over the healing period. UV-Vis spectrophotometry will be used to measure the long-term prophylaxis capabilities of the synthesized polymer in the UV-spectrum.

Student: Hydock, Evan

Major: Political Science

Faculty Mentor: Kelly McHugh

Presentation Time: 2:40-3:00

Presentation Type: Honors Proposal

Room: Room 4

Title: The Ethics of Targeted Killings

Abstract: The revelation of new technology and innovation has accompanied a wave of ethical and moral questions; medical breakthroughs, surveillance, artificial intelligence, and autonomous technology are just some of the industries that have experienced intense scrutiny. However, one field that is often ignored is also one of the only spaces where the killing of humans is sanctioned as righteous and necessary: the battlefield. However, war as we know it has changed – it's not what it used to be. Since the dawn of the new century the United States has engaged in a campaign of targeted killings. This loosely defined term refers to the premeditated and intentional assassination of individuals, typically in

2022 Fiat Lux Presentations

the context of an armed conflict. The events of the 9/11 attacks and the ensuing war on terror have made targeted killings, whether done via drone strikes above or raids on the ground, a practical and effective tool. As war continues to evolve and targeted killings are used more frequently, we, as a nation, must meet this unparalleled moment in history with an equally measured response. The following research seeks to define targeted killings, identify the pros and cons of targeted killings in its various forms, review case studies of specific targeted killings, evaluate the ethics of targeted killings from a theological perspective, and present a framework to help us understand when, if at all, targeted killings would be an appropriate course of action for the United States to take.

Student: Izadi, Lillee

Major: Biology

Faculty Mentor: Christopher Brandon

Presentation Time: 4:40-5:00

Presentation Type: Senior Project

Room: Room 2

Title: Identifying the Functional Properties of Arthropsin in Daphnia

Abstract: Arthropsin is a newly discovered protein subtype in the rod cells of certain arthropod species, including those in the planktonic crustacean genus, Daphnia. Although its function has not been completely elucidated, previous literature has implicated its possible nonvisual functions in olfactory sensation, chemosensation, and/or circadian rhythm. Thus, this project focused on pinpointing the functional properties of arthropsin by exposing two species of Daphnia, *D. magna* and *D. pulex*, to high-light and dim-light conditions. Additionally, we compared the relative expression of arthropsin genes in the head and the body. In doing this, we theorize that arthropsin holds a greater function in circadian rhythm and will be most highly expressed in the head portion of both species under dim-light conditions.

Student: Jacob, Noelle

Major: Chemistry

Collaborators: McKinley Miller and Valentina Montoya

Faculty Mentor: Erica H. Bernheim

Presentation Time: 3:40-4:00

Presentation Type: Oral Presentation

Room: Room 7

Title: ENG 2023: The Revision Process of Literary Work

Abstract: Writing different pieces of literature is a long process that consists of multiple steps. One of the larger steps is the revision process. By presenting a piece I have written I plan to show how revision can occur and how to handle that criticism from teachers and peers when fixing your work. (I am doing this presentation as part of a larger presentation and will need to be scheduled back to back with the other two honors ENG 2023 students presenting)

2022 Fiat Lux Presentations

Student: Jarrett, Morgan

Major: Marine Biology

Collaborator: Chloe Potts

Faculty Mentor: Philip Gravinese

Presentation Time: 2:40-3:00

Presentation Type: Oral Presentation

Room: Room 7

Title: Do pH Variable Habitats Provide Refuge for the Florida Stone Crab from Coastal Acidification?

Abstract: Anthropogenic inputs, like organic-based runoff, along with seasonal precipitation changes and daily respiration and photosynthetic processes can cause diurnal variability in seawater pH within many coastal habitats. Marine organisms that experience this variability in pH may be better acclimatized to tolerate future extremes in seawater acidification. The Florida stone crab is a commercially important species in Florida valued at \$30 million dollars annually. Previous research has shown that stone crab hatching success and larval survival can be reduced under end-of-century pH scenarios. Here, we tested if stone crabs from pH variable habitats within Tampa Bay may be better acclimatized to tolerate future extremes in seawater pH. We placed ovigerous stone crabs into either sandy habitats seagrass habitats to determine if embryo development time and hatching success improved under end-of-century pH scenarios. Ovigerous stone crabs underwent embryogenesis in both sandy and seagrass habitats and extrude a new egg mass before being brought back to the Florida Southern College experimental ocean acidification system. Ovigerous crabs were then held in either the control (pH = 8.0) or lower pH (pH = 7.7) treatment for the duration of their embryo development. All stone crabs were then monitored for embryo development time and hatching success. Crabs conditioned in the seagrass site then placed into the low pH treatment experienced a hatching success of 76%. This suggests that the diurnal variability experienced in local seagrass habitats may serve as a potential refugia habitat for the stone crab as coastal habitats continue to acidify.

Student: Keene, Grace

Major: Psychology

Faculty Mentor: Joe Ligato

Presentation Time: 2:20-2:40

Presentation Type: Oral Presentation

Room: Room 7

Title: How One “Big Five” Trait Fits into the Business Environment

Abstract: Personality testing can be a highly effective method of worker evaluation in the hiring and promoting functions of any organization. Finding someone who is the right fit for a particular position can launch a new business on a trajectory towards success, or maintain a quality reputation. One of the most well-known and widely used methods of personality assessment is the Big Five Personality Test. The methodology of the main data set examined in the research process involved a survey using free responses to six statements to assign participants numerical scores for each dimension of the Big Five Personality Test and the Holland code. This presentation will focus solely on the openness to experience trait, and an exploration of how high levels of this trait impact enterprising careers. The developed hypothesis is that higher scores on the Big Five personality trait of openness to experience will have a positive correlation with the Holland Code dimension of enterprising. Analysis of the data set shows the correlation between the two variables to be statistically significant. Similar research on these variables support the findings as well.

2022 Fiat Lux Presentations

Student: Kellar, Victoria

Major: Biochemistry and Molecular Biology

Faculty Mentor: Shameka Shelby

Presentation Time: 3:00-3:20

Presentation Type: Honors Proposal

Room: Room 5

Title: NSAID-Releasing Hemostatic Gelatin for Post-Surgical Applications

Abstract: Non-steroidal anti-inflammatory drugs, NSAIDs, are becoming increasingly popular analgesics due to their lack of addictive properties and ability to treat inflammation. Localized delivery of NSAIDs can help minimize adverse effects such as gastrointestinal complications while also enabling more steady delivery. The potential of conjugating NSAIDs with a hemostatic agent can be paramount in reducing inflammation at the surgical site and aid the healing process. Hemostatic agents are used post-operatively to control bleeding at the surgical site. Gelatins serve as advantageous hemostats because of their ability to be absorbed, their flexibility, and commercial producibility. Conjugating such gelatin hemostats with NSAIDs can load significant amounts of drug for slow, controlled release ultimately addressing inflammation, infection, and pain, while also reducing the toxic side effects NSAIDs can have when administered systemically. To achieve this, NSAID-gelatin conjugates will be generated and data will be collected to analyze release profiles of how much of the drug is released over time. Also, the efficacy of the drug once it is released will be assessed as well as cell viability, and the overall success, efficacy, and safety of the conjugates. Conclusively, generation of successful conjugates can improve outcomes of post-surgical recovery in a myriad of fields.

Student: Kinker, Simran

Major: Political Science

Faculty Mentor: R. Bruce Anderson

Presentation Time: 4:00-4:20

Presentation Type: Oral Presentation

Room: Room 8

Title: The U.S Pharmaceutical Industry: Policy Analysis of Rising Drug Prices and Excessive Profits

Abstract: This paper will analyze the current policy issues that are driving high drug prices and will argue that these profits are unfair under profit theory because the policies in place run contrary to the ethical considerations they were built upon, which are pharmaceutical innovation and overall welfare for consumers. Furthermore, these IP protection laws, federal patents, and grants, create an economic structure for the pharmaceutical industry that edges on monopolistic, with unjustifiable profit margins in comparison to research and development costs (R&D). Some argue that these high costs are justified by the high costs of R&D, however major pharmaceutical companies have used grants to cover a high amount of these costs and actively curtail an open and competitive industry by implementing strategies to use the current policies in place to increase profit, with little to no attention to consumer needs and pharmaceuticals innovation. This paper will analyze the current policies in place and examine alternatives of price ceilings, changes to the IP protection policies and patent practices currently in place, aiming to find policies that promote the entry of generic drugs and decrease overall drug expenditures in the U.S.

2022 Fiat Lux Presentations

Student: Kinstler, Jill

Major: Biology

Faculty Mentor: Brittany Gasper

Presentation Time: 1:40-2:00

Presentation Type: Honors Proposal

Room: Room 5

Title: Determining the Presence of Antibiotic Resistance Genes and Capability of Spread in the Commercially Available Probiotic *Streptococcus Thermophilus*

Abstract: Probiotics are live microorganisms that can be digested through food products and may provide health benefits to the human digestive system. *Streptococcus thermophilus*, a type of probiotic found in food products, is known for assisting with food breakdown, absorbing nutrients, and improving/restoring gut flora. Because probiotics are used as a preventative method of medicine, rather than used as a therapeutic medication, some consider probiotics to be the opposite of antibiotics. Additionally, antibiotics are used to destroy bacteria, whereas probiotics are bacteria that stimulate the immune system to defend itself from pathogens. However, an antibiotic resistance crisis is currently occurring due to the overuse and misuse of antibiotic medications, giving bacteria the ability to develop immunity against medications that were designed to kill them. I will be performing research to assess whether *S. thermophilus* found in common food products possesses antibiotic resistance. To determine *S. thermophilus* susceptibility to different antibiotics, I will isolate *S. thermophilus* from Greek yogurt and perform a Kirby Bauer disk diffusion assay. From there, the project will expand to identify the genes providing antibiotic resistance and if these antibiotic-resistant genes can be transferred to other organisms through conjugation. Should there be no antibiotic resistance of *S. thermophilus*, an antibiotic susceptibility survey of other probiotic bacteria will be performed.

Student: Koch, John

Major: Political Science

Faculty Mentor: R. Bruce Anderson

Presentation Time: 4:20-4:40

Presentation Type: Oral Presentation

Room: Room 8

Title: Flooding in New England: A Triple Threat

Abstract: This paper details the need for a solution to the increasing frequency of flooding in the northeast region of the United States. Flooding has been shown to be increasing in this area more than anywhere else within the country. The rate of flooding is becoming a problem that will prove incredibly difficult to solve if the solution is not begun now. Multiple reasons for this problem have been theorized and laid out. The potential solutions for this problem have also been laid out in the paper. Flooding is an issue that has been seen and attempted to be solved in areas where it occurs frequently. Events such as the Mississippi delta flooding in New Orleans and the approach that was used have been taken into account throughout the process of the research and writing of this paper. After conducting research, it was concluded that funding will be one of the biggest issues against the solution. When researching it was found that repair costs and installation costs of some of the barricade type structures are quite high and would prove challenging to raise funds for these reasons. Primarily, it is concluded that the better management of spillways as well as coastal walls in the weaker more threatening areas are the most effective solution for the problem that this paper addresses. Preemptive action is one of the better approaches when addressing this issue because of how much the issue and cost increases after a flooding event occurs.

2022 Fiat Lux Presentations

Student: Kruse, Carter

Major: Accounting

Faculty Mentor: James Farrell

Presentation Time: 3:00-3:20

Presentation Type: Honors Proposal

Room: Room 4

Title: The Need for Financial Literacy Education in High Schools

Abstract: I will be presenting why financial literacy courses are needed for high school students and the effect they have on student's financial outlook post-graduation. My research will focus on different subgroups of high school students based on criteria such as: further education, parental education, and socioeconomic status of the students pre- and post-graduation. In addition to reading published research articles, I plan to speak with both teachers and administrators in Polk County to gather data regarding their thoughts about students' access to financial literacy courses. As of this past week, Governor Ron DeSantis passed a bill mandating Florida schools have students pass a financial literacy course to graduate from high school. My plan is to look into the curriculum and discuss it with teachers and administrators in Polk County. I plan to compare the proposed Florida curriculum to mandated financial literacy course curricula in other states. The primary comparison will be with states and districts with the highest levels of financial literacy as to articulate how to better both Florida's and the nation's financial literacy programs that have been and have yet to be implemented.

Student: Kurek, Stephen

Major: Political Science

Faculty Mentor: R. Bruce Anderson

Presentation Time: 5:00-5:20

Presentation Type: Oral Presentation

Room: Room 8

Title: Reinventing Airhub Travel to Fit America's Future

Abstract: This paper deals with the increasing need for concrete long term funding that is found at major airports with capacity constraints. This is a problem that is primarily rooted in large airports with complex revenue streams, and where necessary upgrades and renovations have been put off due to funding issues in recent decades. There are a number of causes laid out within the paper that categorize the problems facing these airports, and a number of solutions have been analyzed. This includes analysis into the individual improvement projects planned at major airports, and how new solutions could be found to fund these improvements as airports deal with a growing number of travelers every year. The primary issue regarding these methods is that the overall charge that would be levied against travelers might be seen as too high, and the investment of federal dollars into commercial projects may be seen as a waste of government resources even if it effectively increases an airport's local revenue, additionally the problems caused by Transportation Network Companies (TNC) and their impact on the individual revenue of airports is analyzed. The paper concluded that coordinating new revenue streams from TNC's, and allowing taxes or additional fees for things like baggage handling, are both politically viable methods of increasing air-infrastructure investment.

2022 Fiat Lux Presentations

Student: Lacefield, Brayden

Major: Political Science

Faculty Mentor: R. Bruce Anderson

Presentation Time: 2:20-2:40

Presentation Type: Oral Presentation

Room: Room 8

Title: Dollar'd To Death: Stopping Financial Exploitation

Abstract: Approximately 25% of Americans are classified as unbanked or underbanked. These people often have to turn to alternative financial services including payday lenders, check cashing services, prepaid debit cards, or money order suppliers and these alternative services come at high costs to these already vulnerable consumers. These fees add up to nearly \$189 billion being paid by low to moderate-income Americans who already struggle to pay for basic necessities, much less these predatory fees. By being exploited by these burdensome fees, these people are trapped in a cycle of poverty that few are able to escape from. Money that could be spent buying school clothes for their children, pay for their electric bills, or go towards the rising price of gasoline for their cars so they can get to work- the money goes straight from their paychecks into the pockets of these financial predators. This project seeks to find a public policy solution that will decrease the fees paid by at least ten percent, saving these hardworking Americans money, and helping to give them a fighting chance to succeed.

Student: Lacefield, Brayden

Major: Political Science

Faculty Mentor: Anna Caney

Presentation Time: 3:00-3:20

Presentation Type: Senior Project

Room: Room 1

Title: It Gets In Your Blood: Inside the Secret Brotherhood of Moonshining

Abstract: Deep in the mountains of Appalachia, a secret brotherhood of moonshining has existed for over a century. Striving to make ends meet for their families, these Americans found themselves living outside the law to handcraft untaxed, unaged alcohol traditionally distilled from corn and grain in copper pot stills to be sold by moonlight to keep away from law enforcement's prying eyes. A century has passed since the nationwide prohibition on alcohol was enacted in 1920 and the exoticism of moonshine has grown stronger with the rise of legal craft distilleries throughout the region. Seeking to understand the history and evolution of moonshining from a backwoods trade to a multimillion dollar industry, It Gets in Your Blood goes outside of typical scholarly research to dissect moonshining from those who have made their living in the trade. With interviews from legends of the moonshining world as well as court transcripts- this project aims to document this piece of American heritage by distilling these oral history interviews into a pure history of moonshining in Appalachia from 1920-2020.

2022 Fiat Lux Presentations

Student: Lake, Meaghan

Major: Biology

Faculty Mentor: Nancy Morvillo

Presentation Time: 1:40-2:00

Presentation Type: Senior Project

Room: Room 3

Title: Functional or Just Plain Pretty? A Reevaluation of Bacterial Pigment Activity

Abstract: *Serratia marcescens* and *Chromobacterium violaceum* are both gram-negative opportunistic pathogenetic bacteria that produce the pigments prodigiosin and violacein, respectively. These secondary metabolites have been demonstrated to act as antibiotic compounds effective against pathogenic bacteria, which could be of future therapeutic importance. In this study, the pigments were purified environmental samples of *S. marcescens* and *C. violaceum* previously identified as antibiotic producers. These pigments were tested for antibiotic activity under three conditions: individually, together, and in combination with the antibiotic neomycin. No antibiotic activity or enhancement of neomycin was seen in either pigment. Efforts to reactivate the antibiotic production included altering the growth conditions for *S. marcescens* and *C. violaceum* and challenging these bacteria with other competing bacterial species. While pigment production was robust, antibiotic activity was not restored. These results demonstrate that the pigment alone does not induce bacteriostatic or bactericidal properties, indicating other cofactors may play a role in antibiotic production within the bacteria. Keywords: Prodigiosin, violacein, antibiotics, secondary metabolite

Student: Lassiter, Lauren

Major: Political Science

Faculty Mentor: R. Bruce Anderson

Presentation Time: 3:40-4:00

Presentation Type: Oral Presentation

Room: Room 8

Title: Voting Access in Georgia

Abstract: In recent years, state legislatures have dramatically increased the number of bills regarding voting access. Specifically, the state legislature of Georgia passed the “Election Integrity Act of 2021” in an effort to combat alleged voter fraud related to an increase in mail-in voting. Many studies conducted across the country have shown recent voting legislation has significantly impacted the voting access of black communities more than the rest. In order to determine the disproportionate impact of voting access legislation on different communities, I utilize a regression to examine the effects of these restrictive laws implemented in the state of Georgia over the past few election cycles. The findings are consistent with the trends across the country of decreasing the access of black voters to the polls. Moreover, I discuss possible actions to combat the inequality in voting access of black voters in the state of Georgia.

2022 Fiat Lux Presentations

Student: Lassiter, Lauren

Major: Political Science

Faculty Mentor: Anna Caney

Presentation Time: 4:20-4:40

Presentation Type: Senior Project

Room: Room 1

Title: Destruction of Cultural Sites: A Historical Analysis

Abstract: Culture is defined as the customs, arts, social institutions, and achievements of a particular notion, people, or other social group. The culture of a society is often regarded by its members as their most prized possession and their greatest asset. However, because of their importance, destruction of cultural and historical sites has become a common weapon of war. Through historical analysis and 3D printing, I examine the destruction of cultural and historical sites in Europe and the Middle East to explore the motives behind the actions of the destroyers, as well as the history that is now lost. Additionally, I analyze possible policy actions that can combat this exponentially growing trend of war.

Student: Leah, Natalie

Major: Studio Art

Faculty Mentor: William Otremsky

Presentation Time: 1:20-1:40

Presentation Type: Honors Proposal

Room: Room 4

Title: The Relationship Between Character and Design

Abstract: My presentation will feature a collection of my original artwork that centers on the concept of relationships. I have been developing a series of three stories that will allow me to showcase my range in storytelling and character design, with each one centered on a different type of relationship. The pieces incorporated in this presentation will be used as my professional studio portfolio for job applications.

Student: Lewis, Naomi

Major: Accounting

Faculty Mentor: Manie Spoelstra

Presentation Time: 3:40-4:00

Presentation Type: Honors Proposal

Room: Room 5

Title: Overtourism in Japan: Achieving Profitable, but Sustainable Tourism

Abstract: Prior to the pandemic, the international tourism industry thrived and had many positive impacts, contributing to both GDP and employment opportunities. However, overtourism is also a rising issue as shown by the negative impacts of the economic dependence of host communities on tourism and the value of profit over respect to local culture and customs. Through my proposal, I intend to identify the socioeconomic consequences of overtourism and to evaluate proposed solutions to overtourism by using Kyoto, Japan as a prime example of an overtourism-afflicted region to answer my research question: What is a profitable and sustainable solution and/or business strategy that can effectively address global overtourism? I will be translating Japanese articles and interviews, using data provided by the Kyoto City Tourism Association, and possibly conducting surveys on Japanese social media.

2022 Fiat Lux Presentations

Student: Lynch, Katherine

Major: Political Science

Faculty Mentor: R. Bruce Anderson

Presentation Time: 1:20-1:40

Presentation Type: Oral Presentation

Room: Room 9

Title: Cyber-Security

Abstract: Cybercrime is a concern for many people because of the rapid advancements in technology. As technology advances, the security systems to safeguard it and its users become less effective. In turn, the likelihood of cybercrime increases. Internet users can learn more about the dangers of a specific web site's content by enhancing security and implementing blockchain technology. As soon as users register for an account, it is the only way to obtain their personal information. Attempts by cybercriminals to gain access to the website we built ourselves have been made. If we have a blockchain and control access to it, our way of life and cybersecurity will be safe. The most important thing is to avoid security breaches by taking proactive actions. Computer systems that prevent harmful hackers from gaining access are a fundamental necessity.

Student: Lyons, Anna

Major: Chemistry

Faculty Mentor: Deborah Bromfield Lee

Presentation Time: 4:00-4:20

Presentation Type: Oral Presentation

Room: Room 6

Title: Synthesis of Cortisol Derivatives and Computational Evaluation of a Cortisol Derivative Library Against Glucocorticoid Receptor

Abstract: Muscular disorders impact roughly 1 in 2 adults in the United States alone. While many of these disorders only have minor impacts, some have major side effects and can cause a lack of muscular development. To assist in the muscular growth of these impacted individuals, glucocorticoids have been used to stimulate the previously inactive non-genomic metabolic pathways. Many of the cortisol derivatives used (e.g. prednisone and locoid) have major side effects. The efforts within these proposed methods hope to synthesize cortisol derivatives that might be used as a treatment method for those afflicted with muscular disorders that do not cause major side effects. Spectral analysis such as IR and NMR will be used to evaluate the structures of these cortisol derivative structures in addition to yield and Green Chemistry metrics. In addition to synthesis of a few derivatives, computational studies will be evaluated with the use of Molecular Docking to explore the binding of a library of derivatives to the 1P93 glucocorticoid receptor paying close attention to GLN-642, ASN-564, CYS-736, and THR-739 binding regions. This analysis will examine the theoretical effect of structural changes on the corticoid structure. Additionally, Computational QSAR data will be evaluated.

2022 Fiat Lux Presentations

Student: Mahnke, Alexandra
Faculty Mentor: Sara Terrell
Presentation Time: 1:40-2:00
Room: Room 7

Major: Exercise Science
Presentation Type: Oral Presentation

Title: Exploration of Pilates as an Exercise Intervention to Improve Balance in Multiple Sclerosis Patients

Abstract: Multiple Sclerosis (MS) is an inflammatory, autoimmune disease of the central nervous system. It is a result of the body's immune system attacking the brain and spinal cord through demyelination. This is a process in which myelin sheaths, the insulating layer surrounding nerves, become inflamed and scarred. Consequently, this impedes the ability of the nerves to transmit messages throughout the body. MS results in debilitating symptoms that negatively impact multiple facets of life, with balance impairments being of the most severe. Thus, finding an effective treatment option is requisite to improve quality of life for patients with MS. In addition to general health benefits, exercise has shown positive outcomes on reducing the severity of MS symptoms. A specific modality of exercise is Pilates, which is a series of exercises focusing on whole-body movement through postural control, strength, flexibility, breathing, and body awareness. Due to these areas of emphasis, Pilates may be beneficial for treating disabling symptoms in persons with MS. Recent research has exemplified the success of Pilates as a treatment strategy, for it targets numerous aspects of MS, such as balance, fatigue, depression, cognition, and physical functionality. Therefore, the purpose of this presentation is to outline key components of MS and examine the effectiveness of Pilates on balance as an intervention for treatment and management of the disease.

Student: Marshall, Rowan
Faculty Mentor: Jason Macrander
Presentation Time: 4:20-4:40
Room: Room 5

Major: Marine Biology
Presentation Type: Honors Proposal

Title: Science Communication Through a Blog: A Case Study with the Journal of Integrative and Comparative Biology

Abstract: Science Communication is a quickly growing field as misinformation about science is being spread faster than ever. The Covid-19 pandemic has especially exposed the need for better communication between scientists and the general public. Research on science communication techniques is limited which means that it is hard to know what is effective for disseminating correct information. In my research project I plan to work with the Journal of Integrative and Comparative Biology on improving their science communication techniques. I will be focusing on their blog website and the people that different blog posts reach. I will be analyzing data about the traffic on the blog posts, including metrics such as how many people visited the site, how they got to the site (Social Media, Google Search, etc.), and the amount of traffic on the site over the course of a year. I will also be implementing changes to the site and the ways the blog posts are promoted and then analyzing the changes to see if they lead to improved traffic numbers. I plan to focus on three areas of communication: the format of the blog, the social media site with the most visitors, and the types of blog posts that are being published. My analysis of the data will lead to a better understanding of the effectiveness of the science communication techniques that I used.

2022 Fiat Lux Presentations

Student: Marusko, Benjamin

Major: Biology

Faculty Mentors: Jarrod F. Eubank and Melanie Langford

Presentation Time: 2:20-2:40

Presentation Type: Senior Project

Room: Room 2

Title: Analysis of Metal-Organic Framework Stability, Antimicrobial Properties, and Dental Applications

Abstract: The focus of this Honors Senior Research Thesis is the biomedical application of metal-organic frameworks (MOFs). Previous research has shown these frameworks (and/or their components) have the potential for antimicrobial properties, and we hypothesized that they may be used on dental implants to inhibit the growth of oral bacteria responsible for peri-implantitis. This project has consisted of the development and structural analysis of several different novel frameworks with high potential for microbial inhibition. Structural stability has been monitored under varying environmental conditions, such as humidity; changes have been recorded and analyzed for potential functional applications in biological conditions. A common characteristic of MOFs is the modularity of components, which could allow for the addition of drug compounds or ligands with higher antimicrobial effects for a stronger inhibition of bacterial growth. Key MOFs were selected for antimicrobial analysis through Kirby-Bauer inhibition tests on the common oral bacteria, *S. mutans*. The desired results are a set of MOFs with the capability of inhibiting microbial growth at a greater rate than any of their individual antimicrobial components. The frameworks presenting the significant bacterial inhibition can then be tested for the capability of growth directly onto titanium implants used in a majority of oral surgeries. If successful, then our research project will result in novel MOFs with antimicrobial properties that can be further functionalized and grown directly onto titanium implants for the prevention of infection immediately post oral surgery.

Student: McCain, Peyton

Major: Marine Biology

Faculty Mentor: Gabriel Langford

Presentation Time: 3:20-3:40

Presentation Type: Honors Proposal

Room: Room 4

Title: Spatial Ecology of the Striped Mud Turtle in a Central Florida Perched Wetland

Abstract: The striped mud turtle (*Kinosternon baurii*) is a species of aquatic turtle in the family Kinosternidae: the collection of all mud and musk turtles. The species *K. baurii* is limited to the southeast United States, with populations found all across Florida. The turtles rely on marshes and upland areas for their habitat, with upland areas being used for nesting. Although this species is understudied in Florida, it is known that their largest threats are habitat loss and collection for the pet trade. When devising methods for the conservation of species, having a baseline of information is crucial. This baseline can include population numbers, home ranges, and general behaviors, and allows scientist to address differences due to anthropogenic effects. While it is known that *K. baurii* relies on wetland habitats, little is known about the specifics of their home ranges in perched wetland areas; this study examines their land use within the Lakeland Highland scrub. The study will start with a preliminary catch at the study site, to ensure that there is a large enough study group. Any turtles caught will have morphometrics (carapace length, width, heigh, weight, sex) recorded, and additional information about the study site will also be collected. After the preliminary catch, eight individuals will

2022 Fiat Lux Presentations

be outfitted with tags for GPS telemetry, and tracked over the course of several months. This tracking data will then be used to compile home range and land use maps for each individual.

Student: McGovern, Emmelyne
Faculty Mentor: Shameka Shelby
Presentation Time: 3:20-3:40
Room: Room 5

Major: Chemistry
Presentation Type: Honors Proposal

Title: Use of Protein Immunochemistry in the Visualization of Latent Fingerprints

Abstract: Latent fingerprints contain biological material that can provide specific information about an individual, including identification via a DNA sample and amino acids/proteins that are present. These proteins and amino acids can provide additional details of a print and help with imaging minutiae to help with identification of the individual that the print belongs to. Current existing methods to identify proteins in latent fingerprints typically utilize antibodies against proteins like ninhydrin. This approach is often used to visualize latent fingerprints on paper and lacks sensitivity. Immunofluorescence is a more sensitive technique that can be used to identify proteins present in a sample, but their use with latent fingerprints is underdeveloped. As a result, I plan to develop immunofluorescence assays for visualizing latent fingerprints. Ideally, this will be used to improve identification of latent fingerprints, and can potentially be modified to become more accessible in the field.

Student: Medina, Kevin
Faculty Mentor: R. Bruce Anderson
Presentation Time: 1:40-2:00
Room: Room 9

Major: Political Science
Presentation Type: Oral Presentation

Title: Puerto Rico: Rise In Unemployment Rates

Abstract: When observing the economic structure of a U.S Territory, Puerto Rico, it was clear to see that a vital part of the structure that needs attention is the unemployment rate. For the last two decades the unemployment rate in Puerto Rico has not reached anything lower than 8% and has even gone as high as 16%. Although there has been limited action with the local government of Puerto Rico by its Congress and Governor, there has been no definite sign of progress. With the research conducted throughout my paper, I hope to establish the unemployment rate as an issue on the territory of Puerto Rico, give context on how it got to this critical point, and offer viable solutions, that may attach to already existing plans by Puerto Rico, to decrease the unemployment rate.

2022 Fiat Lux Presentations

Student: Miller, McKinley

Major: Film

Collaborators: Valentina Montoya and Noelle Jacob

Faculty Mentor: Erica H. Bernheim

Presentation Time: 3:20-3:40

Presentation Type: Oral Presentation

Room: Room 7

Title: A Film Student's Experience in Creative Writing

Abstract: My partners and I are all honors students taking a creative writing class, even though none of us are English majors. This presentation will elaborate on what we have each learned and taken away from the class that we will apply to our majors.

Student: Milter, Michelle

Major: Political Science

Faculty Mentor: R. Bruce Anderson

Presentation Time: 2:40-3:00

Presentation Type: Oral Presentation

Room: Room 8

Title: The Fake News Epidemic: The Government's Role in Bursting The Social Media Bubble

Abstract: Social Networks' omnipresence and accessibility has revolutionized the distribution of information in today's world. However, easy access to information does not equal an increased level of public knowledge. Unlike traditional media channels, social networks facilitate faster and wider spreads of misinformation due to a lack of regulation. These viral spreads of false information have serious implications on the behaviors, attitudes and beliefs of the public, and ultimately can jeopardize the integrity of democratic processes within the United States. But like everyone else, social media companies have a First Amendment right to free speech, and many of the proposals to regulate these companies run right into the First Amendment. Because it is nearly impossible for the government to heavily regulate social media networks, this paper will analyze a wide range of solutions that do not contradict freedom of speech but can aid with early detection and control of extensive spreads of fake news in existing social media. This paper will examine past studies and statistical outputs on the potential solutions for this misinformation spread. Finally, I will evaluate potential methods and present some challenges to overcome for the future.

Student: Misenaar, Morgan

Major: Biology

Faculty Mentor: Sara Terrell

Presentation Time: 1:20-1:40

Presentation Type: Honors Proposal

Room: Room 5

Title: Exploring the Influence of a Preventative Shoulder Strengthening Program on Collegiate Swimmers' Shoulder Function

Abstract: INTRODUCTION: Collegiate swimmers often accrue over 25 miles of weekly training. This repetition, coupled with the freestyle stroke mechanics, places the shoulder under extreme stress. Ninety percent of swimmers report shoulder pain; female swimmers report more shoulder pain and injuries than males. Preventative exercise programs may support shoulder health and reduce injury risk. Yet, whether an intervention program targeting shoulder strength, stability, and range of motion can produce

2022 Fiat Lux Presentations

improved functional outcomes within Division II female swimmers remains unclear. **PURPOSE:** To explore the influence of an 8-week exercise intervention on shoulder strength, stability, and range of motion in female collegiate swimmers. **METHODS:** This study will be a pre-test, post-test research design. A convenience sample (n=20) of female swimmers will be used. Pre-test isometric strength measures (MicroFet™ dynamometer) will include: shoulder internal rotation, external rotation, and scaption; scapular protraction and retraction. Goniometer measurements for shoulder internal and external range of motion will be done. Shoulder stability will be assessed with the Closed Kinetic Chain Upper Extremity Test. Pre-test data will be used to determine experimental (EXP) (n=10) and control (CON) (n=10) groups through match-pair design. The EXP group will complete a resistance-band exercise intervention targeting scapulothoracic and glenohumeral joint strength, stability, and mobility as 2x/week for 8 weeks. The CON group will complete normal training. Post-test measurements will be compared to pre-test measures to determine if the program improved functional outcomes. **ANTICIPATED SIGNIFICANCE:** The proposed study may provide insight on how an exercise intervention can influence a swimmer's shoulder health during season.

Student: Montoya, Valentina

Major: Political Science

Collaborators: Noelle Jacob and McKinley Miller

Faculty Mentor: Erica H. Bernheim

Presentation Time: 3:00-3:20

Presentation Type: Oral Presentation

Room: Room 7

Title: Inspiration for Writing from Important Poets

Abstract: Examples of personal works from ENG2023-01H will be presented in an effort to show the creative process involved with writing and how these skills apply to various majors outside of English. Inspiration can come from various outlets and ones own creative work can be expressed through a response to important pieces that offer a varying perspective related to what the original author intended.

Student: Moreno, Nathalie

Major: English

Faculty Mentor: Jennifer Moffitt

Presentation Time: 4:20-4:40

Presentation Type: Honors Proposal

Room: Room 4

Title: The Growing Need for Subjective Journalism in Modern Perception of Violence

Abstract: The longstanding belief that journalists should be objective in any and all topics they choose to cover is being challenged by critics and journalists themselves. Due in large part to the normalization of "objectivity," where journalists must report the facts at the expense of anyone and everyone, people have become desensitized to violence and pain. Objective reporting and an overexposure to violence and other disturbing events affects our moralistic and ethical values. As opposed to stepping in and helping, the people documenting the occurrences believe they are servicing the world by ensuring that everyone remains unbiasedly informed. However, journalists argue that journalism should be subjective in some form and we need to do more than just stand back and observe. Would subjective journalism provide a better understanding into the lens of violence we look into often?

2022 Fiat Lux Presentations

Student: Nagoshi, Hikaru

Major: Political Science

Faculty Mentor: R. Bruce Anderson

Presentation Time: 1:20-1:40

Presentation Type: Senior Project

Room: Room 3

Title: The Global Shortage of Semiconductors and the Fragility of the U.S. Supply Chain

Abstract: The world shortage of semiconductors began late in 2020 due to the response against the COVID-19 pandemic along with other serious disasters. This shortage has not only affected the U.S. economy but has also impacted both economic and national security in the United States.

Semiconductors are essential components shaping today's economy and technological innovation. They are used to create electric products from smartphones and cars to AI or medical devices. The fragility of the semiconductor supply chain has been exposed for the first time ever by the COVID-19 outbreak. To protect the future of national security and global competitiveness, taking a more focused approach on critical strategic risks and building semiconductor manufacturing capacity domestically in the U.S. will help reach the sensitive needs in critical strategic importance and keep peace in the world. This paper analyzes current policies and provides alternative policy options in response to both the fragility of the semiconductor supply chain in the U.S. as well as the decline in U.S. manufacturing share percentage in the global market.

Student: Nardone, Alanya

Major: Biochemistry and Molecular Biology

Faculty Mentors: Deborah Bromfield Lee and Shameka Shelby

Presentation Time: 3:40-4:00

Presentation Type: Oral Presentation

Room: Room 6

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

Abstract: Cancer, which affects millions each year, is a malignant growth due to uncontrolled proliferation of abnormal cells. Due to the mechanism of this proliferation, mutations, and varying location of the cells, development of new target drugs are necessary to extend life and/or reduce effects of the cancer. This project focuses on the synthesis of stilbenes using the Wittig reaction. There has been recent research pertaining to SARs with cancer with stilbene derivatives that have different R groups which affect their activity. A library of 15 compounds has been synthesized with modifications to the benzene rings. Halogens, methoxy, hydroxyl and ethoxy groups have been added to the stilbene structure in an attempt to determine their effectiveness and ability to enhance the activity of the stilbenes. Similar studies have focused on electron donating and electron withdrawing groups and have provided the basis for this research. Not only is the synthesis focused on developing a library of compounds, but examining the use of Green Chemistry principles. For example, triphenylphosphine oxide by-products are always created, and finding less wasteful methods to remove them are key. Additionally, other methods include targeting one stereoisomer over another to reduce waste, using microwave chemistry, and synthesis using solid support chemistry can reduce waste. All compounds synthesized were characterized by NMR and GC-MS. Biological studies were performed using assays to determine efficacy of the stilbene compounds against epithelial ovarian cancer cell lines, SKOV3 and OVCAR3. Specifically pertaining to inhibition and apoptosis of tumor cells.

2022 Fiat Lux Presentations

Student: Nieves, Emma

Major: Exercise Science

Collaborators: Nick Picarella, Stephen Roth, and Maddi Conner

Faculty Mentor: Charles Allen

Presentation Time: 4:20-4:40

Presentation Type: Oral Presentation

Room: Room 7

Title: The Effects of the AIRWAAV Performance Mouthpiece on Countermovement Vertical Jump Height

Abstract: The purpose of this investigation was to determine the effect of jaw clenching and the AIRWAAV performance mouthpiece on jump height during vertical jump (VJ) performance. Participants included ten male and sixteen female (n= 26) college athletes. One week prior to the VJ assessment, participants provided written informed consent, participated in a mouthpiece fitting conducted according to manufacturer's instructions, and were familiarized with data collection procedures. Participants performed VJ assessments under four experimental conditions: Mouthpiece + Jaw Clenched, Mouthpiece + Jaw Relaxed, Jaw Clenched + No Mouthpiece, Jaw Relaxed + No Mouthpiece. VJ assessments were performed on a portable force platform that records force*time data during the jump. VJ height was calculated from the force*time data. Participants executed three jump trials for each experimental condition. All jump trials for each condition were averaged for analysis. A 2x2 (Mouthpiece + Clench) repeated measures ANOVA was utilized to determine difference between experimental conditions. There was a statistically significant main effect for jaw clenching, which led to an improvement in vertical jump performance. Clenching on the mouthpiece led to slightly better results compared to clenching alone, but this improvement was not statistically significant. Maximal jaw clenching improved VJ performance. It appears that clenching on a mouthpiece may provide additional benefit above clenching alone by facilitating a stronger clench and enhancing the ergogenic benefit. Strength and conditioning professionals may recommend jaw clenching as an ergogenic strategy while performing sport, exercise, and physical activity to achieve improved performance and outcomes.

Student: Picarella, Nicholas

Major: Biology

Collaborators: Emma Nieves, Maddi Conner, and Stephen Roth

Faculty Mentor: Charles Allen

Presentation Time: 4:40-5:00

Presentation Type: Oral Presentation

Room: Room 7

Title: The Effects of Maximal Jaw Clenching and a Performance Mouthpiece on Net Concentric Impulse During the Vertical Jump Assessment

Abstract: The purpose of this study was to compare the effects of maximal jaw clenching (MJC) and a performance mouthpiece (MP) on net concentric impulse during the maximum vertical jump (VJ) assessment. Ten male and 16 female collegiate baseball and softball athletes, respectively, visited the facility on two separate occasions. The first visit included the participants providing written informed consent, and MP fitting according to manufacturer specifications. The second visit involved maximum VJ assessment performed on a portable force platform under four experimental conditions: MJC + MP, jaw relaxed + MP, MJC without MP, and jaw relaxed without the MP. Three VJ trials were performed for each experimental condition, and net concentric impulse values from each trial were averaged for statistical analysis. A 2x2 (mouthpiece x clench) repeated measures ANOVA was utilized to determine

2022 Fiat Lux Presentations

differences between experimental conditions. There was a statistically significant main effect for jaw clenching ($p = 0.002$) leading to improved net concentric impulse during VJ performance. There was no significant main effect for the mouthpiece condition and no interaction effect. Maximal jaw clenching resulted in greater net concentric impulse values during the VJ assessment. MJC on the MP was improved over clenching alone, but this difference was not statistically significant. Coaches can encourage athletes to clench the jaw maximally during sports performance and resistance training activities to enhance force production characteristics. Using a mouthpiece to facilitate jaw clenching may also be beneficial.

Student: Potter, Alexandra

Major: Political Science

Faculty Mentor: R. Bruce Anderson

Presentation Time: 4:40-5:00

Presentation Type: Oral Presentation

Room: Room 9

Title: Disparities in Maternal Mortality Rates: How Do We address Racism in Healthcare?

Abstract: Despite a majority of pregnancy related deaths being preventable, physician care in the United States often impacts the significant outcomes, and in the case of Black women, they are affected at significantly higher rates by pregnancy complications and pregnancy related deaths. Significant racial and ethnic disparities in maternal morbidity and mortality exist in the United States. Black women are three to four times more likely to die a pregnancy-related death as compared with white women. Growing research indicates that quality of healthcare is crucial for improving outcomes for racial and ethnic minority women. Black women have suffered from immense brutality dating back to the middle passage on slave transport ships, and still face the harsh outcomes of Maternal Mortality. This paper addresses the racial/ethnic disparities in healthcare, the historical development of those disparities, the severe disparities in maternal mortality, and potential policy options to decrease those disparities. Although many areas of American society need to improve on the basis of race, the healthcare system is a crucial area where Black Americans should be able to rely on equal treatment. However, the racist practices in healthcare that derived during times of American slavery still impact the healthcare system today. In order to decrease disparities in Maternal Mortality rates, the simple passage of time will not suffice, policy directed towards physician biases is crucial in order to decrease disparities. Both the systemic and individual levels have to be addressed through this policy.

Student: Potter, Zoe

Major: Marine Biology

Faculty Mentor: Christy Wolovich

Presentation Time: 3:00-3:20

Presentation Type: Senior Project

Room: Room 2

Title: Complex Environmental Enrichment in Brown Anoles (*Anolis sagrei*): Increasing Resilience to Improve Welfare

Abstract: Welfare is an important aspect of the care of captive animals. Although a substantial amount of research has examined captive mammal welfare, relatively few studies have aimed to improve reptile welfare in captivity. Enrichment is a common tool utilized in facilities to promote animal wellbeing by encouraging species-specific behaviors and reducing stereotypies. Animals displaying a diverse array of

2022 Fiat Lux Presentations

species-specific behaviors are considered to have good welfare, whereas animals displaying stereotypical behaviors have poor welfare. The purpose of this study was to utilize a series of enrichment devices to increase behavioral diversity in brown anoles (*Anolis sagrei*), in order to improve welfare and demonstrate the need for enrichment for captive reptiles. I observed 30 brown anoles during a series of feeding trials (n=90 trials). I noted state behaviors, event behaviors, latency to first feeding, and whether they were successful in their first feeding attempt. I then conducted a series of enrichment trials, recording state behaviors at specific intervals (n=270 trials) and noting interactions with the perch enrichment. Fifteen anoles were given increasingly complex enrichment, while the other 15 received the same enrichment throughout the trials. After all enrichment trials, I again conducted feeding trials (n=90 trials). The results of this study can inform future welfare practices in captive reptile care.

Student: Potts, Chloe

Major: Marine Biology

Collaborator: Morgan Jarrett

Faculty Mentor: Philip Gravinese

Presentation Time: 4:20-4:40

Presentation Type: Oral Presentation

Room: Room 9

Title: Do pH Variable Habitats Provide Refuge for the Florida Stone Crab from Coastal Acidification?

Abstract: Anthropogenic inputs, like organic-based runoff, along with seasonal precipitation changes and daily respiration and photosynthetic processes can cause diurnal variability in seawater pH within many coastal habitats. Marine organisms that experience this variability in pH may be better acclimatized to tolerate future extremes in seawater acidification. The Florida stone crab is a commercially important species in Florida valued at \$30 million dollars annually. Previous research has shown that stone crab hatching success and larval survival can be reduced under end-of-century pH scenarios. Here, we tested if stone crabs from pH variable habitats within Tampa Bay may be better acclimatized to tolerate future extremes in seawater pH. We placed ovigerous stone crabs into either sandy habitats seagrass habitats to determine if embryo development time and hatching success improved under end-of-century pH scenarios. Ovigerous stone crabs underwent embryogenesis in both sandy and seagrass habitats and extrude a new egg mass before being brought back to the Florida Southern College experimental ocean acidification system. Ovigerous crabs were then held in either the control (pH = 8.0) or lower pH (pH = 7.7) treatment for the duration of their embryo development. All stone crabs were then monitored for embryo development time and hatching success. Crabs conditioned in the seagrass site then placed into the low pH treatment experienced a hatching success of 76%. This suggests that the diurnal variability experienced in local seagrass habitats may serve as a potential refugia habitat for the stone crab as coastal habitats continue to acidify.

2022 Fiat Lux Presentations

Student: Prescott, John

Major: Political Science

Faculty Mentor: R. Bruce Anderson

Presentation Time: 2:40-3:00

Presentation Type: Senior Project

Room: Room 1

Title: Semi Truck Situation

Abstract: The national shortage of trained semi-truck drivers, which is contributing to the national supply chain shortage that has been leaving grocery store shelves empty and making the prices of goods skyrocket, has reached up to 81,000 drivers needed in order to deliver the goods and get the industry back on its feet. In order to counter this shortage, a reasonable goal to start with would be to recruit a minimum of 40,000 drivers, half of what the industry is missing, and then gradually increase the goal amount as more drivers are hired. That being said, one of the main tasks to overcome is to increase the appeal of driving a semi-truck as a career to potential newcomers, especially younger adults due to the possibility of staying with the career longer than older demographics. It would also be reasonable to make the process of becoming a semi-truck driver simpler to achieve by eliminating any unnecessary steps in the process without infringing on the safety of the truck drivers or others on the road. Furthermore, the incentives for current drivers to stay would also have to be increased and/or modernized. However, due to the recent amount of inflation of the U.S. dollar, it would be wise to focus on non-monetary incentives.

Student: Ragsdale, Holt

Major: Chemistry

Faculty Mentor: Jason Montgomery

Presentation Time: 3:00-3:20

Presentation Type: Oral Presentation

Room: Room 6

Title: Electronic Properties of Metal Organic Frameworks towards CO₂ Adsorption

Abstract: Interaction energies of a simple 2D MOF-5 and CO₂ were studied using Density Functional Theory (DFT). Ligand substitutions at the 2 and the 5 position of the BDC ligand with OH, SH, NH₂, and CH₂NH₂ were optimized, and interaction energy calculations were performed to determine how different functional groups affect the interaction energy between the metal organic framework (MOF) and the CO₂ molecule. The 2, 5 NH₂ BDC ligand showed the most promising interaction energy, increasing the interaction by a factor of 10.646 compared to the unsubstituted BDC ligand. The OH, SH, and CH₂NH₂ substituted BDC ligands increased the interaction energy by factors of 2.879, 2.219, and 2.751 respectively. In accordance with previous literature, it has been shown that the open zinc sites within MOF-5 are the main adsorption factors, but the substituted functional groups play a significant role in stabilizing the Zn-CO₂ interaction.

2022 Fiat Lux Presentations

Student: Ricketts, Chris-Ann
Faculty Mentor: Shameka Shelby
Presentation Time: 4:20-4:40
Room: Room 6

Major: Chemistry
Presentation Type: Oral Presentation

Title: Controlled Release of Diclofenac from a Gelatin-Hemostatic Agent for Application in Postoperative Patients

Abstract: Non-steroidal antiinflammatory drugs (NSAIDs) are often prescribed to patients suffering from acute or chronic pain and inflammation after surgical procedures. Its therapeutic effect is due to the inhibition of the cyclooxygenase enzymes. While they are generally safe, and even available as over the counter drugs, high doses of NSAIDs are known to have the potential to induce significant negative side effects in patients such as surgical hemorrhaging. Therefore, we aimed to generate a hemostatic agent that had the ability to release NSAIDs in a controlled fashion in the surgical site to potentially reduce adverse effects. Conjugate synthesis was done using the NSAID diclofenac, gelatin type B and a carbodiimide cross-linking agent (EDC). UV-Vis spectroscopy and Infrared Spectroscopy were used to analyze the release of diclofenac from the product and confirm the structural integrity of the released diclofenac. Confirmation of the efficacy of the released samples was accomplished via a modified protocol in cultured cells. With the application of this novel drug-delivery hemostatic agent to post-surgical operations, side effects of otherwise orally delivered drugs may be greatly reduced while maintaining or increasing drug efficacy.

Student: Rincon Garcia, Daniela
Collaborators: Steven Zet and Gianna M. Del Monte
Faculty Mentor: Erica M. Marshall
Presentation Time: 2:00-2:20
Room: Room 7

Major: Exercise Science
Presentation Type: Oral Presentation

Title: Alterations in Vagal Measures of Linear Heart Rate Variability Following High Load and Blood Flow Restriction Exercise

Abstract: To compare vagal measures of heart rate variability (HRV) following high load resistance exercise (HLRE) to blood flow restriction exercise (BFRE) and two BFRE cuff types: elastic knee wrap (kBFRE) and pneumatic cuff (pBFRE). **METHODS:** Nine individuals participated. Vagal measures of HRV were collected at rest, immediately post-exercise (IP), 10-, 30-, and 45-minutes post-exercise. Participants completed three conditions: HLRE, kBFRE, and pBFRE. Repeated Measures ANOVAs were used to examine the effect of condition across time on linear, vagal measures of HRV: high frequency (HF) power, root mean square of successive differences between RR intervals (RMSSD), and the number of pairs of adjacent RR intervals differing by more than 50 ms divided by the total number of RR intervals (pRR50). Significant ($p \leq 0.05$) main effects were analyzed using pairwise comparisons. **RESULTS:** The lnHF was reduced similarly across all conditions from rest to 10 minutes post-exercise. However, the lnHF increased from 10 minutes to 30 minutes such that it recovered and was similar to rest. The lnRMSSD was also reduced similarly across all conditions from rest to 10 minutes post-exercise and was recovered by 30 minutes compared to rest. Finally, the pRR50 was reduced similarly across all conditions from rest to IP, as well as 10- and 30-minutes post-exercise, but recovered by 45 minutes, such that it was similar to rest. **CONCLUSIONS:** These data suggest that HLRE, kBFRE, and

2022 Fiat Lux Presentations

pBFRE result in similar transient reductions in vagal measures of HRV for up to 45 minutes post-exercise.

Student: Risko, Gabrielle

Major: Biology

Faculty Mentor: Christy Wolovich

Presentation Time: 2:00-2:20

Presentation Type: Senior Project

Room: Room 2

Title: Scent Marking and the Possible Implications for Mate Guarding in Owl Monkeys (*Aotus nancymaae*)

Abstract: Scent-marking facilitates intraspecific communication and helps maintain social organization. In pair-living species, scent marking might function in mate guarding if the chemical deposits deter competitors from mating with one's partner. Overmarking, marking on top of an existing scent, and partner marking, marking one's partner, might be especially effective in masking a mate's scent. We examined scent-marking in 10 male-female pairs of captive owl monkeys (*Aotus nancymaae*) at the DuMond Conservancy (Miami, FL) in response to unfamiliar conspecific urine (male/female). We scored their behavior systematically during 30-minute trials (n = 76 trials) and used generalized linear models to determine which factors predicted patterns in scent-marking. Male owl monkeys scent marked more than did females, and their rates of scent marking increased when unfamiliar conspecific urine was present. Contrary to expectations, monkeys did not overmark the experimental stimuli. Both overmarking and partner marking were rare and usually performed by focal males in the presence of unfamiliar male urine. Following this pattern, owl monkeys marked their food trays and nest boxes most often when unfamiliar male urine was present. These results suggest that scent marking by male owl monkeys may function in both mate guarding and resource defense. Female owl monkeys, on the other hand, may scent mark for other purposes such as advertisement of reproductive state. Owl monkeys rely upon strong pair bonds and use coordinated behavior to defend territories and rear offspring. Our findings indicate that scent-marking may be critical to the maintenance of these pair bonds.

Student: Robinson, Corinna

Major: English

Faculty Mentor: Jennifer Moffitt

Presentation Time: 3:40-4:00

Presentation Type: Senior Project

Room: Room 3

Title: Traces of Hellenism and Perpetual Hope: Religious Faith in Greek American Return Narratives

Abstract: During the 1960s, Greek American writers were particularly interested in exploring their cultural heritage, leading many to produce "return narratives," stories of a return to their ethnic, pre-American homeland. These narratives often emphasize religious faith, insisting upon its centrality to Greek identity. My project focuses on the roles of Orthodox Christianity and Hellenic polytheism within two such return narratives: Daphne Athas's *Greece by Prejudice* (1963) and Elias Kulukundis's *The Feasts of Memory* (1967). Athas and Kulukundis return to Greece within distinct contexts and experience religion in contrasting ways, but both authors ultimately suggest that by reconciling Greece's hybrid religious landscape, they are in turn able to reconcile their hybrid cultural backgrounds.

2022 Fiat Lux Presentations

Student: Roth, Stephen

Major: Biology

Collaborator: Sarah Grady

Faculty Mentor: Charles Allen

Presentation Time: 1:20-1:40

Presentation Type: Oral Presentation

Room: Room 7

Title: The Effects of a Weightlifting Belt on Concentric Movement Velocity During the Deadlift Exercise

Abstract: The purpose of this study was to explore the effects of wearing a weightlifting belt on concentric velocity during the barbell deadlift exercise. Sixteen resistance trained athletes, ten females and six males, participated in four research sessions. The first two sessions were a one repetition maximum (1RM) deadlift assessment; one with the weightlifting belt and the other without. The last two sessions consisted of submaximal deadlifts based on the non-belted 1RM. During the submaximal deadlifts, participants performed two sets of one repetition for every 10% interval between 30% and 90% of their 1RM. Again, one session was performed with the weightlifting belt and one without. Each subject performed the concentric phase of the sub-max deadlifts as fast as possible, while maintaining correct technique. A Tendo Power Analyzer recorded the average velocity and power for each repetition. A 2x7 repeated measures ANOVA with pairwise comparisons was used to determine differences between experimental conditions. Average velocity was significantly greater for the 60-90% loads ($p < 0.05$) in the weightlifting belt condition. Average power was also improved at 60-90% loads with 70% and 90% being statistically significant ($p < 0.05$). Wearing a weightlifting belt is beneficial to improve average velocity and power output during moderate to heavy loaded resistance exercises. At these loads, the weightlifting belt likely assists in trunk stability and greater force transfer throughout the kinetic chain. Athletes and strength coaches may implement a weightlifting belt to improve movement velocities and power output when training at moderate to heavy loads.

Student: Sahay, Ashutos

Major: Political Science

Faculty Mentor: R. Bruce Anderson

Presentation Time: 2:00-2:20

Presentation Type: Oral Presentation

Room: Room 9

Title: The Working Homeless

Abstract: This policy paper hopes to focus on a specific subset of homeless people, and what the public can do to help their well-being: the working homeless in Florida. Many people are not living in the streets, but they do not have good permanent living conditions. This group of people are often underpaid; making \$25,000-35,000 a year. The government should help these people. There is a public role in this due to the fact that the government has regulations on houses, businesses, and infrastructure. Therefore, the precedent for a public role has already been set. The threshold of success would be if the Florida working homeless population gets reduced by 10% within a year. The policy analysis eventually yielded an effective solution for the working homeless population of Florida.

2022 Fiat Lux Presentations

Student: Savage, Brianna

Major: Nursing

Faculty Mentor: Nancy Marc

Presentation Time: 2:20-2:40

Presentation Type: Honors Proposal

Room: Room 5

Title: Isolation Correlation of NICU Parents and Infants Following COVID-19 Pandemic

Abstract: The COVID-19 pandemic has had a tremendous impact on the manner in which newborn babies and parents bond. For those infants sent to the NICU, safety precautions required isolating the baby from any potential risks, often to the point of only allowing one parent in the room for minimal amounts of time. In this study, I seek to determine if this isolation due to COVID precautions has had an impact on parents' abilities to form a bond with their newborn babies.

Student: Schabes, Madeleine

Major: Chemistry

Faculty Mentor: An-Phong Le

Presentation Time: 2:20-2:40

Presentation Type: Senior Project

Room: Room 1

Title: Quantifying the "Golden Ratio" of Hyper-Palatable Foods: What Makes Junk Food so Addictive?

Abstract: The rising popularity of hyper-palatable foods is motivating research on what makes a food addictive. The current research focuses on neurological and psychological explanations, not on the foods' physical makeup. It is suggested that food companies strategize the ratio of salts, sugars, and fats to overcome a person's natural eating regulation, or sensory-specific satiety (SSS.) This strategy is referred to as the "golden ratio" or "bliss point" but has never been quantified. The study will compare popular and unpopular potato chips as determined by purchasing trends and rankings. For this investigation, the salt, sugar, and fat content was measured through analyzing chloride, dextrose, sucrose, fructose, lactose, and solid fat content. Subsequent statistical analyses will find if different ratios exist between popular and unpopular potato chips. If a common ratio is found, it could aid in ingredient reduction without affecting palatability. This can be a major cost-saving measure for the food industry, and it could make foods healthier for people with conditions such as diabetes and hypertension.

Student: Schalwig, Hailee

Major: Environmental Studies

Faculty Mentor: Ashley Bowers-Macrandar

Presentation Time: 4:40-5:00

Presentation Type: Honors Proposal

Room: Room 5

Title: Environmental Education: The Role of Outdoor Learning, Eco-Art, and Demographic Variables in EE Success

Abstract: With the rising awareness of the impact of human actions on the natural world, environmental education (EE) has become increasingly prominent, particularly in school-age children. EE has been recognized as critical for increasing students' environmental knowledge and fostering strong connections with the natural world, which promote pro-environmental actions and behavior. This presentation explores the role of outdoor learning experiences and art within the realm of environmental education and addresses demographic variables, such as gender, age, race, and socioeconomic status,

2022 Fiat Lux Presentations

that influence the success of EE programming. Preliminary research indicates that EE should utilize a multidisciplinary approach that incorporates innovative teaching strategies and evaluation methods to reach children across a wide range of demographics. My goal is to use this information to develop, implement, and evaluate an environmental education program for elementary school-aged children that teaches students about organisms, ecosystems, processes, and issues relevant to Central Florida. In conversation with current EE research and pedagogy, my project seeks to produce environmental education curricula that are informative, innovative, culturally responsive, and engaging to help children develop positive relationships with the world around them.

Student: Schell, Katrina

Major: Religion

Faculty Mentor: Anthony Purcell

Presentation Time: 2:40-3:00

Presentation Type: Honors Proposal

Room: Room 5

Title: The Drama of Scripture and Shaping Christian Theology: An Interpretation of Love

Abstract: For my honors project, I will be interpreting the themes of love present in 1 John and applying them to a dramatic situation. Throughout my directed study, I have studied 1 John as well as written and edited a play that utilizes its themes. For my honors project, I will be presenting the play to different audiences and examining their reaction in terms of the theology presented in the play. I am interested in the different interpretations of love in the church--as compared to my own interpretation presented in the play--because love is one of the central tenets of Jesus' ministry. The church's interpretation of love will inform its relationship with the world, and after studying 1 John and forming my own viewpoint on love, I want to see how different Christian and non-Christian audiences have shaped their own theology of love.

Student: Schiefele, Lea

Major: History

Faculty Mentor: H. A. Nethery

Presentation Time: 2:00-2:20

Presentation Type: Senior Project

Room: Room 3

Title: Aktion T4: Causes and Consequence

Abstract: During WWII an unknown number of people with disabilities were killed by the Nazis in an operation later code named Aktion T4. To understand these horrific events it is important to understand not only the origins of Aktion T4, but also the consequences, many of which have been ignored. In this presentation I will discuss the ways in which people with disabilities were presented as abnormal, how Aktion T4 paved the road to the Holocaust, and why this topic is still relevant today.

2022 Fiat Lux Presentations

Student: Schmidt, Amber

Major: Music

Faculty Mentor: Fen-Fang Chen

Presentation Time: 2:20-2:40

Presentation Type: Honors Proposal

Room: Room 4

Title: Clash of Cultures: An Insight into Tuvan Throat Singing in the Cultural Context of the Wider World

Abstract: From a pastoral lifestyle to the Cultural Revolution to the Russian annexation, the Tuvan people have a long history, and throughout that entire time, they have held onto a unique musical tradition. One notable element from their music is a vocal technique often referred to as throat singing. Although there are other peoples who utilize similar techniques, Tuvan throat singing has stemmed from their oral tradition, passed down from generation to generation. In the 70s, Tuvan musicians started to collaborate with the rest of the world and contribute to the library of world music; however, they are still largely unknown to the general public. I plan on interviewing musicians both from Tuva and those who have collaborated with Tuvan musicians about the nature and purpose of throat singing in the past, present, and predicted future of world music. In this research I expect to find evidence confirming that Tuvan throat singing has influenced world music in ways that society has not fully recognized.

Student: Scirica, Kaitlyn

Major: Accounting

Faculty Mentor: Celina Jozsi

Presentation Time: 5:00-5:20

Presentation Type: Honors Proposal

Room: Room 5

Title: The Other Side of Paradise: An Analysis of the Environmental Reporting of Public Companies in the United States

Abstract: Around the world, the demand for environmental change is increasing. One of the main parties in the spotlight? Corporations. According to The Carbon Majors Database Report, 100 companies are responsible for 71% of global carbon emissions, including investor-owned companies like Chevron and BP (Griffin, 2017). But do investors know about the impact these companies are having on the environment? Does the general public? “The Other Side of Paradise: An Analysis of the Environmental Reporting of Public Companies in the United States,” explores the differences between methods of environmental reporting internationally and what choices are relevant to reshaping the United States Generally Accepted Accounting Principles (GAAP) to give investors a better understanding of corporate environmental impact. Throughout this thesis, I will be discussing the current shortcomings of environmental reporting within GAAP, alternative reporting standards, and the practicality of implementing such standards, including audit procedures and enforcement of proper reporting. As of now, there is a clash between the desire for investors to be able to make sustainable investment decisions and the original intent of the Standards to provide information about company cash flows. However, with the current environmental pattern the world is on, investors, regulators, and even other corporations are beginning to show more concern with the environmental initiatives held by companies. Through this project, I aim to identify the current shortcomings within GAAP reporting and present a series of potential solutions to this problem.

2022 Fiat Lux Presentations

Student: Sill, Grace

Major: Religion

Faculty Mentor: Brian Hamilton

Presentation Time: 3:20-3:40

Presentation Type: Senior Project

Room: Room 1

Title: Are You My Mother: Redefining Adoptive Relationships Through a Comparative Study of Western-Christian and Neo-Confucian Ethics

Abstract: According to Adoption Network, a U.S. adoption agency, nearly 1.5 million Americans are adopted, and 100 million Americans have an immediate family member who is adopted. Despite the prominent presence of adoption in society, Christian theology and jurisprudence has preserved the assumption that adoptive relationships are inherently inferior to biological relationships. Thomas Aquinas and Karl Barth, for example, legitimize adoption on the basis of economics or spiritual need, while suggesting that biological relationships are “natural” and need no justification. Contemporary research on Christian conceptions of adoption continues these trends. To redefine Western Christian perspectives of adoptive relationships, my research looks to the neo-Confucian philosopher Zhang Zai and his concept of qi, the vital energy or life force that permeates the universe. I argue that Zhang Zai’s philosophy of qi promotes a more holistic understanding of the relationships between things. Applied to adoptive relationships in particular, qi recognizes the economic and spiritual characteristics of adoptive relationships while also affirming their intrinsic value. Modern families have diverse compositions, and a Christian ethics grounded in God’s all-encompassing love must recognize the inherent value of adoptive relationships in theory and practice.

Student: Simpson, Cameron

Major: Political Science

Faculty Mentor: R. Bruce Anderson

Presentation Time: 5:00-5:20

Presentation Type: Oral Presentation

Room: Room 6

Title: Flooding in New Orleans: A National Problem

Abstract: Water in itself is a necessity for life on planet Earth. However, too much water in one geographic area can be detrimental to the land, structures, and people within it. As a city, New Orleans has a deeply historical problem of flooding. This has been the case since its foundation as a city, and has progressed to the present day as well. A flood is described as “A flood occurs when water inundates land that’s normally dry” (Nunez, 2019). The beauty of New Orleans withers away with each horrific flooding event that comes about. As a whole, the city has tried to prevent flooding by introducing new levees and structures to block off potential floods. This however has served as only partially helpful as the city will soon need to take drastic measures if these events continue to transpire. The problem can be traced back to its original roots as the city was established at 10 feet above sea level and has since dropped to 1-2 feet below, and this can specifically be attributed to New Orleans being built upon loose soil. (Prior, 2019). With the known addition of sea levels rising, it can be clear to see the trouble that New Orleans has gotten itself into since its humble beginnings. In turn, new solutions must arise with the flooding doing the same.

2022 Fiat Lux Presentations

Student: Soto, Giselle

Major: Biology

Faculty Mentor: Brittany Gasper

Presentation Time: 3:40-4:00

Presentation Type: Senior Project

Room: Room 1

Title: Demonstrating the Antibacterial Properties of Essential Oils Against Antibiotic Resistant Bacteria

Abstract: Antibiotic resistance has been a growing issue in the field of medicine and science due to the overreliance and improper use of these medications. As a result, alternative options have been researched in order to replace the heavy dependence on existing antibiotics. Essential oils are volatile compounds that are widely used in the food, cosmetic, and pharmaceutical industry. Essential oils contain functional groups, including terpenes and aromatic constituents, that aid in antibacterial activity. Peppermint oil has been a main focus in many research papers and has been demonstrated to have antibacterial properties against bacteria such as *Staphylococcus aureus*. In this research, broth microdilution methods along with 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyl-2H-tetrazolium bromide (MTT) assay on microtiter plates will be used to determine bacteria cell viability against peppermint, clove, and lemongrass oil. Clove and lemongrass oil are suspected to have antibacterial properties but have not been studied as extensively as peppermint oil. MTT assay will be used to measure the essential oil inhibitory effects as well as bactericidal effects against Gram-negative and Gram-positive bacteria. The bacteria being tested against include *S. aureus*, *Pseudomonas aeruginosa*, and *Escherichia coli*. Future implications of this research are expected to aid in developing essential oils as a possible alternative or addition to antibiotics, thus decreasing bacteria susceptibility to antibiotic resistance.

Student: Stamper, Olivia

Major: Political Science

Faculty Mentor: R. Bruce Anderson

Presentation Time: 5:00-5:20

Presentation Type: Oral Presentation

Room: Room 7

Title: Affordable Healthcare: Not So Affordable

Abstract: The cost of healthcare in America is disproportionately high. Many adults in the United States have difficulty affording the strenuous costs that it takes to get access to the variety of healthcare needs they might have. Half of adults in the United States say that they have either missed or didn't go due to cost in the last year. In addition to not going due to the cost, 29 percent have also reported that they were unable to take their prescription medicine due to the cost of refills. Access to healthcare is ranked top on the list of expenses that people worry about affording. This is clearly a huge issue. Some may say that this only affects those who are not covered by insurance, but that is just not the case. In 2021, almost half (46%) of the people in the U.S have reported difficulty paying their out of pocket fees. There is an estimated number of about 31.1 million (9.6%) people who had no access to healthcare at all last year. Overall, last year 16.9 percent of people insured and uninsured reported at least one financial barrier when it came to healthcare access. This has got to change. People deserve better, more affordable health care in order to get the services that they need. Everyone has the right to access basic healthcare.

2022 Fiat Lux Presentations

Student: Steed, M. R.

Major: Psychology

Faculty Mentor: Chastity Blankenship

Presentation Time: 1:40-2:00

Presentation Type: Honors Proposal

Room: Room 4

Title: Too Young To Know It Gets Better: Elevating and Providing Hope for Young Caregivers

Abstract: Across the world, it's relatively common to see adults taking care of aging or chronically/terminally ill family members or children. Almost 18 million adults in the United States alone are considered to be "informal caregivers", caring for others without assistance or pay (Edwards et al., 2020). But, what happens when it's not an adult acting as a caregiver? Current literature shows that informal adult caregivers have a higher likelihood of health issues, burnout, and financial instability. However, there is a tremendous gap in the literature regarding caregivers under the age of 25. Through my research project I plan to survey young caregivers (spanning in age from 13 to 25) from various backgrounds, analyzing their experiences in education, employment, and mental health issues. I anticipate that some of their experiences are universal in caregiving, regardless of age, but that they will report a variety of experiences specific to their age group. For example, I predict that they will report lower social support than their older counterparts, and subsequently higher emotional distress and instability based on their parentification. Additionally, I anticipate that they will report higher financial strain and transportation/attendance issues in outside commitments. Beyond understanding their experiences, I aim to use my survey responses to outline their needs and develop a plan to support these young informal caregivers and their families.

Student: Surapaneni, Prasamsa

Major: Biochemistry and Molecular Biology

Faculty Mentor: Carmen Gauthier

Presentation Time: 3:00-3:20

Presentation Type: Oral Presentation

Room: Room 8

Title: The Design of Zinc Metal-Organic Materials for Biomedical Applications—Drug Delivery

Abstract: Metal organic frameworks (MOFs) can simply be defined as inorganic-organic hybrid compounds. They have shown extreme versatility in several areas of chemistry. One area of particular interest is in the area of drug delivery. This research presents the synthesis of several zinc metal-organic frameworks (Zn-MOFs) which are arbitrarily referred to as AB MOF-1, AB MOF-2, and AB MOF-3. These frameworks were synthesized by the reaction of zinc nitrate and 5-hydroxyisophthalic acid using multiple templates. The stability of the aforementioned structures along with the drug delivery potential was investigated using UV-Vis and X-Ray Powder Diffraction. The use of the novel AB MOF 1 as a drug delivery vessel was investigated by monitoring the uptake and release of ibuprofen, erythromycin, acetaminophen and acetylsalicylic acid under physiological conditions.

2022 Fiat Lux Presentations

Student: Tarleton, Abigail

Major: Marine Biology

Faculty Mentor: Jason Macrander

Presentation Time: 3:40-4:00

Presentation Type: Honors Proposal

Room: Room 4

Title: Is Reef Safe Sunscreen Really Safe?

Abstract: Human activity has been contributing to the decline of coral reefs in recent years; however, increased exposure to common pollutants (such as sunscreen) in these areas has been largely overlooked by scientists. This is concerning as many common active and inactive ingredients in sunscreen are known to be harmful to corals and anemones, the backbone of coral reef ecosystems. Some research has suggested that the most-used chemical ultraviolet (UV) blockers in sunscreen (such as octinoxate and oxybenzone) are harmful to these organisms. Octinoxate and octocrylene have been recently banned in popular tourist destinations such as Hawaii and the Florida Keys. This has led to the creation of “reef safe” sunscreens which often use Zinc oxide as an alternative UV filter. This project aims to use the sea anemone *Exaiptasia pallida* to test the relative safety of mineral-based versus chemical sunscreens. I will expose *E. pallida* to impossibly small (although potentially lethal) doses of sunscreen during which time they will be observed for signs of stress. Afterwards, I will be able to extract and sequence their RNA to better understand how the stress response works chemically within their bodies. Lastly, this project will allow us to ensure we are asking the right questions. Sunscreens have many different ingredients, are the active ingredients the only ones of concern? What, if anything, should be changed about the sunscreen industry and is there anything we, as consumers, can do to help?

Student: Tipton, Macey

Major: Accounting

Faculty Mentor: Collin Clark

Presentation Time: 4:20-4:40

Presentation Type: Senior Project

Room: Room 3

Title: The Concerning Reality of Special Purpose Acquisition Companies

Abstract: Special Purpose Acquisition Companies (SPACs) are shell corporations that are listed on the stock exchange with the intent to raise money to acquire a private company. The company is then listed on the public market, without the company having to go through the traditional offering process. SPACs were initially created in 1993 by David Nussbaum, but have recently become a big topic of conversation. While there have been over 1,300 SPACs listed since their creation, over 800 have been in the last two years alone. With the chaos and uncertainty surrounding the stock market, it brings up the question of whether or not SPACs should be further federally regulated, and the caution that investors should take before investing in SPACs. This thesis will give an overview of SPACs and dive into answering these questions.

2022 Fiat Lux Presentations

Student: Trevino-Rios, Sergio

Major: Political Science

Faculty Mentor: R. Bruce Anderson

Presentation Time: 2:20-2:40

Presentation Type: Oral Presentation

Room: Room 9

Title: New Slavery

Abstract: There are groups of people who are being taken advantage of. Some middlemen hire these workers through illegal companies or even legal companies; these migrant workers can be charged “thousands of dollars apiece in illegal recruitment fees, among other abuses” (Twohey et al., 2016). The thing about these companies is that they “are fly-by-night. They can secure legitimate visas and operate within the system,” and “When their practices are scrutinized, they often disappear and reinvent themselves as a new company.” (Twohey et al., 2016). This problem is enormous because out of the 350,000 foreign workers that come to the U.S, at least 6% are underpaid and abused in one form or another. To add salt to the wound, “there is also very little oversight of temporary work visa programs. Most of the programs have no rules in place at all to protect guest workers after they arrive in the United States” (Costa, 2019). This is forced labor or institutional slavery, such as “Two dozen people were indicted in Georgia last month on charges of smuggling Mexican and Central American immigrants to the United States and forcing them to live in camps and work on farms in the state in what authorities say was an illegal enterprise akin to “modern-day slavery.” (Silva & McCausland, 2021). You may assume that they are illegal immigrants, but they are far from it; they are contracted workers.

Student: Uslan, Kendall

Major: English

Faculty Mentor: Jennifer Moffitt

Presentation Time: 4:40-5:00

Presentation Type: Honors Proposal

Room: Room 4

Title: Labeled: A Personal Exploration of Gender Theory

Abstract: Binary operations, and how they are present in our construction and view of gender, are widely discussed within academia. However, connecting these theories to daily life is easier said than done. To bridge theory and praxis, I intend on creating an original performance piece housed in an artist’s book and performed in a non-traditional theatre space on the FSC campus. My research in preparation for this project is two-pronged as I will be grounding the piece in gender theory by Judith Butler and Michel Foucault while also being inspired by feminist and queer theatre. I will explore the embodied experience of gender in a way accessible to a broader audience. This project will also examine the power structures present within gender theory through a personal and intimate lens.

Student: Vassalotti, Ryan

Major: Biology

Faculty Mentors: Jarrod F. Eubank and Brittany Gasper

Presentation Time: 3:20-3:40

Presentation Type: Senior Project

Room: Room 3

Title: An Inquiry into the Synthesis of Zinc/Chelidonate-based MOFs and Their Potential Uses in the Prevention of Hernia Mesh Infections

2022 Fiat Lux Presentations

Abstract: A hernia, or a weak spot in a muscle through which internal organs can protrude, is a common medical condition that must be repaired through surgery. Unfortunately, the meshes used for hernia repair surgeries are prone to infection by bacteria such as *E. coli*, *S. aureus*, Enterococci species, and some Staphylococcus species. To prevent these infections, this study aimed to synthesize a novel metal-organic framework (MOF) possessing antimicrobial properties. A MOF is a highly modular, crystalline material made from a combination of metals and organic linker molecules, or ligands. MOFs can be tailored to have a wide variety of different functions and properties depending on the metals and ligands chosen. In this study, a novel zinc/chelidonate-based MOF, RV22, was successfully synthesized and characterized via PXRD and single crystal analysis. RV22 was then tested against both *S. aureus* and *E. coli* via the agar well diffusion method and demonstrated antimicrobial properties. Additional experiments were performed to assess the ability of RV22 to adhere to polypropylene, a common hernia mesh material. These tests yielded promising results, but further experimentation needs to be done. Overall, the results of this study have suggested MOF materials have great potential for biomedical application. Their modularity and simple synthesis methods make them attractive materials for use in hernia repair surgeries.

Student: Wall, Katharine

Major: Chemistry

Faculty Mentor: Deborah Bromfield Lee

Presentation Time: 2:00-2:20

Presentation Type: Honors Proposal

Room: Room 4

Title: Improving the Wittig Reaction Through Solid Support Synthesis to Create a Teaching Lab

Abstract: The goal of Green Chemistry is to reduce the human and environmental impacts of chemical reactions by designing more sustainable reactions. The twelve principles provide a foundation of ways to improve the sustainability of reactions through the improvement of yield and the reduction of the reaction's overall toxicity. One such reaction that could be improved through the use of Green Chemistry is the Wittig Reaction. The Wittig Reaction is a chemical reaction used to convert an aldehyde or ketone to an alkene; the reaction is carried out using a Wittig Reagent, triphenyl phosphonium ylide. Although the reaction is successful in producing an alkene, the yield is low due to the reaction generating byproducts, mainly triphenylphosphine oxide. The focus of this study is to determine if the use of solid support synthesis can be used to remove the byproducts of the reaction, thus improving the green chemistry of the reaction. Solid support synthesis employs the use of solid support material, resin beads, to covalently link the desired molecule to the bead. In our study, solid support will be used to remove the byproduct of the reaction through the process of washing. If the use of solid support synthesis is proven to be beneficial in removing our byproduct, the study will expand to create a teaching lab for Organic Chemistry II students. The lab will focus on demonstrating ways to use polymers and will create a bridge between Organic II material and material presented in Biochemistry and Medicinal Chemistry.

2022 Fiat Lux Presentations

Student: Wieleba, Amy

Major: Nursing

Faculty Mentors: Carrie A. Hall and Judy Risko

Presentation Time: 4:40-5:00

Presentation Type: Senior Project

Room: Room 1

Title: Needs of Children During the Parental Death Experience

Abstract: Background: An important and often overlooked aspect of end-of-life care is the support of a client's family members, specifically children. Children face profound struggles before and after experiencing the death of a parent. There is limited research available surrounding this adverse childhood experience and the support needs of this population. Methods: A descriptive phenomenological study exploring the needs of children during the parental death experience was conducted. The study included a demographic survey via Survey Monkey and a semi-structured interview via ZOOM. Participants were recruited through social media platforms and individuals wishing to participate provided implied consent by clicking a link to a demographic form via Survey Monkey. The sample included four participants over the age of 18 who experienced the death of a parent during late childhood. Interviews were transcribed and thematic analysis was completed using Colaizzi's method of data analysis by the research team. Results were shared with participants to ensure trustworthiness. Results: Five themes were identified: 1) Counting Down the Days; 2) Storm of Events; 3) The New Normal; 4) Silver Lining; 5) It Takes a Village. Conclusion: This study explored the experience of parental loss during childhood. The identified themes provide opportunities for tailored interventions to support children during parental loss.

Student: Wilkens, Jack

Major: Psychology

Faculty Mentor: Leilani Goodmon

Presentation Time: 3:20-3:40

Presentation Type: Senior Project

Room: Room 2

Title: Sexism, Harassment, & Attraction: Studying the Effects of Various Factors on Workplace Discrimination

Abstract: This study investigates how making a sexual harassment accusation affects the way the accuser is perceived by their co-workers. Additionally, gender and attractiveness of the accuser is considered. By investigating these three factors, the study aims to uncover covert biases against women, less attractive individuals, and individuals who accuse their coworkers of sexual harassment. All of this is done in an attempt to combat discrimination and better understand hesitations when it comes to harassment allegations.

Student: Willett, Camryn

Major: Chemistry

Faculty Mentor: Shameka Shelby

Presentation Time: 4:40-5:00

Presentation Type: Oral Presentation

Room: Room 6

Title: Caffeine Decreases Cell Growth and Proliferation through the Akt/GSK3/mTOR Pathway

2022 Fiat Lux Presentations

Abstract: Caffeine is consumed by 85% of people in the US everyday, making it the most regularly consumed stimulant in the country. Stimulants have significant impacts on the regulation of dopamine, leading to their addictive properties. One class of receptors in the dopaminergic system, D2 receptors, are responsible for regulating attention, motivation and excitability. Previous studies have demonstrated a link between D2 receptor activation and the Akt/GSK3/mTOR pathway. This essential cell signaling pathway controls processes such as cell growth, transcription of DNA, and cell metabolism. Investigating changes in this pathway in response to caffeine can give a greater understanding of how this stimulant impacts the body on a cellular level, which has not been widely established. The following experiment aims to explore the influence of caffeine on Akt and GSK-3 β expression in Chinese Hamster Ovarian cells through Western blot analysis. Caffeine is expected to cause an increase in inactivated Akt and activated GSK-3 β , linked to stimulated attention and motivation in behavioral studies but inhibited cell growth and proliferation in cellular studies.

Student: Wilson, Brock

Major: Computer Science

Collaborator: Hannah Wilberding

Faculty Mentor: Matthew Eicholtz

Presentation Time: 1:20-1:40

Presentation Type: Oral Presentation

Room: Room 6

Title: Moc Lots: Finding Parking Using Computer Vision

Abstract: Students have increasingly struggled to find parking on the campus of Florida Southern College (FSC) due to its fast growing attendance. The research presented aims to find cost-minimal solutions to this problem by utilizing FSC's security camera feed and Computer Vision techniques in video and image segmentation. Previous research in video segmentation has tended to rely on neural networks which require large amounts of data. This constraint, along with the possibility of overfitting that comes with a general neural network, resulted in the decision to focus primarily on video segmentation using computer vision techniques. Data was gathered from FSC's Garden Apartments using an already installed Arecont panoramic security camera. Background subtraction, contour detection, and optic flow, among other techniques, were applied to the video feed to detect the presence, direction, and magnitude of movement, and distinguish cars from other moving objects. Our findings indicate that video segmentation has notable potential in measuring the flow of traffic through an area, which could have greater applications to solving problems related to this subject in the future.

Poster Presentations

In alphabetical order by presenter's last name.

Each poster presentation features a three to four minute pre-recorded video presentation, which you are invited to watch prior to Fiat Lux. Video links are on the following pages.

Poster presenters will host individual question and answer sessions from 5:20-5:40.

2022 Fiat Lux Poster Presentations

Student: Boyer, Joshua

Major: Marine Biology

Collaborator: Catherine Fox

Faculty Mentors: Gabriel Langford and Allison Durland Donahou

Pre-Recorded Presentation: [Click to View](#)

Question and Answer Session: Room 1

Title: Spatial Ecology of Elasmobranchs in Hillsborough Bay, Florida

Abstract: Spatial ecology provides important information about species' movements, spatial arrangements, populations, and the effect of different habitats on individual species' ecological roles. Hillsborough Bay offers a unique ecosystem with a variety of habitats, such as freshwater river mouths, shallow-water estuaries, and seagrass beds, that allow different elasmobranchs to fulfill specific niches in the bay. While over a dozen shark and ray species have been documented in the Gulf of Mexico, more data is required to establish a thorough understanding of the spatial ecology, and biology of these animals. Our objective is to observe, document, and track elasmobranch communities in eastern Hillsborough Bay, specifically the Bonnethead *Sphyrna tiburo*, and Bull Shark *Carcharhinus leucas* populations near the Alafia River. From June 2021 to February 2022, we captured 6 Bonnetheads, 31 Bull Sharks, 15 Southern Stingrays *Dasyatis americana*, and 21 Cownose Rays *Rhinoptera bonasus*. A full health workup was performed on each elasmobranch, and each was tagged using a variety of external and internal tags. Most Bull sharks were found and caught near mangroves, indicating a potential preference for this habitat. All 6 Bonnetheads were caught in a seagrass bed near E.G. Simmons Park. In the future, we hope to explore how habitat loss and degradation due to pollution, global warming, and development are affecting shark populations in Hillsborough Bay. Elasmobranchs are vulnerable to a number of threats, and understanding their habitat needs and the specific niches they occupy is key to the future development of effective conservation plans.

Student: Del Monte, Gianna

Major: Exercise Science

Collaborators: Daniela Rincon Garcia, Steven Zet, and Abbey Hafler

Faculty Mentor: Erica M. Marshall

Pre-Recorded Presentation: [Click to View](#)

Question and Answer Session: Room 2

Title: Changes in Hemodynamics Following High Load and Blood Flow Restriction Exercise

Abstract: PURPOSE: To compare changes in hemodynamics following high load resistance exercise (HLRE) to two blood flow restriction exercise (BFRE) cuff types: elastic knee wrap (kBFRE) and pneumatic cuff (pBFRE). METHODS: Nine young resistance-trained individuals participated. Measures of hemodynamics: heart rate (HR), systolic blood pressure (SBP), and diastolic blood pressure (DBP) were collected at rest, immediately post-exercise (IP), 10, 30, and 45 min post-exercise. Participants completed three separate conditions: HLRE, kBFRE, and pBFRE, which were predetermined. Repeated Measures ANOVAs were used to examine the effect of condition across time on HR, SBP, and DBP. Significant ($p < 0.05$) main effects were analyzed using pairwise comparisons with a Sidak correction factor. RESULTS: The HR was increased similarly across all conditions from rest to IP, 10, and 30-min post-exercise, but was recovered by 45 min compared to rest. However, IP the HR was greater following HLRE compared to pBFRE. Further, the SBP was increased similarly across all conditions from rest to IP. But, SBP increased at 10, 30, and 45 min compared to IP, such that all time points were similar to

2022 Fiat Lux Poster Presentations

rest. Lastly, the DBP was decreased similarly across all conditions from rest to 10 min. The DBP at 10 min following HLRE was higher than kBFRE. **CONCLUSIONS:** These data demonstrate that HLRE and BFRE have similar, transient alterations post-exercise, which include an increased HR and SBP with reductions in DBP. Although, HR responses appear to be greater with HLRE compared to pBFRE in the IP period.

Student: Hammack, Brookelyn

Major: Education: Secondary Biology

Faculty Mentor: Hope Holley

Pre-Recorded Presentation: [Click to View](#)

Question and Answer Session: Room 3

Title: Diving into Marine Science: A Study of Student Proficiency in a High School Marine Science Classroom

Abstract: In this study, student teacher Brookelyn Hammack, monitored high school students' understanding of three key marine science standards over the course of a semester. Using a pre-assessment and state mandated test scores, students were grouped into two groups: those who were proficient in both reading comprehension and scientific understanding, and those who needed intervention and additional support in those areas. This intervention group was further divided into three more groups: those who were scoring lower than the whole group, those that were at risk of failing, and those who needed immediate intervention by the preservice teacher. After this grouping, the preservice teacher implemented a variety of key teaching methods and strategies to boost engagement, motivation, and understanding of marine biology concepts. After implementation, students were then given a summative project that would evaluate not only their understanding of unit topics, but also their overall literacy and scientific understanding. These scores were then compared to the pre-assessment scores to determine whether or not students made positive learning gains. Results showed that the influence of the key teaching strategies, modification of the content, and additional support for those needing intervention did positively increase student understanding of marine concepts.

Student: Meares, Madison

Major: Psychology

Faculty Mentor: Leilani Goodmon

Pre-Recorded Presentation: [Click to View](#)

Question and Answer Session: Room 4

Title: Disentangling the Rhythm from the Melody: What Really Causes the Mozart Effect?

Abstract: The Mozart Effect refers to enhanced spatial ability following listening to 10 minutes of Mozart music (Rauscher et al., 1993; Rauscher et al., 1995; Rideout & Taylor, 1997). However, many researchers have not been able to replicate the benefit on cognitive functioning (McKelvie & Low, 2002; Steele et al., 1999) and other researchers provide evidence that the intellectual benefit may not be due to the music exclusively but to changes in mood and arousal levels (Chabris, 1999; Steele, 2000; Linzt & Gadbois, 2003; Thompson et al., 2001). For example, Thompson and colleagues (2001) exposed participants to either an upbeat, happy Mozart sonata, a slow, melancholy Albinoni Adagio piece of music, or silence. They found that performance on the subsequent spatial task was best for those exposed to the Mozart sonata (compared to silence), however this spatial task benefit only emerged

2022 Fiat Lux Poster Presentations

when the music increased levels of arousal and moods. Thus, researchers have shown that a positive mood/arousal induced by Mozart music improves spatial task performance, however it is unclear whether this “Mozart Effect” is the result of the melody or the rhythmic pattern of the Mozart melody (Shi, 2019). Therefore in the current study, participants were exposed to 10 minutes of one of three types of music: 1. Mozart Sonata for Two Pianos in D major K. 448 (the original upbeat, happy Mozart sonata), 2. A Lo-fi version of the Mozart sonata with a slower rhythmic pattern but the same chords as the original, or 3. Albinoni Adagio in G Minor for Organ and Strings. Participants’ mood and arousal was assessed before and after exposure to the music. Then participants completed a 2-D mental rotation task. Results will be discussed in terms of the differences in mood and arousal and spatial task performance as a function of the type of music exposure where the melody was held constant but the rhythmic pattern varied. Because of the link between positive mood and cognitive performance (Ashby et al., 1999; Isen, 1999), it was hypothesized that compared to those exposed to the Albinoni Adagio music, those exposed to the original Mozart music would exhibit better spatial task performance, but only for those whose mood was elevated by the exposure to the Mozart music. Because there is no prior research on the effect of the specific Lofi version of the Mozart Sonata used in the current study, we were unable to formulate specific hypotheses related to exposure to that particular piece of music. If exposure to the Lofi version also induces differences in mood and arousal and results in enhanced performance on the mental rotation task compared to Albinoni Adagio music, this could provide evidence that the rhythmic pattern (as opposed to the melody) of the original Mozart sonata increases mood and arousal leading to better cognitive functioning.

Student: Schalk, Olivia

Major: Psychology

Collaborator: Hope Geraghty

Faculty Mentors: Deah Quinlivan and Leilani Goodmon

Pre-Recorded Presentation: [Click to View](#)

Question and Answer Session: Room 5

Title: Reactions to Teachers’ Responses of Bullied Students with Behavioral Differences

Abstract: The current study aims to examine the biases that participants have towards children with behavioral differences and whether they support or condone the mistreatment of these children under a variety of conditions. There were 139 participants ranging from ages 18 to 22. Participants were randomly assigned to 1 of 4 vignettes and then completed a 12 question post-reading questionnaire as well as a manipulation check. The vignettes included a positive teacher response to a student without outbursts, a positive teacher response to a student with outbursts, a negative teacher response to a student without outbursts, and a negative teacher response to a student with outbursts. Participants felt the student with an outburst that received a positive teacher response “deserved” to be bullied significantly more than any other condition. Participants identified that the teacher would have responded differently if the student with an outburst had a different behavioral history. Participants felt that the student that had an outburst was more likely to be acting out for attention than the student that had no behavioral outburst. Large scale impacts of this study include a better understanding of peoples’ perspectives of the classroom climate when children with behavioral differences are involved. This topic is not thoroughly researched, and more can be done to expand upon this study to fully understand the biases towards children with behavioral differences.

2022 Fiat Lux Poster Presentations

Student: Zet, Steven

Major: Exercise Science

Collaborators: Daniela Rincon Garcia and Gianna Del Monte

Faculty Mentor: Erica M. Marshall

Pre-Recorded Presentation: [Click to View](#)

Question and Answer Session: Room 6

Title: Changes in Nonlinear Measures of Heart Rate Variability Following High Load Resistance Exercise and Blood Flow Restriction Exercise

Abstract: PURPOSE: To compare non-linear measures of heart rate variability (HRV) following acute high load resistance exercise (HLRE) to two blood flow restriction exercise (BFRE) cuff types: elastic knee wrap (kBFRE) and pneumatic cuff (pBFRE). METHODS: Nine individuals volunteered to participate. Non-linear measures of HRV were collected at rest, immediately post-exercise (IP), 10, 30, and 45 minutes post-exercise. Participants completed three separate conditions: HLRE, kBFRE, and pBFRE, which were predetermined. Repeated Measures ANOVAs were used to examine the effect of condition across time on non-linear measures of HRV, which were analyzed via Poincaré Plot. These included: standard deviation of the Poincaré Plot crosswise (S1), standard deviation of the Poincaré Plot lengthwise (S2), and its axis ratio (S1/S2). Significant ($p \leq 0.05$) main effects were analyzed using pairwise comparisons. RESULTS: The S1 was reduced similarly across all conditions from rest to 10 minutes post-exercise, but was recovered by 30 minutes compared to rest. The S2 was also reduced similarly across all conditions from rest to 10 minutes post-exercise. But, the S2 increased from 10 to 30 minutes, such that it recovered and was similar to rest. Lastly, the S1/S2 ratio was reduced similarly across all conditions from rest to 10- and 30-minutes post-exercise. However, the S1/S2 ratio increased from 30 minutes to 45 minutes, such that it was similar to rest. CONCLUSIONS: These data suggest that acute HLRE, kBFRE, and pBFRE result in similar transient reductions in non-linear measures of HRV for up to 45 minutes post-exercise.

Notes:

Notes:

Notes:

This page intentionally left blank.

