



FLORIDA ATLANTIC UNIVERSITY

Harriet L. Wilkes
Honors College

22nd ANNUAL

SCHOLARLY



CREATIVE

research

SYMPOSIUM

Friday, April 12

John D. MacArthur Campus

Chastain Lecture 2024

**Are Broken Brains Doomed
to Dysfunction?**

Lessons from Hippocampal Formation

Explore the effects of Hippocampal injuries and research
behind improving recovery from these traumas.

MEET THE SPEAKER

JULIO J. RAMIREZ, PH.D.



R. Stuart Dickson Professor and Director of
the Neuroscience Program, Davidson College

1999 | 2024

25
YEARS

OF *Honors*

22ND ANNUAL



SYMPOSIUM COMMITTEE:

Annina Ruest – chair

Zachary Ferrara

Andia Chaves-Fonnegra

Wairimũ Njambi

Alex Coffman (ex officio)



MESSAGE FROM DEAN JUSTIN PERRY, PH.D.



Welcome to the 22nd Annual Harriet L. Wilkes Honors College Scholarly and Creative Research Symposium, in which we celebrate the high-caliber, original scholarship and creativity of our students. Today we have the opportunity to watch the students we have taught, advised, and mentored share their academic research and creative projects with a broad audience of community members and their peers. Their intellectual curiosity combined with many hours spent in laboratories, in field research sites, on data collection, on reviews of literature, and on writing and revising has produced over 100 publications by our students in peer-reviewed academic journals. We hope that you enjoy this day as much as we do, and we encourage you to ask questions, engage with our students, support your peers, and challenge yourself to cross interdisciplinary boundaries.

— Dean Justin Perry, Ph.D.

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The 2024 Robert Lee and Thomas M. Chastain
Honors Symposium Lecture Presents:
JULIO J. RAMIREZ, PH.D.
R. Stuart Dickson Professor and Director of the
Neuroscience Program at Davidson College



Chastain Lecture 2024
**Are Broken Brains
Doomed to
Disfunction?**

Lessons from Hippocampal Formation

EVENT SCHEDULE: APRIL 12, 2024

8:30–9:00	Participant Registration	AD Building
9:15–10:15 AM	Session 1: Oral Presentations	AD Building
10:15–10:30	Break	
10:30–Noon	Session 2: Oral Presentations	AD Building
Noon–1:00	Break	
1:00–2:00 PM	Chastain Lecture: Julio J. Ramirez, Ph.D.	AD 119
2:00–4:00 PM	Session 3: Visual Arts and Creative Research Research Poster	SR Building HC Building

SESSION 1 AND 2: ORAL PRESENTATIONS SCHEDULE

All student abstracts are included in alphabetical order on the pages following the presentation schedule grids.

SESSION 1

	AD 103	AD 104	AD 122
9:15 AM	Lucas Todoberto	Ashley Perry	Camila Rimoldi Ibanez
9:30 AM	Kyle Villalobos	Odette Terrazas	Aethena Fitzgerald
9:45 AM	Briana Abraham	Karolina Thomas	Braden Haggart
10:00 AM	Carolyn Mas	Laura-Lee McComie	Makayla Davis

SESSION 2

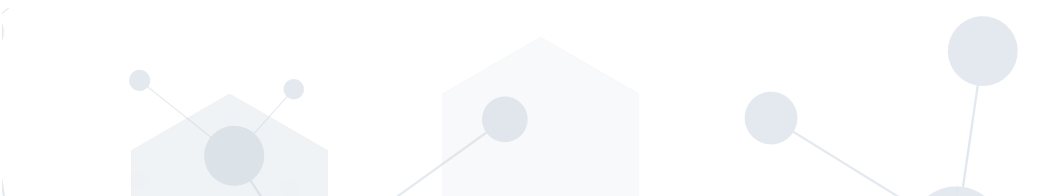
10:30 AM	Olivia Benson	Katrina Dearman	Jacob Carlson
10:45 AM	Mark Berrios	Kathaleen Kelly	Paityn Johnston
11:00 AM	James Branca	Andrea Carey	Maya Soud
11:15 AM	Joseph Farrell	Gabrielle Fagundes	Kacian Clayton
11:30 AM	Jenna Leali	Jessica Cordiner	Jared Haynes
11:45 AM	Izan Gonzalez Fayos	Damon Farrell	Rachel Kavalakett

SESSION 1 AND 2: ORAL PRESENTATIONS SCHEDULE

All student abstracts are included in alphabetical order on the pages following the presentation schedule grids.

AD 202	AD 204	AD 205	AD 206
Nicholas Moy		Tyler Martin	
Ellie Pfahler	Kaira Yee	Ariely Burgos	
Alberto Hernandez	Brandy Garcia Velasquez	Drew Burgess	
Ava Pitts	Daniel Fernandez	Maiya Singer	

Celia Roberts	Gavin Dunsby	Adam Burjan	
Emma Leonardo Solorzano	Thomas Testa	Ritvik Kesharaju	
Ishama Medilien	Blake Habay	Michelle Gras	Josue Maldonado-Zelaya
Kateryna Tsekhmayster	Victoria Grove	Kaijah Brown	Amelia Marshall
Ashley Schiffman	Kayla Filjon	Amanda Grodman	Emari Wimberly
Anthony Giguere	Avanthi Puvvala	Carlos Vaca Angus	



ORAL PRESENTATIONS

9:15 AM

AD103 **LUCAS TODOBERTO**

Advisor/Professor: N/A

Standardizing Supervised Deep Learning Networks to Separate Noise from Neurons in Multi-Photon Brain Images

AD104 **ASHLEY PERRY**

Advisor/Professor: Sondra Washington

"You Can Be Anything"? Interrogating Postfeminist Girl Power in the Barbie Animated Films

AD122 **CAMILA RIMOLDI IBANEZ**

Advisor/Professor: Andia Chaves Fonnegra

Sound Emission and Perception in Corals

AD202 **NICHOLAS MOY**

RACHEL KAVALLAKATT AND AVANTHI PUVALA

Advisor/Professor: Timothy Steigenga

Global Heritage Creations

AD205 **TYLER MARTIN**

Advisor/Professor: Terje Hill

Could Solar Energy be our Future?

9:30 AM

AD103 **KYLE VILLALOBOS**

Advisor/Professor: Terje Hill

Simulating Global Motion of the Brain in Response to Trauma:
Differential Biomechanics

AD104 **ODETTE TERRAZAS**

Advisor/Professor: Rachel Luria

Modernist Translation and its Impact on the Publishing Industry

AD122 **AETHANA FITZGERALD**

Advisor/Professor: Chitra Chandrasekhar

Are Electric Cars Really More Carbon Efficient Than Gasoline Cars?

AD202 **ELLIE PFAHLER**

TARRUCK WHEELER

Advisor/Professor: Christopher Strain

Neurodiverse Educational Testing (NET)

AD204 **KAIRA YEE**

Advisor/Professor: Shaina Rowell

The Role of Language as an Activator of Cultural Identity in
Bilingual Autobiographical Memory

AD205 **ARIELY BURGOS**

Advisor/Professor: Terje Hill

Storm Prevention: Flooding and High Winds in
Coastal Regions of Florida

9:45 AM

AD103 **BRIANA ABRAHAM**
MARIA SMIRNOVA

Advisor/Professor: Catherine Trivigno
Impact of Neuronal IL-1R1 on Neural Stem Cell Proliferation

AD104 **KAROLINA THOMAS**

Advisor/Professor: Nancy Tille-Victorica
Growing Awareness through Childhood and Adulthood in Paradise of the Blind by Doing Thu Huong

AD122 **BRADEN HAGGART**
ANDIA CHAVES FONNEGRA

Advisor/Professor: Andia Chaves Fonnegra
Parentage and Dispersal Capability of a Sponge Bioeroder within Caribbean Reefs

AD202 **ALBERTO HERNANDEZ**

Advisor/Professor: Timothy Stegienga
Stone Pine Marketing and Productions: Innovative Marketing Solutions for Nonprofits

AD204 **BRANDY GARCIA VELASQUEZ**

Advisor/Professor: Rachel Corr
Máscaras mexicanas: Death and Lucha Libre

AD205 **DREW BURGESS**
CATHERINE TRIVIGNO AND RACHEL CORR

Advisor/Professor: Catherine Trivigno
You Feel What You Eat: How Culture and Food Access Shape Mental Health via the Gut Microbiomes

10:00 AM

AD103 **CAROLYN MAS**

Advisor/Professor: Mark Tunick

Loot Boxes and Gambling

AD104 **LAURA-LEE MCCOMIE**

Advisor/Professor: Ashley Kennedy

Ethical Dilemmas in Glioblastoma Patient Care: A Case Study

AD122 **MAKAYLA DAVIS**

TRACY MINCER

Advisor/Professor: Tracy Mincer

The Microbiome of Salicornia

AD202 **AVA PITTS**

Advisor/Professor: Christopher Strain

Enviro Hours

AD204 **DANIEL FERNANDEZ**

Advisor/Professor: Kevin Lanning

The Adverse Behavioral and Cognitive Effects of Heavy Metal Contamination on the Neurodevelopment of Adolescents

AD205 **MAIYA SINGER**

Advisor/Professor: Gregg Fields

Correlation of Membrane type 1 Matrix Metalloproteinase (MT1-MMP) Expression to Invasive Potential and Survival of Pancreatic Cancer

ORAL PRESENTATIONS

10:30 AM

AD103 **OLIVIA BENSON**

Advisor/Professor: William O'Brien

How Anthropocentrism Shaped Florida

AD104 **KATRINA DEARMAN**

Advisor/Professor: Mark Tunick

Models of Advocacy in Dependency Cases: A Multidisciplinary Perspective

AD122 **JACOB CARLSON**

Advisor/Professor: Nancy Tille-Victorica

L'importance de la Perspective de l'Innocence de l'Enfance du roman
Petit Pays

AD202 **CELIA ROBERTS**

Advisor/Professor: Timothy Steigenga

Pentecostalization and Populism: Catlicos and Evanglicos in Costa Rican
and Guatemalan Politics

AD204 **GAVIN DUNSBY**

Advisor/Professor: Christopher Ely

Francisco Franco and ETA: A Cycle of Terror, Repression, and Retaliation

AD205 **ADAM BURJAN**

Advisor/Professor: Fily Yaouen

Optimization of lead compounds targeting RNA CUG repeats causing
Myotonic Dystrophy Type 1

10:45 AM

AD103 **MARK BERRIOS**

Advisor/Professor: William O'Brien

Assurance in the Appalachians: Evaluating crime and injury among thru-hikers along the Appalachian Trail

AD104 **KATHALEEN KELLY**

Advisor/Professor: Mark Tunick

Examining the Power of Governments to Limit Public Displays of Religion

AD122 **PAITYN JOHNSTON**

Advisor/Professor: Miguel Ángel Vázquez

Freedom of Desire, and Desire for Freedom

AD202 **EMMA LEONARDO SOLORZANO**

Advisor/Professor: Timothy Steigenga

Corruption in Government: A Case Study of Guatemala

AD204 **THOMAS TESTA**

Advisor/Professor: Christopher Ely

The Sarr-Savoy Report: Its Findings, Recommendations, and Implications for the Future of the Restitution of African Cultural Heritage

AD205 **RITVIK KESHARAJU**

Advisor/Professor: Chitra Chandrasekhar

The Acute Effects of Graphene Nanoflakes on Whole-Cell Cholesterol

11:00 AM

AD103 **JAMES BRANCA**

Advisor/Professor: Warren McGovern

Group Rings

AD104 **ANDREA CAREY**

Advisor/Professor: Mark Tunick and Timothy Stigenga

Academic Freedom in Higher Education

AD122 **MAYA SOUD**

Advisor/Professor: Nancy Tille-Victorica

The Fusion of Learning and Leisure in the Age of Distraction

AD202 **ISHAMA MEDILIEN**

Advisor/Professor: Timothy Steigenga

Critiquing the Religious Economic Model: Re-Evaluating Factors Behind the Catholic Church's Actions during the Dictatorships of Argentina, Chile, and Brazil during the 1970s

AD204 **BLAKE HABAY**

Advisor/Professor: Christopher Ely

The Achille Lauro Hijacking: Israel, Italy, International

AD205 **MICHELLE GRAS**

MAIYA SINGER

Advisor/Professor: Lillian Onwuha-Ekpete

Elucidation of the Relationship Between Intracellular Matrix Membrane type 1 Matrix Metalloproteinase (MT1-MMP) and Hypoxia Inducible Factor-1 α (HIF-1 α) in Pancreatic Cancer

AD206 **JOSUE MALDONADO-ZELAYA**

OLIVIA BENSON AND ANGELINA EMERSON

Advisor/Professor: Kevin Lanning

The Relevance of Psychology to Climate Change: Overview

11:15 AM

AD103 **JOSEPH FARRELL**

Advisor/Professor: Warren McGovern

Hearts that Beat the Odds: An Analysis of the Fontan Procedure

AD104 **GABRIELLE FAGUNDES**

Advisor/Professor: Nicholas Baima

Biological Warfare: Can a War be Justly Fought Using Biological Weapons?

AD122 **KACIAN CLAYTON**

Advisor/Professor: Nancy Tille-Victorica

Stem Cell Therapy Could Replace the Use of Root Canals

AD202 **KATERYNA TSEKHMAYSTER**

Advisor/Professor: Kanybek Nur-tegin

Democratization of Belarus and Lithuania in the Post-Soviet Space

AD204 **VICTORIA GROVE**

Advisor/Professor: Monica Maldonado

Prescribed Fire Reduces Flow Resistance and Reinvigorates Mature Cattail in a Constructed Wetland

AD205 **KAIJAH BROWN**

Advisor/Professor: Kelsie Bernot

A Protein's Filament, the Resilient Cytoskeleton; Understanding Science Through Poetry

AD206 **AMELIA MARSHALL**

JENNA DUKE AND LAUREN REYNOLDS

Advisor/Professor: Kevin Lanning

The Developmental and Social Psychology of Climate Change

11:30 AM

AD103 **JENNA LEALI**

Advisor/Professor: Warren McGovern

Dynamic Pricing in Miami's Hotels: A Statistical Analysis in Brickell and Coral Gables

AD104 **JESSICA CORDINER**

Advisor/Professor: Mark Tunick

Drunk Driving vs. Distracted Driving: Should They Be Punished Equally?

AD122 **JARED HAYNES**

Advisor/Professor: Nancy Tille-Victorica

An Exploration of How to Further My Intellectual Life

AD202 **ASHLEY SCHIFFMAN**

Advisor/Professor: Kanybek Nur-tegin

A Historical Analysis of Payment Methods and their Success or Failure Over Time

AD204 **KAYLA FILJON**

CHRISTOPHER SPAGNOLIA

Advisor/Professor: Andia Chaves-Fonnegra

Disease Progression in High and Low Microbial Abundance Sponges

AD205 **AMANDA GRODMAN**

CONNOR THOMAS, AYA ZUCCA AND NAOMI KAMASAWA

Advisor/Professor: Tricia Meredith

Automating 3D Segmentation of Neurons in Volume Electron Microscopy
Data for Correlative Light and Electron Microscopy Workflow

AD206 **EMARI WIMBERLY**

JESUS BECERRA AND KAIJAH BROWN

Advisor/Professor: Kevin Lanning

The Cognitive and Behavioral Psychology of Climate Change:
Communicating with Each Other and Ourselves in Order to Change
Behavior, and Ultimately Change the World

11:45 AM

AD103 **IZAN GONZALEZ FAYOS****THOMAS VAISSIERE, PAN YUTING AND GAVIN RUMBAUGH****Advisor/Professor:** Tricia Meredith

Exploring Feasibility: Targeting Syngap1 Haploinsufficiency in the Basolateral Amygdala and Somatosensory Cortex for Neurodevelopmental Disorder Research

AD104 **DAMON FARRELL****Advisor/Professor:** Sarah Malanowski

Genetic Doping, Enhancement, and Therapy: An Ethical Analysis in the Context of Competitive Sports

AD122 **RACHAL KAVALAKETT****Advisor/Professor:** Timothy Holford

Activity of Central Amygdala Neuronal Ensembles in Heightened Fear Phenotypes in Autism Spectrum Disorder

AD202 **ANTHONY GIGUERE****KEITH JAKEE****Advisor/Professor:** Keith Jakee

Washington Should be Concerned with Debts and Deficits

AD204 **AVANTHI PUVVALA****JONATHAN CHUCK AND LAURA SOLT****Advisor/Professor:** Monica Maldonado

Investigating the Mechanism behind ROR's Repression of IFN- γ

AD205 **CARLOS VACA ANGUS****Advisor/Professor:** William O'Brien

Empirical Governments by Design

AD206 **MEIRA GILDIN****Advisor/Professor:** Jacqueline Fewkes

Difficulties and Disparities Women Face While Seeking Healthcare

SESSION 3

VISUAL ARTS AND CREATIVE RESEARCH

SR BUILDING, ROOM 149

2:00 - 4:00 P.M.

RACHEL ALLISON

Advisor/Professor: Dorotha Lemeh

Artistic Expression with Water-based Media

LUKE BERG

SOFIA WASILEWSKI

Advisor/Professor: Dorotha Lemeh

Rewriting Intentions

JESSICA CORDINER

Advisor/Professor: Dorotha Lemeh

Desperation

LUIS DO PRADO

Advisor/Professor: Dorotha Lemeh

Perceptual Echoes

ANDRES FRAGA

Advisor/Professor: Annina Ruest

ESCAPE! A Maze Game

JOVAN FULLER

Advisor/Professor: Annina Ruest

Elyrion's Harmony

TRIP KEEFAUVER

Advisor/Professor: Annina Ruest

Games Showcase: The Journey to Find Closure

YUJIN KIM

Advisor/Professor: Dorotha Lemeh

a work in progress (will include title with submission)

BRIANNA LETTERIO

DELANEY ROSENBLATT

Advisor/Professor: Dorotha Lemeh
Metamorphosis: Growing Up in Play

CHRISTINA MCCABE

Advisor/Professor: Dorotha Lemeh
Untitled (Landscape)

CHRISTINA MCCABE

TABITHA WAGGNER

Advisor/Professor: Dorotha Lemeh
Untitled (Number Tree)

EMMA PHELPS

Advisor/Professor: Annina Ruest
Ant Farm

KIMBERLY SCHWEIGER

Advisor/Professor: Annina Ruest
Little Red's Adventure

CHRISTIAN SOARES DE OLIVEIRA

Advisor/Professor: Annina Ruest
Invictus: Nigredo & Calcinatio

TABITHA WAGGENER

Advisor/Professor: Dorotha Lemeh
Childhood

AVANTHI PUVVALA

CHRISTINA MCCABE

Advisor/Professor: Dorotha Lemeh
Calm Chaos

SOFIA WASILEWSKI

Advisor/Professor: Dorotha Lemeh

Modern Vampire

SOFIA WASILEWSKI

Advisor/Professor: Dorotha Lemeh

The First Supper

INDIA WILLIAMS

Advisor/Professor: Annina Ruest

Milk

Audubon's Scientific Illustrations

Advisor/Professor: Jon Moore and Dorotha Lemeh

SIENNA AGUIAR, RACHEL ALLISON, ROB ALONSO-GUMA, ANNA ARMBRUST, NATHALY BAYONA, ERIN BELL, OLIVIA BENSON, ARIELY BURGOS, SAVANNAH DEUTSCH, MICHAEL GREEN, FINN HAHN, ERIN HAJOSTEK, DAVID HEIBLUM, YUJIN KIM, ALLISON MACKENZIE, MOSS MIXON, JAZMIN MORRIS, NARESH PADMANABAN, CALVIN PECKHAM, KATIE POQUETTE, SHEILA RIOS, BRUNA SHARKEY, ANYA SPARA, REBECCA STANLEY, MACIEJ TADLA, CHRISTIAN TESTORF, SATURN VOGEELEY, ANTHONY WARD AND SOFIA WASILEWSKI

RESEARCH POSTER

HC Building

2:00 - 4:00 P.M.**SIENNA AGUIAR****Advisor/Professor:** James Wetterer

Evaluating various enrichment methods on the impact of Sloth Bear
Pacing at Zoo Miami

NISHI ANTHIREDDY**WILLIAM JA AND PRIYA RAJU****Advisor/Professor:** Jennifer Krill

Quantifying the probability of meal initiation in *Drosophila melanogaster*
using the Fly Liquid-Food Interaction Counter (FLIC)â€

YOSUF ARAB**CARLOS OLIVA, GABRIEL BONASSI, DANIELLE RIBOUL AND GREGORY MACLEOD****Advisor/Professor:** Kelsie Bernot and Tracy Mincer

Towards a Metabolic Assay for Neuronal Performance in Vivo

ANNA ARMBRUST**Advisor/Professor:** James Wetterer and William O'Brien

Flora of Halpatiokee Regional Park

MYA ARSCOTT**Advisor/Professor:** Laura Vernon

Ketamine's Therapeutic Potential: A Review

DHEERAJ AYAPATI**SARAH COHEN****Advisor/Professor:** Julie Earles and Alan Kersten

Effects of Green Tea on Neurodegeneration in a *Drosophila* Model of
Huntington Disease

NATHALY BAYONA

Advisor/Professor: Tracy Mincer

The Effects of Vitamin B12 on Pyrodictum bahamense's Growth and Proliferation

AMANDA BELIZAIRE

**KEEDON LEWIS, JON MOORE, ERICCA STAMPER, IRIS SEGURA-GARCIA, TRACY MINCER
AND KELSIE BERNOT**

Advisor/Professor: Jennifer Krill

Taxonomic Identification of Hepatozoon Parasite in Gopherus Polyphemus

GABRIELLA BOEHM

JAMILYA RODRIGUEZ

Advisor/Professor: Jennifer Krill

Testing the effects of COVID-19 cardiac performance in an endurance exercise assay using Drosophila melanogaster

JACOB CARLSON

NATALIA ESCOVAR

Advisor/Professor: Jennifer Krill

Assessing the Impact of Essential Oils on Seizure Recovery in Bang-Sensitive Drosophila melanogaster

DAKOTA COGLIATI

Advisor/Professor: Chitra Chandrasekhar and William O'Brien

The Importance of Federal Policies Required to Regulate PFAS in Water Resources

ZACHARY COMELLA

**PRANAV MEKA, JOSEPH JABLONSKI, LUISA MORI, SUSANA VALENTE
AND SONIA MEDIOUNI JABLONSKI**

Advisor/Professor: Jill Rahaim

The Screening of an shRNA Library of Human Pioneer Factors for their Effect on HIV Transcription

EDEN CUDAK**MEALNIE SAROZA-PLACENCIA****Advisor/Professor:** Kelsie Bernot and Tracy Mincer

Comparing Effects of Fragile X Syndrome on Long and Short-Term Memory Through *Drosophila Melanogaster*

PAIGE DEFOREST**PAULO PROTACHEVICZ AND RODRIGO DE OLIVEIRA PENA****Advisor/Professor:** Rodrigo De Oliveira Pena

Investigating the Role of Astrocytes in the Activity of Neural Networks

ROSELYN DIAZ**Advisor/Professor:** Alan Kersten and Julie Earles

Effect of Verbal Reminders and Actor Gender on Event Memory

REBECCA DICICCO**KOICHI HIROKAWA AND SHOUVIK MAJUMDER****Advisor/Professor:** Erica Young

Cell-Type-Specific Consolidation of Learned Motor Memories in the Neocortex

ALYSSA DIGIOVANNA**Advisor/Professor:** Laura Vernon

The Impact of Adventure Therapy on Later Coping for Veterans

ALLISON DOBULER**Advisor/Professor:** Shania Rowell

Does Signaling Mitigate the Seductive Details Effect?

JORDAN DOYLE**Advisor/Professor:** Yaouen Fily and Laura Vernon

The Effect of Environmental Stressors on Eating Disorder Symptom Severity

HANNAH EPSTEIN

MADELEINE HAGOOD, JAMIE KNAUB AND MARIANNE PORTER

Advisor/Professor: Daniel De Lill and Veljko Dragojlovic

The Effects of Acute and Chronic Caffeine Exposure on Neuronal Function
Using *Lumbricus terrestris*

NATALIA ESCOVAR

JACOB CARLSON

Advisor/Professor: Jennifer Krill

Assessing the Impact of Essential Oils of Seziure Recovery in Bang-
Sensitive *Drosophila Melanogaster*

BROOKE ESTEVEZ

Advisor/Professor: Jordon Beckler

Micro-computed Tomography-based Visualization of Bioturbation within
Sediment

SETH WYATT FALLIK

CARALIN BRANSCUM AND COLETTE CONTENT

Advisor/Professor: Tricia Meredith

Voluntary Victim Intoxication in Sexual Assault State Statutes: A Content
Analysis

NELL ROBERT FAVEUR

KELSIE BERNOT AND TRACY MINCER

Advisor/Professor: Jon Moore

Investigation of Bacterial Horizontal Gene Transfer Within the Fecal
Microbiome of The Gopher

KAYLAN FERNANDEZ

CRISTAL AUGER

Advisor/Professor: Jennifer Krill

Exploring Therapeutic Potential of Natural Compounds and Micronutrients
on Glioblastoma in *Drosophila melanogaster*

KAYLAN FERNANDEZ**KHUSHI PATEL****Advisor/Professor:** Jennifer Krill

Exploring Dehydration's Impact on Nerve Signals: A Study with *Lumbricus terrestris*

LUNA FORERO**Advisor/Professor:** Chitra Chandrasekhar and Gregory Macleod

Development of Recombinant Protein Models to Evaluate Chemical Probes for Cysteine Oxidation

GABRIELLA FUNDERLICH**Advisor/Professor:** Nancy Tille-Victorica

The Effects Anabolic Steroids Have on Health and Sports

DANIELA GARCIA-MORENO**CHAD FORBES****Advisor/Professor:** Monica Maldonado

Group Perception During Learning Tasks of Underrepresented Students

SIDDHI GAVKAR**ADELE STEWART, PAULA KURDZIEL AND RANDY BLAKELY****Advisor/Professor:** Monica Maldonado

Interactions between Dopamine and Serotonin in a Mouse Model of Neuropsychiatric Disorders

AIDEN GELETA**Advisor/Professor:** Laura Vernon

The Effect of Pyrethroid on Conduction Velocity and Threshold of *Lumbriculus variegatus* giant fibers

IBRAHIM GHET**CHRISTOPHER HAGA****Advisor/Professor:** N/A

Graph Neural Networks for the Identification of Novel Inhibitors of a Small RNA

AMPARO GODOY PASTORE

ARASH GOLCHUBIAN, MEHRDAD NOJOUMIAN AND OGE MARQUES

Advisor/Professor: Terje Hill

Exploring Deep Learning Approaches to Medical Image Analysis: A MATLAB "Cookbook"

IZAN GONZALEZ FAYOS

JAMES LEE

Advisor/Professor: Jennifer Krill

Exploring Tactile Learning and Memory in Genetically Modified *Drosophila*: A Y-Maze Investigation

LARAH GORAYEB

Advisor/Professor: Kelsie Bernot and Tracy Mincer

Detection and Prevalence of *Hemolivia* Haemoparasite Within the *Gopherus Polphemus* Population

NOAH GORMAN

Advisor/Professor: Jon Moore

Preliminary Assessment of Boat-Generated Wake Influence on the Ecological Structure of a Seagrass Meadow

MIABETH GORODETZER-EDELMAN

Advisor/Professor: Kelsie Bernot and Tracy Mincer

The Fungal Gut Microbiome of *Gopherus polyphemus* of the Abacoa Greenway

MICHELLE GRAS

Advisor/Professor: Jennifer Krill

Examination of Sodium on the Nervous System of *L. Terrestris*

AMANDA GUEVARA

Advisor/Professor: Shaina Rowell

A Review of Applied Behavior Analysis' Effectiveness and Ethical Implications

SOPHIA GUILARTE**ERIK ENGBERG****Advisor/Professor:** Kelsie Bernot and Tracy Mincer

Advancing Prosthetic Tactile Sensing Through Wearable Flexible Sensors, Pattern Recognition, and Neural Networks

KEVIN HALPERN**KEEDON LEWIS, JON MOORE, ERICCA STAMPER, TRACY MINCER AND KELSIE BERNOT****Advisor/Professor:** Kelsie Bernot

Examining the Potential Prevalence of Herpesvirus within Gopherus Polyphemus in Abacoa

KALEIGH HARBIN**ANDREW CHAMBERLIN****Advisor/Professor:** Jennifer Krill

Exposure Effects of Common Pesticides on Neurophysiology in Lumbricus terrestris

KALANI HERNDON**ERIN BELL****Advisor/Professor:** Jennifer Krill

Exploring How Genetic Variation Within the Foraging (for) Gene in Drosophila melanogaster Affects Ethanol Preference, Tolerance, and Aggression

BLAIZE HICKS**IZAN GONZALEZ FAYOS****Advisor/Professor:** Jennifer Krill

Exploring Tactile Learning and Memory in Genetically Modified Drosophila: A Y-Maze Investigation

JASPER HOOKER**GRAYSON MURPHY AND KARIS HONG****Advisor/Professor:** Jennifer Krill

SARS-CoV-2 Effects on Gustation in Drosophila melanogaster

SHARADA IYER

AVA TRACY

Advisor/Professor: Jennifer Krill

The Effects of Polystyrene Microplastic Consumption on Reproduction and Survival Rate of *Drosophila melanogaster*

PRANAV JAMBULINGAM

ERIK DUBOUÉ AND LAURA FONTENAS

Advisor/Professor: Lucia Carvelli

Assessment of the Role of Glia in the Evolution of Brain Function and Behaviors in *Astyanax Mexicanus*

WESTIN JOHNSON

Advisor/Professor: Terje Hill and James VanZwieten

Development and Testing of a Small WEC for Numerical Simulation Validation

LIBERTY JUNO

Advisor/Professor: Jon Moore

The Occurrence, Neuroanatomy, and Morphometrics of Slickhead *Leptochilichthys* in the Gulf of Mexico

AVINASH KANAKAM

SARAH STERN

Advisor/Professor: Catherine Trivigno

An Integrated Workflow for the Analysis and Quantification of Context Dependent Feeding Behavior

ANJALI KANNAN

LAUREN SIMONITIS, AUBREY CLARK AND TRICIA MEREDITH

Advisor/Professor: Daniel de Lill and Veljko Dragojlovic

Olfactory Rosette Microstructure in Blacktip Sharks (*Carcharhinus Limbatus*)

MARLI KNOX

SARAH COHEN AND ROBERT STACKMAN JR.

Advisor/Professor: Jennifer Krill

Isolating Direct Neuronal Projections from the Mouse Perirhinal Cortex to the Hippocampus

JOSIE LEALI

Advisor/Professor: Justin Perrault

Stress Indicators in Hatchling Leatherback (*Dermochelys coriacea*), Loggerhead (*Caretta caretta*), and Green (*Chelonia mydas*) Sea Turtles in Relation to Holding Conditions

NIKKI LEALI

Advisor/Professor: Monica Maldonado

Improving Medical Diagnosis Classification Accuracy through Deep Learning Detection of Poor Quality Images

EMERSON LEE

PASHA NIROO

Advisor/Professor: Laura Vernon

Freeze Frame Meditation and Decision-Making

MATTHEW LEGARE

Advisor/Professor: Jon Moore and James Wetterer

Remote Camera-Trap Survey of the Under-Roadway Animal Corridors in the Abacoa Greenway

MARISSA LIPPINKHOF

MARIA JOSE OLVERA AND SARAH STERN

Advisor/Professor: Monica Maldonado

Conditioned Taste Aversion Reveals Lateralization of the Murine Insular Cortex

LAURA-LEE MCCOMIE

Advisor/Professor: Ashley Kennedy

Ethical Dilemmas in Glioblastoma Patient Care: A Case Study

JOSUE MALDONADO-ZELAYA

OLIVIA BENSON

Advisor/Professor: Kevin Lanning and Shaina Rowell

Using SNAP for Early Behavioral Intervention

SOFIA MARTINEZ

Advisor/Professor: Tucker Hindle

Development of a GIS-based Approach to Seaport Operability Assessment of Projected Sea Level Rise Scenarios

RYAN MAYER

VYANA TRIEU

Advisor/Professor: Jennifer Krill

Effect of Roundup® on *Lumbricus terrestris* Physiology

JULIA MCDUFFEE

Advisor/Professor: Veljko Dragojlovic

A Look Through Chemistry History: Why We Tasted and Smelled Chemicals and When We Stopped

LIZBETH MONCADA

MADISON MCADOO

Advisor/Professor: Daniel de Lill and Veljko Dragojlovic

Exploring Effective and Sustainable Synthesis Routes for Enantioselective Chlorolactonization using Retrosynthesis

ERIC MORALES

MATTHEW SWANSON AND LAURA BOHN

Advisor/Professor: Kelsie Bernot

Investigating the Opioid Binding Receptor in Human T Lymphocytes

GABRIELLA NUNEZ

JONATHAN YARDLEY

Advisor/Professor: Kelsie Bernot

Factors That Contribute to the Declining Number of Veterinary Students Pursuing a Career in Equine Medicine

ELENA OBERST

Advisor/Professor: Barry Rosson

Creating a Calderesque Kinetic Mobile Through Precise Design and Engineering Principles

NARESH PADMANABAN**ERIK DUBOUE AND DANIELA UMANA****Advisor/Professor:** James WettererBrain-wide Mapping of Adaptive Feeding States in *Astyanax mexicanus***OHM PARIKH****Advisor/Professor:** Goksu Oz and Ryohei YasudaThe Effect of PKM ζ Loss-of-Function on Spatial Learning and Memory**KHUSHI PATEL****NANCY JONES, ERIN JONES AND SAMANTHA GOTT****Advisor/Professor:** Jennifer Krill

Fear-elicited Emotional Responses in Infants and Brain Development

ZOE PAYNER**Advisor/Professor:** Rachel Corr and Sarah Malanowski

Human Remains: The Conflict of Benefits and Ethics

KATIE POQUETTE**Advisor/Professor:** Peter Rodriguez, Randy Blakely and Lucia CarvelliEffects of Amphetamine Exposure on Dopamine Transmission using mutated *Caenorhabditis elegans* from the Million Mutations Project**ELLA PROTZ****Advisor/Professor:** Lillian Onwuha-Ekpete and Gregg FieldsGelatinases are Important for CD4⁺ T-cell Metabolic Reprogramming**MADISON PUZDER****Advisor/Professor:** Gregory Macleod

Exploring Understudied Modes of GPCR Regulation

PRIYA RAJU

NISHI ANTHIREDDY

Advisor/Professor: William Ja, Scarlet Park and Monica Maldonado
Optimizing iTRF for Maximum Drosophila Melanogaster Lifespan Extension

KATELYN RAMSAHAI

Advisor/Professor: Sandra Kovachka, Mason Martin and Matthew Disney
Synthesizing RNase Recruiters

GABRIELLE RUIZ

**MIABETH GORODTZER-EDELMAN, KEEDON LEWIS, JON MOORE, TRACY MINCER
AND KELSIE BERNOT**

Advisor/Professor: Jennifer Krill
Analysis of Bacterial Diversity in Response to Natural Factors of Gopherus
Polyphemus

JULIE SAMPAIO

SARAH WETTERER

Advisor/Professor: James Wetterer
Flora of Refúgio das Águas, a private reserve in Minas Gerais, Brazil

CLAIRE SANFORD

Advisor/Professor: Samantha Gott and Nancy Aaron Jones
Emotional Development In Infants Six Through Ten Months Old

MELANIE SAROZA-PLACENCIA

EDEN CUDAK

Advisor/Professor: Jennifer Krill
Comparing Effects of Fragile X Syndrome on Long- and Short- Term Memory
through Drosophila Melanogaster

NICHOLAS SHAFFER

EMMA ROBERTSON

Advisor/Professor: Veljko Dragojlovic and Daniel de Lill
A Retrosynthetic Workup of a Chlorolactone Following Chlorocyclization

ABIGAIL SHEPARD**JAMES LEE****Advisor/Professor:** Jennifer Krill

Effects of Saturated and Unsaturated Fats on Neuronal Activity

SARAH SINGH**KEEDON LEWIS, JON MOORE, ERICCA STAMPER, IRIS SEGURA-GARCIA,****TRACY MINCER AND KELSIE BERNOT****Advisor/Professor:** Kelsie Bernot and Tracy MincerDetection of *Mycoplasma agassizii* and *Mycoplasma testudineum* in Abacoa's Gopher Tortoise Aggregation**JILLIAN SIVERLY****Advisor/Professor:** Laura Vernon

Cultural Frame Switching: The Role of Language and Culture in Attitudes Towards Mental Illness

NATALIE SOUZA**Advisor/Professor:** Randy Blakley and Monica MaldonadoExploring the Role of Inflammatory Cytokines and p38 α MAPK in Autism Spectrum Disorder: Implications for Serotonergic Signaling**LEIGHTON STACK****JON MOORE, ERICCA STAMPER, IRIS SEGURA-GARCIA, KEEDON LEWIS,****KELSIE BERNOT AND TRACY MINCER****Advisor/Professor:** N/APresence Of Nematodes in *Gopherus polyphemus* in the Abacoa Greenway**MACIEJ TADLA****Advisor/Professor:** Jon Moore and Andia Chaves Fonnegra

Comparing Species Distribution of Barnacles in the Intertidal Zones at Jupiter Inlet in Jupiter, Florida and North Jetty Beach in Nokomis, Florida

MICHAEL THAYER**Advisor/Professor:** Kanybek Nur-tegin

Is Airbnb Impacting Home Prices? Evidence from Fort Lauderdale

SESSION 3

ELENA TONKIN

KELSIE BERNOT, TRACY MINCER, KEEDON LEWIS, ERICCA STAMPER AND IRIS SEGURA-GARCIA

Advisor/Professor: Jennifer Krill

Anaplasma phagocytophilum's effect on Gopher Tortoises of South East Florida

HANNAH VARGHESE

Advisor/Professor: Kelsie Bernot and Tracy Mincer

Genetic Variance Present in Toll-like Receptor 2 of Gopherus polyphemus

ANIRUDHH VENKAT

ERIC MORALES

Advisor/Professor: Jordon Beckler

Quantifying Unresearched Coastal Carbon Cycle Components Using Satellite Remote Sensing

MIA VILA

Advisor/Professor: Surya Pandey and Courtney Miller

Behavioral and Neural Impairments in Adult Mice with Prenatal Oxycodone Exposure

JOHN VO

SEBASTEIN BULLICH AND SARAH STERN

Advisor/Professor: Kelsie Bernot

Acute Stress and Chronic Stress and its Effects on Feeding Behavior in Mice

MIKAYLA WIGLESWORTH

Advisor/Professor: Laura Vernon and Wairimu Njambi

Examining the Effects of a College Support Program for Foster Youth

MATTHEW ZOLL

Advisor/Professor: Jon Moore

An Analysis of the Biodiversity and Vertical Ecology of Scopelarchid and Evermannellid Fishes in the Gulf of Mexico

Abstracts: Oral Presentations

ALPHABETICAL BY STUDENT'S LAST NAME

BRIANA ABRAHAM

Impact of Neuronal IL-1R1 on Neural Stem Cell Proliferation

While it has been long accepted that neurons could not regenerate in the adult brain, recent research has not only suggested the existence of ongoing neurogenesis, but that the process is imperative in specific brain regions such as the dentate gyrus (DG) of the hippocampus. Through the utilization of EdU proliferation assay to visualize adult hippocampal neurogenesis in mice, studies have explored the impact of various factors on brain plasticity. An understudied factor is the pro-inflammatory cytokine Interleukin 1 (IL-1) and its signaling through neuronal IL-1 receptor. Understanding the effect of that signaling on adult hippocampal neurogenesis could aid in understanding and potentially treating neurogenerative disorders. In this study, IL-1 was delivered into the hippocampus of mice expressing IL-1 receptor only in neurons. Hippocampal sections were collected and stained with EdU. A total count of EdU+ cells in the DG was quantified and compared between IL-1 injected mice and controls.

OLIVIA BENSON

How Anthropocentrism Shaped Florida

Anthropocentrism, the belief that humankind is central to existence and has priority over all other living beings and systems, is embedded in Western philosophy and motivates environmental degradation.

The history of Florida provides some of the most egregious examples, compiled with instances of destruction and mutilation for the sake of tourist, residential, commercial, and industrial developments. Florida's rapid development and natural resource use in the twentieth century changed its unique landscape by using ruinous methods to reclaim land and synthesize a paradise for humans alone. The loss of over half of the Everglades—the unique wetland system with incredible biodiversity—is lamentable, but it has been seen largely as a victory, celebrating the anthropocentric influences that have shaped modern Florida. This paper will examine the history of Florida's development, its anthropocentric motivations, and how to profile and prevent it effectively.

MARK BERRIOS

Assurance in the Appalachians: Evaluating Crime and Injury Among Thru-hikers Along the Appalachian Trail

The Appalachian Trail sees over four million visitors annually, and about four-thousand of those visitors attempt to thru-hike the trail. Only about one-fourth, however, successfully complete the 2,200-mile hike. Given the relentless physical and mental demands of a thru-hike, incapacitating bodily injury is one of the primary fears of a thru-hiker. Additionally, the prolonged solitude, consistent introductions to new individuals in unfamiliar towns, and continuous travel between rural countryside also leaves many novice hikers concerned for their personal safety on trail. By analyzing published studies of injuries and previous instances of crime along the trail, this can provide the identification of risk factors and precautionary measures to better physiologically and psychologically equip prospective thru-hikers.

JAMES BRANCA

Group Rings

Within mathematics, the field of algebra focuses primarily on preserving symmetry and structure within a set. The main objects of study are groups, rings, and fields with each object having more specifications than the last. This thesis focuses on a given group G over a (commutative) ring R , also referred to as the group ring $R[G]$. Elements within $R[G]$ are formal sums of elements of G with coefficients from R . A class of reduced rings that generalizes integral domains is that of complemented rings. A topic of interest is when $R[G]$ is complemented given that R is an integral domain. We will discuss $R[D_n]$, $R[C_n]$, along with others ($\text{char}(R) = 0$) and determine when it is complemented.

KAIJAH BROWN

A Protein's Filament, the Resilient Cytoskeleton; Understanding Science Through Poetry

In today's research world, Scientists focus on gathering unique or new and improved methods and ideas surrounding the topics that we know little about. More importantly, their emphasis is on disseminating that discovery to the masses in order to teach or advance their conclusions. Oftentimes, these explanations and information are convoluted making it difficult to understand, with this in mind, a new goal has arisen and that is presenting research in a way that everyone can comprehend. Here, I've decided to demonstrate how the arts, for example, poetry, can aid in making Science more digestible and enjoyable for everyone. Although seemingly different, they both have the same goal of sharing unfamiliar concepts with a general audience and evoking insights and critical thoughts. Consequently, implementing both in research can popularize topics and ideas in hopes of expounding upon it through shared apprehension.

DREW BURGESS

You Feel What You Eat: How Culture and Food Access Shape Mental Health Via the Gut Microbiome

Previous research implicates the gut-brain axis in mental health, but factors such as cultural diet and other circumstances that influence the gut-brain axis have not been extensively studied. This thesis aims to investigate cultural factors and other factors, including seasonal and economic conditions, that may influence diet and therefore, the gut microbiota, and in turn, the gut-brain axis. To explore this connection, the relationship between components of diet and changes in the gut microbiota composition was reviewed. To understand how those factors may interact to impact anxiety and depression via the gut-brain axis, a host of influences should be considered, including diet as one of many complexities that contribute to an individual's mental health. This thesis proposes recommendations for mental health professionals, public health policy, and future research to effectively support the mental health of individuals with conditions, such as anxiety and depression, with the respect and mindfulness they deserve.

ARIELY BURGOS**Storming Prevention: Flooding and High Winds in Coastal Regions of Florida**

In recent years, Florida has faced significant economic losses due to its hurricane season, totaling over \$115 billion in damages. The most destructive elements of these storms include flooding and high-speed winds. However, advancements in structural design offer promising solutions for mitigating such devastation. Innovations such as enhanced framing, truss systems, and gutter designs bolster home resilience against hurricanes. These developments stem from lessons learned after the devastating Hurricane Andrew in 1992, prompting the implementation of stricter building codes. These codes, informed by mathematical models like Copula Function and Nataf transformation, provide smarter approaches to withstand powerful winds and minimize flood damage. We discuss some of these structural precautions that help to save billions in future hurricane-related losses and ensure the safety of countless residents.

ADAM BURJAN**Optimization of Lead Compounds Targeting RNA CUG Repeats Causing Myotonic Dystrophy Type 1**

Current screening methods in drug discovery have inherent limitations that we seek to overcome. Optimizing a lead compound using traditional experimental techniques is excessively expensive and time-consuming. Synthesizing a modified version of a lead compound can take anywhere from a week to a month depending on the complexity of the modification. Therefore, we have developed an in-silico drug discovery pipeline to optimize lead compounds and have applied it to a lead compound known as I27, previously identified for its targeting of RNA CUG repeats. A combinatorial approach was employed to generate approximately 2.8 million derivatives, which were subsequently filtered based on the physiochemical and toxicological parameters we established. After conducting MM/PBSA calculations, we predicted the binding free energies of each theoretical derivative to RNA CUG repeats. Initial results reveal 5178 derivatives with lower binding free energies, suggesting that they are better binders compared to the lead compound.

ANDREA CAREY

Academic Freedom in Higher Education

Academic freedom has been threatened by recent legislation seeking to prohibit the teaching of specific topics related to diversity in university classrooms, such as Florida House Bill 999 titled Postsecondary Educational Institutions, which went into effect in July 2023. I defend the concept of academic freedom, tenure and viewpoint diversity within the higher education system. Essentially, free discourse and the concepts of tenure go hand in hand, as both preserve the integrity and neutrality of the classroom. House Bill 999 directly threatens the neutral nature of the classroom, by demonizing certain perspectives while upholding other perspectives and threatening the concept of academic tenure within our higher education institutions. This directly creates a hostile learning environment which threatens the learning environment of the classroom.

JACOB CARLSON

L'importance de la Perspective de l'Innocence de l'Enfance du roman Petit Pays

In the novel *Petit Pays* (Small Country) published in 2016, Gaël Faye explores how childhood innocence can shape perceptions of major historical events, particularly during the Rwandan Genocide in 1993. The protagonist, Gabriel, is a 10-year-old Tutsi boy in Burundi, navigates the rising tensions between the Hutus and Tutsis. Born to a Rwandan mother and French father, Gabriel embodies the turmoil of his surroundings. Faye's narrative delves into the impact of war and genocide on children, emphasized by Gabriel's loss of innocence and his transformation into adulthood at a young age. This presentation will show how the perspective of a child can change a reader's frame of reference of important historical events, such as genocide and war. Gabriel's narration reveals how he is affected by the tragic events that he experiences, through the impact to and eventual loss of his childhood and innocence. This presentation will be completed in French.

KACIAN CLAYTON

Stem Cell Therapy Could Replace the Use of Root Canals

Often, when a tooth is damaged beyond repair, the typical procedure that can be done to save the rest of the viable tooth is a root canal. This procedure removes all of the decayed and unviable tooth portions of the tooth. However, it is not a perfect fix since this procedure can weaken the tooth integrity. The regenerative dentistry field focuses on regrowing and repairing injured oral tissue and regaining its ability to work. With stem cell technology and tissue engineering as its center, this newly emerging field could create another treatment plan for dentists to choose from when addressing their root canal-bound patients. Stem cells, being undifferentiated cells capable of growing into various types of cells, if applied, could repair and restore the damaged tooth to its initial state.

JESSICA CORDINER

Drunk Driving vs. Distracted Driving: Should They Be Punished Equally?

In the United States, driving with a blood alcohol concentration (BAC) of at least .08% is regarded as one of the most serious offenses threatening road safety; meanwhile, driving while using a cellphone is considered to be significantly less serious. Whether or not an accident occurs, the BAC .08% driver may face punishment, including jail time, while the cellphone driver merely faces fines at most. Both offenses risk harm to others, but only the BAC .08% drivers offense is taken seriously. I argue that, assuming both are equally culpable and risk equivalent harm, both drivers should face equal punishment, and punishment should not depend on the driver actually causing an accident because punishment should not depend on moral luck.

MAKAYLA DAVIS

The Microbiome of Salicornia

This study sought to isolate the various microbiota inhabiting and cohabitating Sea Asparagus (*Salicornia bigelovii*), a succulent perennial native to the coast of California, using a metagenomics approach. Upon successful isolation, and subsequent identification of the microbial community associated with this vegetation, the researcher explored the possible application of the finding to the modulation of gut health, through the manipulation of the gut microbiome. Moreover in an effort to treat diseases with explicit ties to the state of the microbes inhabiting the gut and understand marine plants which have not been subject to modern agricultural practices. The researcher hopes to provide evidence showing the presence of identified microbes in *Salicornia bigelovii* and demonstrate its ability to be effective in the alteration of microbial flora in the gut, as well as the prevention and/or treatment of certain disease models.

KATRINA DEARMAN

Models of Advocacy in Dependency Cases: A Multidisciplinary Perspective

Through normative considerations of how we ought to advocate for and represent children in dependency court, I will argue that we should use a multidisciplinary approach as opposed to a best interests or child's wishes approach. Best interests believes that a child's advocacy should be based upon what is in their best interests, regardless of what the child wants. Child's wishes holds that a child's advocacy should be centered around the child's desired case outcome. In both models, advocates can be lay people or attorneys. In a multidisciplinary model, attorneys are appointed to the child to provide legal representation in conjunction with a lay advocate. Advocates should inform the court of the child's wishes but ultimately advocate for their best interests regardless of the child's wants.

GAVIN DUNSBY

Francisco Franco and ETA: A Cycle of Terror, Repression, and Retaliation

From 1939–1975, General Francisco Franco controlled Spain through violence and repression. In 1959, Euzkadi ta Askatasuna (ETA), a Basque separatist organization, was formed and, in 1968, began using terrorism against the Spanish state. From that point forward, both the government and ETA fought each other. For ETA, the fight was for the creation of an independent Basque country, while the government fought to maintain control over the country; both used terrorism to do so. Terrorism is a set of tactics that creates fear in its target audience to incite political change. In their fight, the Spanish government and ETA created a cycle of violence, terror, and repression that intensified with every attack. ETA was so entrenched in this cycle, that even when the country transitioned into a democracy following Franco's death in 1975, it continued its terrorist campaign with hundreds dying in the decades to come.

ANGELA EASTERLING

Facial Emotion Recognition in Autistic Children

Autism Spectrum Disorder (ASD) is often characterized by varying deficiencies in social behavior and communication. In this study, there will be discussion of addressing gaps in the literature, such as exclusion of certain racial and gender exclusions due to the complex nature of ASD in its diagnosis and its recognition of importance in research. This study aims to investigate the facial emotion processing abilities of children aged 4 to 8 with ASD, compared to typically developing (TD) children, and discussing further the implications of the study in comparison to previous studies in which there were populations excluded or there were other criteria that were not met.

GABRIELLE FAGUNDES

Biological Warfare: Can a War be Justly Fought Using Biological Weapons?

Biological agents and toxins have been used as weapons offensively as early as 1320 BC. Modern ability to manipulate and control biological materials has raised concerns as to how wars will be fought in the future. Although the use of biological weaponry has been banned for almost a century, government and non-government funded research in this area has not ceased. This highlights the importance of continuing research into the ethics of biological weaponry use according to modern science. The Geneva Protocol of 1925 and the subsequent Geneva Conventions have clearly determined biological warfare as unethical and illegal due to the devastating effects it has on both combatants and noncombatants. The International Humanitarian Laws, based on the fourth Geneva Convention, are used as guidelines for fighting just and legal wars. After having compared modern biological advancements to these laws, the use of biological weaponry still cannot be justified in war.

JOSEPH FARRELL

Hearts that Beat the Odds: An Analysis of the Fontan Procedure

My research delves into the Fontan cardiovascular procedure, a specialized intervention for congenital heart defects. Through historical analysis, preparatory protocols, statistical data, and long-term effects, my thesis offers a comprehensive examination of this surgical procedure. It traces its origins, breakthroughs, and milestones, from diagnosis to detailed planning and execution. With approximately 50,000 worldwide cases, statistical analysis explores success rates, regional variations, and demographics. Recognizing its lifelong impact, the research examines postoperative complications, quality of life, and ongoing healthcare needs. This comprehensive scrutiny extends to long-term implications. Additionally, there is a digital platform conveniently disseminating insights and factual information about the Fontan procedure, fostering greater understanding and awareness among healthcare professionals and the broader community.

DAMON FARRELL**Genetic Doping, Enhancement, and Therapy: An Ethical Analysis in the Context of Competitive Sports**

In the realm of sports, a domain characterized by skill, competition, and entertainment, the consensus stands firm—cheating is unequivocally wrong. Violations extend beyond the traditional realm of illicit substances like stimulants and steroids to encompass emerging technological advancements, notably gene doping. Gene doping involves the utilization of genetic-altering technology to augment human performance, introducing a new dimension to the ethical discourse surrounding sports. Despite its designation as a banned practice by numerous sports agencies, there are scenarios where the deployment of this technology warrants consideration and even ethical approval. This analysis delves into the prospects of gene doping, elucidates fundamental sports principles like fairness and health from the “spirit of the sport”, presents a multifaceted ethical argument defending the judicious use of gene technology in these areas of contention, and provides a solution in the form of a divisional hierarchy to elevate the problem of increased administration of genetic enhancement.

DANIEL FERNANDEZ**The Adverse Behavioral and Cognitive Effects of Heavy Metal Contamination on the Neurodevelopment of Adolescents**

An overview of the neurodevelopment effects of arsenic and lead exposure on adolescents' cognitive and behavioral functioning. Lead and arsenic are neurotoxic chemicals that can affect the developing brain at low levels of exposure. Lead and arsenic exposure are negatively associated with neurocognitive performance in verbal abilities, visuospatial abilities, memory, attention, psychomotor function, and IQ. Particularly, the blood lead IQ relationship slope is higher at lower blood lead levels. This demonstrates that the adverse effects of lead are higher at lower levels, exposing that there is no safe level of exposure. This presentation will outline the negative associations between lead poisoning and aggression, conduct disorder, and crime. Additionally, it will provide an overview of the underlying mechanisms of action, the in-utero effects of heavy metal poisoning, different biomarkers (i.e., differences between analyzing blood lead levels and bone lead levels), and the effectiveness of various treatment methods.

KAYLA FILJON

Disease Progression in High and Low Microbial Abundance Sponges

Though many reef ecosystems rely heavily on sponges for ecological functions due to extreme coral loss, little is known about how these sponge populations may be threatened. This project aimed to evaluate the responses of different sponges found abundantly on Florida coral reefs to one such threat- a disease termed "white veil disease." Individuals of high and low microbial abundance sponges were collected from Broward reefs and exposed to higher temperatures, teasing out white veil disease in one individual. All individuals were fragmented and divided into six tanks, and the progression of the disease was tracked within each fragment and throughout each tank. Changes in the microbiome in each sponge were also tracked throughout the duration of the observational trial. By understanding how this disease may affect hardy sponges, we can predict their resilience and how they may respond to areas of high stress where corals have declined.

AETHENA FITZGERALD

Are Electric Cars Really More Carbon Efficient Than Gasoline Cars?

Ever since the invention of the wheel, humans have been trying to find faster and more efficient modes of transportation. The evolution from the first horse-drawn carriages to the currently popular electric vehicles tracks a big improvement in speed and reliability. Today, humanity relies deeply on cars, the most popular mode of transportation. There are two main types of cars: gasoline-powered and electric. Gas powered cars are known for their carbon inefficiency in burning fossil fuels, which causes too much greenhouse gas emissions into the Earth's atmosphere. In recent years, electric vehicles have gained popularity and produce fewer carbon emissions. However, the big question is whether or not they are actually more carbon efficient, especially when the production processes are considered. In this thesis, both types of cars will be investigated and compared to see if electric vehicles are that much more sustainable and greener than gasoline powered cars.

BRANDY GARCIA VELASQUEZ**Máscaras mexicanas: Death and Lucha Libre**

Masks have played a significant role in Mexican lucha libre for decades. Masked wrestlers, referred to as enmascarados, communicate important information about their in-ring personas through specific visual designs and body gestures. Enmascarados must take care to protect their identities while wearing their mask, as it is a shorthand for their honor, and they experience social death if they lose a well-known mask during a lucha de apuestas (wager match). Due to the relationship between an enmascarado's mask and his identity, it becomes an important component of their commemoration after they die. The appearance of masks within enmascarados' funerals marks a change in the standard ritual by incorporating a representation of Mexican popular subculture. Similarly, the use of masks in other memorialization efforts, such as fan-made artwork and ofrendas, solidify enmascarados' place within Mexican national identity.

ANTHONY GIGUERE**Washington Should be Concerned with Debts and Deficits**

The federal debt and deficit within the United States have been increasing by ever-growing magnitudes since 2007, with the current debt sitting at 34.33 trillion dollars. Jason Furman and Lawrence Summers, two former White House economic advisors, claim that the debt and deficit aren't too be worried about, and present a plan to spend only when the project has a rate-of-return higher than the interest rate on those borrowed funds. This approach ignores the political economy aspects of public choice and profit maximization among citizens, blames most of the running and increasing deficits on tax cuts, and even advocates for introducing more currency to repay debts. Utilizing the theory of public choice from Buchanan, alongside fiscal policy issues presented by Jakee and Turner, Furman and Summers will be shown to have made grand assumptions in the viability of their plan, proven further by the financial implications of the Covid-19 pandemic.

IZAN GONZALEZ FAYOS

Exploring Feasibility: Targeting Syngap1 Haploinsufficiency in the Basolateral Amygdala and Somatosensory Cortex for Neurodevelopmental Disorder Research

Neurodevelopmental disorders manifest through disruptions in sensory processing, perception, and cognition. In particular, loss-of-function variants in SYNGAP1 are linked to developmental encephalopathy, characterized by cognitive impairment, autistic traits, and epilepsy. Recent research highlights the involvement of key brain regions such as the somatosensory cortex (S1) and the basolateral amygdala (BLA) in modulating these behavioral irregularities. To determine the necessity of Syngap1 expression in specific brain regions we hypothesize that Syngap1 loss-of-function variants in the BLA and S1 could replicate some of the phenotypes observed in a germline mouse model of Syngap1 haploinsufficiency. Through a combination of genetic methodologies and viral transduction techniques, we successfully evaluated the viability of targeting Syngap1 haploinsufficiency within these specific brain regions.

MICHELLE GRAS

Elucidation of the Relationship Between Intracellular Matrix Membrane type 1 Matrix Metalloproteinase (MT1-MMP) and Hypoxia Inducible Factor-1α (HIF-1α) in Pancreatic Cancer

Pancreatic cancers are difficult to treat with a 13% survival rate. Factors such as hypoxic niches within the cancer promote drug resistance, while enzymes such as membrane-type-1-matrix metalloproteinase (MT1-MMP) are linked to disease etiology. MT1-MMP's transmembrane region is implicated in cancer invasion and metastasis. However, little is known about the cytoplasmic tail (MT1-MMP-CT). Recent studies have linked MT1-MMP-CT and the transcription factor, hypoxia-inducible-factor-1-subunit-alpha (HIF-1α); a transcription factor that is stable only under hypoxia. This study uses flow cytometry to quantify the co-expression of HIF-1α and MT1-MMP-CT among human pancreatic cell lines, under both normoxia and hypoxia. The data presented demonstrates that pancreatic cell lines have an unusually stable HIF-1α expression under normoxia, as well as hypoxia. In addition, the frequency of MT1-MMP-CT+HIF-1α+ cells were elevated under hypoxic culture conditions. Thus, suggesting differential MT1-MMP-CT expression in difficult to treat cells of the hypoxic niches, and providing a potential therapeutic target.

AMANDA GRODMAN**Automating 3D Segmentation of Neurons in Volume Electron Microscopy Data for Correlative Light and Electron Microscopy Workflow**

Correlative light and electron microscopy (CLEM) is a workflow used in neuroscience to consecutively relate a neuron's temporal activity to its morphology. Reconstructing a neuron in 3D using volume EM data through manual segmentation is required to elucidate its physiology in CLEM, yet necessitates time and expertise. We seek to develop a workflow to automate single neuron segmentation using EM data to improve the time efficiency, consistency, and precision of analysis. We anticipated volumetric segmentation in the software "Segment Anything for Microscopy" (μ SAM) would be feasible through image processing such that one neuron could be recognized among a background of dense processes. However, further optimization through finetuning a model in μ SAM might be necessary to achieve the goal. Future applications of automatic EM segmentation in CLEM will provide us with better understandings of neuronal physiology in a network.

VICTORIA GROVE**Prescribed Fire Reduces Accumulated Standing Typha spp. Biomass in a Constructed Wetland**

Typha spp., also known as cattail, is an emergent macrophyte commonly used to clean polluted water in constructed wetlands. Accumulated standing biomass in mature cattail restricts water flow through these wetlands, reducing treatment efficiency and leaving stands vulnerable to delamination and tussock formation. In collaboration with the South Florida Water Management District, I examined the immediate and short-term (3.5 months) impact of a prescribed burn on standing biomass and cattail recovery in 550 acres of a *Typha*-planted stormwater treatment wetland. Additionally, I compared the consumed biomass in stands that were first chemically desiccated (to carry the fire) with untreated stands. Preliminary results suggest that fire effectively consumes accumulated standing biomass and that non-desiccated cattail recovers faster after a prescribed burn. Ultimately, this study is intended to inform vegetation management strategies in *Typha*-planted water treatment wetlands.

BLAKE HABAY

The Achille Lauro Hijacking: Israel, Italy, International

This thesis reviews the events regarding the hijacking of the Italian cruise liner Achille Lauro that took place on October 7, 1985. It focuses on three primary factors to provide a holistic overview of the Achille Lauro incident, alongside its causes and effects. Firstly, it recollects the contentious relationship between Palestine and Israel that inspired the incident and details of the hijacking itself. Secondly, it discusses the legal and political implications surrounding the crisis at Sigonella Air Force Base hosted between the United States and Italy following the hijacking. Finally, it explores the reactions and decisions of the remaining parties involved besides the United States and Italy.

BRADEN HAGGART

Parentage and Dispersal Capability of a Sponge Bioeroder within Caribbean Reefs

The excavating sponge *Cliona delitrix* is one of the most abundant and highly efficient coral bioeroders in Caribbean reefs. As sea temperatures rise, this species has increased its abundance. To better understand its population expansion, we investigated the dispersal capabilities by estimating parentage and kinship of sponge individuals at the reef scale. Tissue samples were obtained from three Caribbean coral reefs and amplified for 10 polymorphic microsatellite loci. The parentage analysis was conducted using COLONY, CERVUS, and ML-RELATE, and the results were correlated with distance between individuals. We have detected unanticipated levels of clonality (6 – 14% per reef), high levels of kinship (1 – 15 siblings per reef), and presence of parents within reefs (0 – 32% of individuals per reef). The results of this analysis can help inform coral transplantation projects to avoid *C. delitrix* attachment.

JARED HAYNES

An Exploration of How to Further My Intellectual Life

This essay explores ways to further my intellectual life after reading the book *Lost In Thought: The Hidden Pleasure of an Intellectual Life* by author Zena Hitz. I believe not as many people have the opportunity to delve into the complexities of intellectual life, as I, a university student, can. While others find themselves engulfed in the strife of life, I have the chance to look ahead and investigate the intricacies of intellectual growth. My approach is divided into eight related avenues: pondering, reflecting, discussing, analyzing, reading, welcoming deviation, being deliberate, and willing.

ALBERTO HERNANDEZ

Stone Pine Marketing and Productions: Innovative Marketing Solutions for NonProfits

Stone Pine Marketing and Productions specializes in assisting nonprofits in South Florida through innovative marketing and video production services. Understanding the unique challenges of the sector, which include shoe-string budgets and a need for tailored approaches, Stone Pine offers cost-effective solutions to enhance visibility and impact. With over 94,000 non-profits in the state facing issues with visibility, our approach focuses on social media, short video content, email marketing, and fundraising campaigns. By leveraging our extensive experience and technical video production skills, we deliver personalized services that boost community engagement and donor support. Stone Pine's strategy of creating impactful videos and promoting organic social media growth addresses nonprofits' visibility issues and creates a sustainable marketing model. This allows nonprofits to concentrate on their crucial missions with increased support and recognition.

PAITYN JOHNSTON

Freedom of Desire, and Desire for Freedom

Throughout history, there have been several notable figures that seem to be exceptions to the rules of society, especially concerning sexual orientation and gender expression. One such figure was Catalina de Erauso of Spain during the 16th-17th century. Catalina was a woman who rejected her novitiate status as a nun, began cross-dressing as a man, and then became a soldier and adventurer across Latin America. Upon discovery of her gender, Catalina was confirmed as a virgin by a Bishop, which began her veneration by the Catholic Church ending with permission to continue cross-dressing openly. Catalina's character exhibited multiple facets, such as the pious nun, the fierce warrior, the mischievous gambler who had a penchant for trade; but she was most known for her virginal status despite her cross-dressing. This central idea prompted my research: to explore the impact of cross-dressing for women during the Renaissance through Catalina de Erauso.

RACHEL KAVALAKATT

Activity of Central Amygdala Neuronal Ensembles in Heightened Fear Phenotypes in Autism Spectrum Disorder

Autism spectrum disorder (ASD) is a neurodevelopmental disorder distinguished by social impairments and behavioral challenges. ASD is highly heterogenous, making it difficult to identify common genetic factors and understand the mechanisms of the disease. Here, we observe the role of somatostatin-expressing (SOM+) interneurons in ASD by knocking out a high-risk gene implicated in autism (phosphatase and tensin homolog on chromosome ten, PTEN). To correlate CeA SOM+ neuron activity to the heightened fear and anxiety phenotype observed previously in the SOM+ conditional knockout of PTEN, we used in-vivo calcium imaging to longitudinally image neural calcium dynamics in freely moving mice. We observed CeA neural activity of our mouse model in several behavioral tests to assess fear and anxiety. This has implications on our understanding of amygdala neural circuits underpinning aversive associative memory formation. Further analysis will include pairing Inscopix calcium imaging with behavioral clustering to correlate neural responses with behavioral motifs.

KATHALEEN KELLY

Examining the Power of Governments to Limit Public Displays of Religion

As nations grow more diverse in religious beliefs, the debate intensifies over what, if any, public religious displays governments should allow. Some argue that the separation of church and state does not hinder the state and religious institutions from coexisting peacefully, thereby allowing the public display of some religious symbols. In contrast, others firmly believe in preventing overlap between the two and that public displays of religion are inappropriate. I argue that in democratic republic nations with laws upholding the separation of church and state, the government should not allow religious displays on public, government-owned land by examining John Rawls's theory of liberal pluralism and applying its principles to case studies from the United States and Italy, countries that recognize the separation of church and state.

RITVIK KESHARAJU

The Acute Effects of Graphene Nanoflakes on Whole-Cell Cholesterol

Graphene is a novel nanomaterial with great potential in biomedicine owing to its high electron mobility, thermal conductivity, and mechanical strength. In biological applications, graphene often makes direct contact with the plasma membrane and likely affects cellular function. The lack of understanding about graphene-plasmalemma interaction inspired this mechanistic study. Based on published work from our lab about graphene's chronic effects on cell growth, we used graphene nanoflakes (GNFs) and examined their acute effects. Our tests show that GNFs readily insert into the plasmalemma, focally enrich membrane cholesterol (mChol), stabilize surrounding membrane, and promote membrane protein activity and transmembrane signaling. More importantly, GNFs' interplay with mChol stimulates cellular cholesterol production, leading to a long-lasting functional impact. In summary, these results advocate for novel and broad applications of GNFs, such as allosteric modulation of cell signaling pathways and active control of sterol metabolism, both of which have promising therapeutic implications.

JENNA LEALI

Dynamic Pricing in Miami's Hotels: A Statistical Analysis in Brickell and Coral Gables

This thesis investigates dynamic pricing within Miami's hotel industry, focusing on the Brickell and Coral Gables neighborhoods. The main objective was to uncover the prevalence of dynamic pricing and identify the most cost-effective booking times. Initially hypothesizing the widespread use of dynamic pricing, the research aims to understand hotels' pricing strategies. Over five months, data was collected from 19 hotels in the target areas using Expedia, Hotels.com, and Bookings.com on specific weekdays. The analysis, primarily conducted with Microsoft Excel, employed statistical tools like box plots, scatter plots, and Levene's Test. Contrary to the hypothesis, findings indicate limited dynamic pricing usage. Booking around a month in advance appears most cost-effective, with insignificant price variations across platforms. This study challenges the notion of prevalent dynamic pricing but notes limitations in sample size and data collection duration, cautioning against broad generalizations about Miami's hotel market.

EMMA LEONARDO SOLORZANO

Corruption in Government: A Case Study of Guatemala

Utilizing data sets from Latino Barometer and the Corruption Perceptions Index, this thesis tests the hypothesis that public perception levels of corruption influenced the 2002-2023 presidential election results in Guatemala. A historical analysis suggests that the Spanish colonial model on which Guatemala operates erodes democratic institutions and perpetuates impunity, leading to rampant corruption in the country. Guatemala has become an electoral autocracy, a hybrid regime that mimics a democracy procedurally but lacks electoral integrity. Additionally, preliminary results suggest that higher perceived levels of corruption correlate with regime change more than actual levels of corruption. The significance of this report lies in its ability to inform anti-corruption efforts moving forward, especially in the current Arevalo administration, to pay greater attention to the actual quality of elections to help create a more-equal society in Guatemala.

JOSUE MALDONADO-ZELAYA

The Relevance of Psychology to Climate Change: Overview

It is irrefutable that human action has brought about a rapid increase in the impacts of climate change. It is also through human action that we must deal with climate change, and through our behavior that we must adapt to it. Through the lens of psychology, we can better understand our reactions and relationships to the climate crisis for more effective mitigation and adaptation efforts on an individual and societal level. This overview will discuss the influences within different aspects of psychology and climate change while examining the mental health effects behind different facets of climate change using various psychological concepts.

AMELIA MARSHALL

The Developmental and Social Psychology of Climate Change

Climate change is a psychological and physiological stressor causing worry, fear, and anxiety. Climate change affects children both directly and indirectly. It is imperative that we study the impacts of climate change on children who will be facing the brunt of the results themselves. We will also examine the role of children in climate advocacy in a time where we want children to feel hopeful and resilient when looking towards their future. Examining climate change within the framework of Social Psychology offers understanding of social effects and mitigating solutions for ongoing climate change. We will address topics including the role of group identity, and place displacement as a result of climate change. We will examine climate change attitudes and potential skepticism within the concepts of group norms, identity, and politics as well as discuss the role of social influence, like corporate business identity, as a mechanism to enhance climate-conscious behavior.



TYLER MARTIN

Could Solar Energy Be Our Future?

As energy consumption increases, the need for an efficient, cheap-to-make, and low-maintenance power converter is increasingly sought after. Solar energy has the potential to fill all these requirements as it is not only the most abundant source of energy on the planet, but the devices themselves require little to no cost post-installation. Solar cells convert photon particles into flowing current, producing voltage by merely remaining stationary, something that fossil fuel production cannot achieve. The efficiency of these devices has drastically improved over the last 30 years, jumping from less than 10% to nearly 30%, and with some of the practices brought up in this talk, those numbers can be pushed up closer to 40%. In this presentation, we discuss the ever-advancing solar panel technology and view its impact on humanity.

CAROLYN MAS

Loot Boxes and Gambling

The "loot box" has become a popular system of purchase in the gaming industry that allows users to receive random in-game items by chance upon paying a fee. The items gained can range from cosmetic items to useful tools that help players gain a competitive advantage. This mechanism is akin to gambling due to the way players can utilize in-game trading platforms or third-party platforms to trade in-game items for actual currency. I argue that the elements of payment, chance, and reward involved with this mechanism exploits the same neurological reward pathways associated with gambling in a way that leaves audiences of adolescents, pathological gamblers, and individuals with anxiety more at risk of impulsive choice and maladaptive behaviors such as problem gambling. Because of the risks, stricter regulation and new federal laws should be implemented to warn and provide protection to these groups.

LAURA-LEE MCCOMIE**Ethical Dilemmas in Glioblastoma Patient Care: A Case Study**

This thesis investigates the ethical implications surrounding the sudden death of a 46-year-old male patient from glioblastoma, a highly aggressive brain tumor. The analysis focuses on the intricate details of the case, dissecting the events that transpired, and identifying the medical and moral mistakes that were made. Further, this thesis critically examines the decisions made by both the healthcare professionals and the patient, and the deficiencies in diagnosis, communication, and treatment strategy in the case. Because of delayed diagnosis and inadequate treatment, the patient suffered an untimely death. By unraveling the complexities of this case, this thesis seeks to contribute a nuanced perspective to the discourse on medical ethics, by offering insights into areas that demand improvement, both in this particular case and in medicine more generally. Failures at multiple levels resulted in the patient deteriorating rapidly and missing the chance to say goodbye to his loved ones. In this thesis, I suggest that by fostering a compassionate and patient-centered approach to healthcare, we can provide more optimal care to individuals facing glioblastoma and similar formidable conditions.

ISHAMA MEDILIEN**Critiquing the Religious Economic Model: Re-Evaluating Factors Behind the Catholic Church's Actions during the Dictatorships of Argentina, Chile, and Brazil during the 1970s**

During the 1970s, the countries of Argentina, Chile and Brazil were under the control of military dictatorships. In Chile and Brazil, the Catholic Church took the position of a moral opposition to the authoritarian regimes, however the Catholic Church in Argentina sided with the dictatorship. Anthony Gill's "Rendering unto Caesar" utilizes a religious economy model to explain these different responses by the Church. Gill theorizes that the Church in Chile sided with the people to compete against the Protestant Churches. However, explanations based on the religious economy model fail to adequately explain the Church's behavior because they ignore other relevant factors, such as the pre-existing church-state relationship and the larger context of the Cold War. By analyzing the three case studies of Argentina, Chile, and Brazil, I provide both a critique of the religious economy model and offer additional explanatory variables that help us to understand Church-State relations.

NICHOLAS MOY

Global Heritage Creations

There are many small-scale producers of hair and skin care products rooted in generations of their ethnic traditions. Oftentimes, these producers' products are overshadowed by bigger players in the market who fail to acknowledge the products' cultural origins. Not only are the communities and cultures that develop these techniques not credited, but they do not receive the financial benefits that are instead going to mega-powerhouse companies. There is a clear space in the global market for these products; however, the original artisans are not able to access this global consumer base. We aim to disrupt the current market by connecting these small-scale producers with an international consumer base they would not otherwise have access to. Through our e-commerce site, we aim to stimulate economic growth in these communities and spread awareness of their cultural remedies.

PASHA NIROO

If "Love" is Always the Answer, Then the Answer Must Come from A Space of Love – A Qualitative Study Measuring the Effect of Love on Decision Making

Every day, we navigate through thousands of decisions, some ordinary and some stressful. Research indicates emotions heavily influence decision-making, suggesting heart-centered practices like the Freeze Frame Meditation from the Heart Math Institute can alleviate stress and foster positive choices. This study investigates whether tapping into a space of "love" through a modified Freeze Frame Meditation reduces decision-related stress and enhances emotional well-being. Participants were divided into experimental and control groups, engaging in either the Freeze Frame technique or visualizing a "typical day." pre-and post-questionnaires assessed emotional states, perceived stress levels, and the influence of head versus heart responses. Finally, an inner smile meditation concluded both conditions to ensure emotional well-being for all participants. It is hypothesized that both approaches will be impactful and enhance emotional states, with the experimental (heart-centered) technique proving slightly more effective. This study may highlight the potential benefits of heart-centered practices in decision-making and emotional management.

ASHLEY PERRY**"You Can Be Anything"? Interrogating Postfeminist Girl Power in the Barbie Animated Films**

Since her plastic debut in 1959, Mattel's Barbie has become both a beauty symbol and object of feminist criticism. More than simply a doll, she has starred in 42 animated films targeted towards young children. In this thesis, I argue that the Barbie animated movies embody the concept of postfeminism, limiting, rather than expanding, the choices available to young girls through a narrow conception of beauty, sexuality, and femininity. By closely analyzing four animated, family-friendly Barbie films throughout the icon's history and contrasting them with the live-action, PG-13 rated, and liberal feminist Barbie (2023), I demonstrate that cinematic Barbie has failed to be a true feminist role model for young children. While the Barbie animated films might seem to challenge gender structures by granting female characters great abilities, they actually reinforce patriarchy by suggesting feminism has achieved its aims and that all women are equal in society.

ELLIE PFAHLER**Neurodiverse Educational Testing (NET)**

Neurodiverse Educational Testing (N.E.T.) specializes in providing comprehensive support for neurodiverse children and students through a range of services, including initial online assessments and personalized 504 education plans. Utilizing advanced machine learning, N.E.T. provides personalized guidance for conditions such as Autism, Dyslexia, Dyscalculia, Dysgraphia, and ADHD. The creation of 504 education plans is central to N.E.T.'s mission, ensuring students receive necessary accommodations for educational success ultimately shortening the gap between neurodiverse children and low graduation rates. N.E.T. is committed to equalizing access to diagnostic and support services, focusing on inclusivity and support for economically disadvantaged families. Through a range of resources, support systems, and professional connections, we empower individuals and families on their neurodiverse journeys, making understanding and assistance readily accessible to all.

AVA PITTS

Enviro Hours

Our planet is currently facing a crisis with an overwhelming amount of trash polluting our environment. In the United States alone, there are approximately 50 billion pieces of trash along roadways and waterways, demanding immediate action. Solving this critical issue requires a collective effort from individuals to remove this massive amount of waste, and that's where high-school students, who are in need of volunteer hours, play a crucial role. Attending college is undeniably expensive, and scholarships often require extensive volunteer hours. Recognizing these challenges, I have designed Enviro Hours, a non-profit app that offers a simple solution. Students can contribute to their communities by stepping outside and uploading photos of litter they've removed from the environment in exchange for volunteer hours. By utilizing the power of technology and the dedication of high-school students, we can create a cleaner and more sustainable world for generations to come, while helping students succeed.

AVANTHI PUVVALA

Investigating the Mechanism behind RORa's Repression of IFN- γ

Interferon- γ (IFN- γ) is a cytokine essential in the regulation of both innate and adaptive immunity. Upon activation CD8⁺ T cells produce and secrete IFN- γ as part of the adaptive immune response. Previous studies into the role of the nuclear receptor Retinoic acid-receptor related orphan receptor alpha (RORa) in the immune system found IFN- γ production in CD8⁺ T cell to be enhanced in RORa deficient mice. However, the exact mechanism governing this phenotype remains elusive. We have previously found that overexpression of RORa in CD8⁺ T cells represses IFN- γ production as such we hypothesize that RORa may transcriptionally regulate IFN- γ . To identify this mechanism, we will create various truncated RORa constructs to assess its activity in regulating IFN- γ through biochemical and molecular immunological techniques, including Luciferase assays and phenotypic analysis via Flow Cytometry. Through these studies we aim to better understand the mechanism behind RORa-dependent repression of IFN- γ .

CAMILA RIMOLDI IBANEZ

Sound Emission and Perception in Corals

Sound is a highly efficient method of exchanging information signals widely used across several phyla for various purposes. In coral reefs, coral larvae actively respond to reef sound in a vertical and horizontal movement manner. However, there is no information about adult corals emitting or responding to sound vibrations. Our objective was to visually and audibly understand adult coral acoustics by observing the response of *Goniopora* sp. corals to two stimuli: light and feeding. The stimuli were tested simultaneously to encourage a change in polyp movement that would hypothetically affect the sound frequency. We found sound spikes before and after the corals were fed in light and darkness. To further support these findings, six genes associated with sound perception and/or emission were tested for presence in the coral genome. Four of the six candidate genes were present; sequencing of these genes is currently underway.

CELIA ROBERTS

Pentecostalization and Populism: Católicos and Evangélicos in Costa Rican and Guatemalan Politics

Remarkable changes to the religious and socio-political identities of Latin American countries have occurred over the last century due to an increased presence of Protestantism, an evolving Catholic Church, and the popularization of populism. Societal changes challenge old theories about the religious-political character of the region, most notably in Costa Rica and Guatemala, countries with vastly different historical developments. An analysis of the history of Catholicism and Protestantism in both countries provides insight into the extraordinary religious and political evolutions of Costa Rica and Guatemala and their contemporary relationships with populism, marked by the emergence of populist political coalitions of conservative Catholics and Protestants. Coalitions forged by similar beliefs about social morality issues, which contribute to the striking similarities between the religious and political characters of Costa Rican and Guatemalan Christians, as well as their surprising relationships with conservative populist coalitions materializing in the contemporary era.

ASHLEY SCHIFFMAN

A Historical Analysis of Payment Methods and their Success or Failure Over Time

By examining the evolution of payment forms over time, this paper provides a framework to understand why and how some methods of payment have succeeded and others did not. Transitioning to modern times, the number of technological advancements has seen dramatic growth since the 1990's, resulting in a wider array of payment forms available to consumers. In particular, 21st century methods like the digital wallet, play a key role in understanding and identifying the key factors that contribute to the success of new payment methods. The forms of payment that focus on consumer convenience are more likely to be successful and to withstand the obsolescence often brought about by newer, more efficient technologies.

MAIYA SINGER

Correlation of Membrane type 1 Matrix Metalloproteinase (MT1-MMP) Expression to Invasive Potential and Survival of Pancreatic Cancer

Pancreatic cancers are projected to cause 8.3% of cancer related deaths in the US this year. Poor prognosis is associated with difficulty in detection and insensitivity to conventional therapies; both events are linked to the enzyme membrane type-1 matrix metalloproteinase (MT1-MMP). The extracellular component of MT1-MMP is associated with invasion linked to the expression of TKS5, whereas the intracellular domain has been implicated in the regulation of Hypoxia. Hypoxic niches exist in the tumor microenvironment and are known to be resistant to apoptosis. This study seeks to correlate flow cytometric quantification of MT1-MMP expression to TKS5 protein expression determined by western blot analysis among pancreatic cancers exposed to hypoxia. The data herein presented suggests MT1-MMP surface expression increases under hypoxic influence, however this trend is not observed in TKS5 expression. Furthermore, reoxygenation stress did not alter the apoptotic indicator, Caspase 3, but it did unexpectedly increase cellular viability.

MAYA SOUD

The Fusion of Learning and Leisure in the Age of Distraction

In her book, *Lost in Thought: The Hidden Pleasures of an Intellectual Life*, philosopher Zena Hitz argues that the importance of leisure comes from its apparent uselessness. However, she presents modernized or contemporary activities, like reading, playing video games, and watching shows and movies, as including minimal opportunities for learning, in comparison to traditional pursuits like crafting goods. Hitz also claims that it is difficult for individuals to grow their inner selves due to these supposed disturbances, preventing people from engaging in musings that count as core-building leisure. However, I propose that in the "age of distraction" leisure should be viewed as involving learning, since many modern activities are truly a blend of both, rather than just one or the other, and offer a plethora of opportunities to learn and foster skills that are intellectual and useful to an individual in both their inner and outer lives.

ODETT TERRAZAS

Modernist Translation and its Impact on the Publishing Industry

This thesis will explore the transformative impact of the modernist poets Pound, Eliot, and Yeats, on the generative art of translation. While traditional interpreters prior to the early 20th century sought fidelity to the source material, these modernists embraced malleability, adapting works like "The Seafarer," "Anabasis," and "King Oedipus" to contemporary sensibilities. Through a deconstructionist lens, this study will compare these pieces to their parent text and earlier translations, revealing a focus on subjectivity, cultural synthesis, and a departure from realism. Such a paradigm shift deviated from all former practices, prompting the publishing industry to commission conceptually and aesthetically engaged material. This analysis will offer valuable insights for today's publishing industry, highlighting the enduring relevance of embracing innovation.

THOMAS TESTA

The Sarr-Savoy Report: Its Findings, Recommendations, and Implications for the Future of the Restitution of African Cultural Heritage

Cultural heritage objects held by foreign nations, museums, and individuals who acquired them through colonial contexts or illegal means ought to be restituted to the people they are most significant to. Despite the signing of international treaties which promise to identify and return such objects to source nations, the governments and museums of Western nations struggle to fulfill their promises of restitution. Indeterminacy of thought and action on restitution to this day prevents the return of cultural objects, but the recent release of the Sarr-Savoy report reinvigorated proponents of restitution across the world. The 2018 report presents the international community with novel means resolution to the debate through an analysis of successful restitution cases and suggested changes to thought and international law. I present an analysis of the Sarr-Savoy report and argue for its utility in solving future cases of restitution, such as the return of Benin Bronzes held by German museums to Nigeria.

KAROLINA THOMAS

Growing Awareness through Childhood and Adulthood in Paradise of the Blind by Doing Thu Huong

The novel *Paradise of the Blind* by Duong Thu Huong explores the life of a twenty-year-old woman, Hang, in Vietnam. Duong illustrates Hang's differing perspectives in childhood versus adulthood through the symbolism of the duckweed flower and her hometown pond. As a child, she saw her surroundings and the people of Vietnam in a positive light; however, as she ages, she begins to realize the negative aftermath of the Land Reform and rule of the communist regime, developing a disgust for the land and people she once adored. In my presentation, I explore this evolving awareness illustrated through Duong's symbolism of Vietnam's nature to illuminate the universal experience of losing innocence and growing cynical. Hang's journey allows us to realize our own developing views on the world and how such views alter our daily decisions for better or for worse.

LUCAS TODOBERTO**Standardizing Supervised Deep Learning Networks to Separate Noise from Neurons in Multi-Photon Brain Images**

Traditional methods of In Vivo imaging in recent decades employ two-photon microscopy, a fluorescence imaging technique, to penetrate brain tissue up to 400 μ m deep. However, the recently developed three-photon microscopy allows imaging of deeper brain tissue up to 1,000 μ m under the same conditions. While manual labeling of cells appearing in images is common practice, numerous computational tools have addressed challenges and time-consuming tasks requiring expert personnel. Cellpose, an algorithm that automatically labels cells, is capable of handling the traditional two-photon micrographs as input; but three-photon imaging is not supported. Hence, this study focuses on retraining Cellpose to leverage three-photon micrographs. We developed a robust deep learning model trained on 2,000 ROIs across four variables. The model averaged 90-95% accuracy, 2-5% false positive rate, and 2-5% missed cells. The inclusion of Cellpose has cut the total pre-processing time from 1 hour to 25 minutes.

KATERYNA TSEKHMAYSTER**Democratization of Belarus and Lithuania in the Post-Soviet Space**

This thesis compares the democratic development of Belarus and Lithuania evaluating levels of Sovietization, corruption, and economic integration in each case. Lithuania was invaded by German and then Soviet forces but maintained its relative cultural identity, religion, and language. Meanwhile, Belarus has not experienced such a degree of independence due to stronger interconnectedness of cultures formulated through hundreds of years. The compounding effects of anti-Westernization sentiments and previous policies of Sovietization reflected negatively in the political and economic development of Belarus, furthering its dependence on Russia. Lithuania's relative independence before its membership in the Soviet Union enabled strong national development and eventual estrangement from the Eastern forces, leading to successful democratic consolidation. Belarus, on the other hand, continues to suffer from dependence on Russia as well as high levels of political corruption.

CARLOS VACA ANGUS

Empirical Governments by Design

Innate biases impede our ability to collaborate on a global scale. In response to these biases, neuroscience should serve to create policy structures that incentivize cooperation and complex problem solving. Today, the broad implications of the government dismissing empirical evidence, such as climate change, are dire. Because our government, by design, has very few experts creating policy; expert opinions are often irrelevant to policy. We can increase expert opinions by redesigning these structures to purposefully include them. We can enhance representation by implementing stratified random selection used in neuroscience. Specifically, we should select population clusters of interest, such as ecologists, to create relevant policies such as climate change. Moreso, the people who run for office and apply to these positions are sampled by convenience. They are not the best possible choice nor are they representative of their desired populations. They are the available choice ensuring problematic representation.

KYLE VILLALOBOS

Simulating Global Motion of the Brain in Response to Trauma: Differential Biomechanics

This research aims to develop a three-dimensional topological model of the brain to simulate concussive movement within the skull in response to applied forces and injurious stimuli. Traumatic brain injuries (TBIs), particularly concussions, pose significant diagnostic challenges; the brain's complex biological dynamics contrast the limitations of current imaging techniques. Leveraging biomechanical methods and ANSYS LS-DYNA software, the project entails creating an anatomically accurate brain model that is manipulated by randomized force vectors, effectively simulating real-world scenarios. Computational analysis of the brain's motion in response to these forces allows the study to focus on identifying regions of concern and predict injury outcomes more accurately. The present study will lead to the development of a system of differential equations to describe gross brain movement within the skull. Anticipated outcomes include a validated model with simulation result and mathematical expression to enhance TBI diagnosis and treatment planning.

EMARI WIMBERLY

**The Cognitive and Behavioral Psychology of Climate Change:
Communicating with Each Other and Ourselves in Order to Change
Behavior and Ultimately Change the World**

Within the science, technology, engineering, and math (STEM) fields, underrepresented women and ethnic minorities can experience a psychological phenomenon known as stereotype threat. Manipulation of intergroup minority/majority interactions prompts unique occurrences of self-stereotyping, diminished self-esteem, and task-avoidant behaviors. Within STEM classroom settings, stereotype threat could be problematic for learning processes and patterns. In the present research, underrepresented students (URS) studying neuroscience-related material will be organized into URS majority or minority groups. Through pre- and post-task self-surveys, participant group interactions and stress levels will be monitored. Quantitative measures of body temperature, heart rate, and brain activity will also help elucidate group cohesion and learning. It is hypothesized that URS female-majority groups will exhibit better learning patterns for neuroscience-related material and better group cohesion as compared to URS female-minority groups.

KAIRA YEE

**The Role of Language as an Activator of Cultural Identity in Bilingual
Autobiographical Memory**

Autobiographical memory, the recall of personal past events, is a crucial cognitive human feature that allows for the formation of personal narratives. It is modulated by various mechanisms such as culture and language and plays a major role in how individuals construct their identity and self-concept. These pathways guide how memories of personal past events are encoded, retrieved, and shared with others. Culture and language can influence autobiographical memories through the different socialization practices in distinct societies. For example, Western societies tend to emphasize autonomy and individuality, whereas Eastern societies tend to promote social cohesion within a community. The cultural expectations of a society then shape the cognitive framework through which memories are filtered. In this project, I explore how bilinguals exhibit a dynamic cognitive framework when accessing autobiographical memories, with language serving as a primary activator of cultural identity.

Abstracts: Visual Arts and Creative Research

ALPHABETICAL BY STUDENT'S LAST NAME

RACHEL ALLISON

Artistic Expression with Water-based Media

In this work, Rachel Allison will utilize techniques in water-based media to depict visual imagery in a contemporary approach to artistic expression. This work will be the culmination of both acquired skill in water-based techniques through practice and diligence and also improved knowledge in the theory and practice behind contemporary painting. The style of the project will represent one unique to Rachel Allison's work, exemplifying one primary subject of the course in how personal style develops through the honing of artistic skill and knowledge. While the style of the project will be unique to the individual student by whom it was created, it will also reflect inspiration and knowledge about painting gleaned from the work of great contemporary fine artists.

LUKE BERG AND SOFIA WASILEWSKI

Rewriting Intentions

We will use a typewriter (Olympia Robust) originally used by the Wehrmacht during WW2 to type text that will be used in collaged works. We will gather participants whose families/community have been impacted by Nazi atrocities to write messages or literary works on the typewriter, with the final pieces of paper being collaged by the participants themselves. Set up in the semi-walled section of the burrow, these collaged works would be displayed side by side with documents concerning the relevant historical context. The sum of the works should be recognized by the thesis statement "This is just a machine to write words. It once had the power to hurt my ancestors and could have been used to hurt me, but we are redefining its purpose." During the symposium, visitors will be invited to create their own self-affirming collages in this space.

ANDRES FRAGA

ESCAPE! A Maze Game

ESCAPE! Is a game that involves you playing as a man and navigating through a dark maze while trying to escape a horror figure. In the game, you have a flashlight that slowly drains power as you play and there are battery collectibles to pick up along the way, either in key spots or in hidden locations, for you to maintain the crucial tool that is the flashlight. As for the story, the main character (i.e. the man you play) stumbles into a dark area and finds himself within the maze, which resembles the popular horror atmosphere known as "The Backrooms" (which is what the level is inspired on) and needs to find his way out in order to survive.

JOVAN FULLER

Elyrion's Harmony

"Elyrion's Harmony," is a 2D side-scrolling game in the fantasy genre. It takes place on the planet Elyrion. Elyrion is home to multiple countries including Earth, Water, and Fire. The player plays as Lyra, a citizen of Earth who witnesses her village's destruction by the malevolent sorcerer, Malachor. Seeking to tear the world asunder, Malachor's chaos disrupts the once-harmonious planet. As Lyra, players navigate diverse landscapes and battle elemental challenges to save her world.

TRIP KEEFAUVER

Games Showcase: The Journey to Find Closure

Video games, as with any form of narrative exploration, have the ability to not only tell a meaningful story, but to allow the player to become a direct part of that story. Themes such as exploration, patience, and the innate human desire to reach an "end" are all facets I imbue into my games. In my 3D game, the narrative takes a back seat, and has the player utilize their intuition to pursue the "end" - the impact of their journey only revealed then. In my 2D game, the narrative is front-and-center, and the player is thrust into a decaying world where if they wish to reach the implied "end" (as not all is directly told), they must do so of their own accord and desire. In both projects, I aim to craft two similar but greatly different modes of storytelling which help the player reach a sense of understanding closure as they make their way through the game(s).

ABSTRACTS

YUJIN KIM

a work in progress (will include title with submission)

With the culmination of learned skills from taking Advanced Water-based Media, Yujin will be utilizing knowledge of color theory, brushing technique, and development of an art style to showcase a painting about her own perspective of the world she lives in.

BRIANNA LETTERIO AND DELANEY ROSENBLATT

Metamorphosis: Growing Up in Play

"Metamorphosis: Growing Up in Play" is an immersive art installation that explores the complex process of growing up through the perspective of play as a kid and the conversion of adult objects into toys. The act of repurposing common objects to represent the passage from one stage of life to another invites visitors to examine the dynamic interplay between imagination and maturity inside this display. As childhood innocence gives way to the complexity of development, the installation functions as a visual metaphor for the changing nature of identity and experience. Every item that has undergone transformation serves as an illustration for a melancholic look back on time, evoking feelings of awe at first sight as well as the melancholy knowledge that the carefree playtime days are coming to an end.

CHRISTINA MCCABE

Untitled (Landscape)

This piece is a landscape made in Honors Advanced Water-Based Media class. The inspiration of this piece is found in finding wonder, drama, and new perspectives of the constants in my life. Fine intricacies, textures, and colors are the focus of this piece.

CHRISTINA MCCABE

Untitled Number Tree

For our proposed presentation, we will be making an installation art piece. It will focus on the use of lighting, colors, and perspective, with themes of the natural mystic. We will be showing the beauty of looking up through the use of transparent umbrellas, artistic design, and a combination of artificial and natural light. Designs of ranging skies, trees with branches, and birds, painted underneath each umbrella to be revealed by being held up to light.

EMMA PHELPS

Ant Farm

The 2D game Ant Farm is about an ant who lives in an ant farm on a college student's desk. The ant wants to travel back to the outside world and return to his family in the ant pile. To find a way out, the ant must follow the scent trails outside. The ant must travel around office supplies and furniture throughout the dorm room making sure he avoids baking soda that is deadly to ants. The game includes background music and some easter eggs! All in all, this game is an imaginative way to envision the life of an ant.

KIMBERLY SCHWEIGER

Little Red's Adventure

Little Red's Adventure follows the story of Little Red Riding Hood but is told a little differently. You play as Little Red, trying to head to her grandmother's house. You will navigate through the dark forest with a small lantern to see and defend yourself against vicious wolves searching for you. Upon reaching Grandma's house, you find that something is not right and attempt to rescue her. In order to rescue Grandma, a great deal of bravery and strength is needed to overcome the danger that lays ahead.

CHRISTIAN SOARES DE OLIVEIRA

Invictus: Nigredo & Calcination

Invictus is a narrative VR game which makes use of 16th century alchemical concepts on becoming spiritually whole. As an alchemist, the player begins their first steps in achieving The Great Work – a state of perfect being; synonymous with creating The Philosopher's Stone. To begin, players embark into a stage called Nigredo, where the many is transmuted into one through the processes of alchemical Fire – calcination – as a method of purification. Players begin in an alchemical laboratory, learning about and preparing the first stage and process. To experience being transmuted by the power of Fire, players brew the "Philosopher's Tincture" in their lab and submerge themselves within the concoction. Players next find themselves awaking at the top of a mysterious library tower deep underground. As players solve magical puzzles and traverse down the tower, they learn of the lessons that Fire has taught humanity over the ages.

TABITHA WAGGENER

Childhood

The piece I will be submitting is an acrylic painting that I made in my Advanced Water-Based Media class. It is a still life concentrating on the topic of childhood. I took some toys that I use to play with and arranged them in a visually pleasing composition. I wanted to make a painting appreciating the things I used to love but is now left in the past in order for me to keep growing as a person.

SOFIA WASILEWSKI

Modern Vampire

Sofia Wasilewski will display the process of constructing, sketching, and painting a visually compelling still-life oil painting. The composition will feature subjects collected from various decades of the 20th century, as well as a few contemporary items rendered in a combination of traditional processes inspired by Renaissance and Baroque techniques as well as experimentations with contemporary mediums and techniques.

SOFIA WASILEWSKI

The First Supper

A 2D piece showcasing techniques in rendering light, human anatomy and visual narrative to celebrate mythical depictions of femininity throughout human history.

TABITHA WAGGENER

You Will Get Through This

For my symposium I will be presenting an installation. My artwork revolves around the topic of mental health because I think it is an important subject to talk about. This installation will also involve light. I will be taking three sorbet containers that I have painted to look like medicine bottles. I have also painted bottle caps and designed them to look like anxiety and mood stabilizer pills. I am going to put the containers out with the "pills" in them along with lights. This installation is supposed to be about how sometimes you can't get by in life with out a little extra help and medication can be the light at end of the tunnel.

INDIA WILLIAMS

Milk

Fear, anxiety, and frustration are all emotions felt when something or someone important is missing. Milk is an immersive walking simulation that sends the player on a hunt for lost persons. From the first-person perspective, the player is placed in a forest at night with only a flashlight and their senses. The player must navigate through obstacles and gather clues to find the subject before it is too late. The game is designed to initiate a sense of urgency and develop tension and stress similar to the feelings of those missing loved ones in real life. The purpose of Milk is not only to provide an engaging and thought-provoking gaming experience, but also to emphasize the importance of preparedness and attentiveness in such situations. Nonetheless, the Milk's unique gameplay, premise, and accessibility deems it a game worth playing and exploring.

IDS 3131C: AUDUBON'S SCIENTIFIC ILLUSTRATION

Audubon's Scientific Illustration takes students out to several sites to select natural history subjects to illustrate. Student's produce sketches and final renderings of their selected subject using various media. Each student in this course will have at least one final project on display. Featured works created by students in IDS 3131C: Audubon's Scientific Illustration, Sienna Aguiar, Rachel Allison, Rob Alonso-Guma, Anna Armbrust, Nathaly Bayona, Erin Bell, Olivia Benson, Ariely Burgos, Savannah Deutsch, Michael Green, Finn Hahn, Erin Hajostek, David Heiblum, Yujin Kim, Allison MacKenzie, Moss Mixon, Jon Moore, Jazmin Morris, Naresh Padmanaban, Calvin Peckham, Katie Poquette, Sheila Rios, Bruna Sharkey, Anya Spara, Rebecca Stanley, Maciej Tadla, Christian Testorf, Saturn Vogeley, Anthony Ward and Sofia Wasilewski.

Abstracts: Research Poster

ALPHABETICAL BY STUDENT'S LAST NAME

SIENNA AGUIAR

Evaluating Various Enrichment Methods on the impact of Sloth Bear Pacing at Zoo Miami

For the past couple of years, Zoos that have Sloth Bears have reported occasional sightings of pacing. The recent reports of pacing by Zoo Miami's two Sloth bears, Hank (M) and Kematee (F) raised concern among the staff. The keepers along with the animal wellbeing team derived a study to experiment with various enrichment methods in order to determine not only which enrichments worked the best, but also if they could target the main reasons behind the pacing. Therefore, the enrichment items presented to them were based on representing different mental and physical challenges the sloth bears would face in the wild. This would help represent and determine what aspect of the sloth bear care would need more attention. The experiment was split into two phases: phase one containing smaller food based enrichments multiple times a day and phase two consisted of one large challenging enrichment item introduced in the morning. Ultimately, the results saw that the sloth bears positively reacted better to phase two of the experiment and saw a significant decrease in both their pacing during the experiment and continuing even after the experiment had finished.

NISHI ANTHIREDDY

Quantifying the Probability of Meal Initiation in *Drosophila melanogaster* using the Fly Liquid-Food Interaction Counter (FLIC)

Obesity is a major health concern. To address it, it is crucial to understand what leads to increased feeding patterns. *Drosophila melanogaster* is a key model for studying feeding behavior as it adjusts its food intake to meet nutritional needs. The Fly Liquid-Food Interaction Counter (FLIC) enables the study of minute fly-food interactions, correlating liquid food interactions with an electronic signal. Initially, we defined specific signal intensities as either tasting events or meals, and then ascertained whether certain tasting events could be classified as "meal initiation events." Testing *Drosophila* Canton-S female flies under low (5mM) and high (500mM) sucrose diets revealed that flies consumed more high sucrose meals due to a higher initiation probability. We aim to use the baseline that this data provides to test Pox-Neuro and Ir25a-Poxn mutant flies in order to find further insights into the roles of taste perception and nutritional reward in feeding behavior regulation.

YOSUF ARAB

Towards a Metabolic Assay for Neuronal Performance in Vivo

The phosphagen system is a crucial energy system in cells that have highly fluctuating energy demands, such as twitch muscle fibers. The phosphagen system acts as an energy buffering system that regenerates Adenosine Triphosphate (ATP), a molecular energy source for cellular activities. The phosphagen system provides cells with the ability to perform necessary operations before the primary ATP producing systems, glycolysis and oxidative phosphorylation, activate. While muscle performance is highly dependent on this system, the extent to which neuronal performance is dependent on the phosphagen system is unknown. We tested this dependence in fruit fly larvae by examining the impact of knocking down the neuronal phosphagen on locomotor performance over a 15-minute period. To bypass the issue of the larva's motivation to contract, we used optogenetics to drive motor neuron firing, and thus peristaltic locomotion, in vivo.

ANNA ARMBRUST

Flora of Halpattiekee Regional Park

Halpattiekee Regional Park is located in Stuart, Florida. This study surveys and lists the flora of Halpattiekee Regional Park using iNaturalist as a data source, as well as personal observation. During this research, I observed a critically endangered Florida ground orchid, *Eltroplectris calcarata*. This study goes further into depth on the northward spread of this specimen.

MYA ARSCOTT

Ketamine's Therapeutic Potential: A Review

The demand for alternative treatment for depressive disorders has increased in recent years, particularly as our clinical understanding of treatment-resistant depression has evolved. Treatment-resistant depression is defined as the absence of significant improvement in depressive symptoms despite standard therapy. Considerable improvement in depressive symptoms can be seen in an improvement of functioning in everyday activities and a decrease in symptoms such as loss of interest, feelings of worthlessness, etc. Ketamine's rapid method of action has been shown to be beneficial for individuals with treatment-resistant depression. Research has proven its short-term efficacy in comparison to more traditional treatments such as electroconvulsive therapy and first-line pharmaceuticals (i.e., SSRIs). However, the full scope of its benefits, long-term efficacy, and abuse potential remain subjects of exploration and more research needs to be done.

DHEERAJ AYAPATI**Effects of Green Tea on neurodegeneration in a *Drosophila* model of Huntington Disease**

Huntington's Disease (HD) is caused by a mutation in the Huntingtin (HTT) protein which causes neurodegeneration and motor skill impairment. Green tea has been shown to have a positive effect on neurodegeneration, however the specific components of green tea have not been investigated. This study aims to investigate the effects of green tea on neurodegenerative symptoms of HD and identify the specific compound in green tea that could potentially ameliorate HD symptoms. To do this, the GAL4-UAS system will be used in a *Drosophila* model of HD. Treatment groups will be fed food with varying concentrations of green tea or key active components to determine the specific effects on ameliorating locomotor function using a climbing assay. The findings of this study aim to provide more knowledge about the potential neuroprotective effects of green tea and its potential use as a therapeutic agent in treating HD.

NATHALY BAYONA**The Effects of Vitamin B12 on *Pyrodinium bahamense*'s Growth and Proliferation**

Harmful algal blooms (HABs) of the dinoflagellate *Pyrodinium bahamense* have become a yearly threat to aquatic ecosystems around the world, as the summer months see a sharp increase in bloom events where saxitoxins are released and consequently harm both marine life and have the chance to harm human life through ingestion of toxic seafood and aerosolized toxins. *P. bahamense* cannot produce several vitamins (auxotrophs) and it has been hypothesized that an overabundance of vitamin B12 in marine ecosystems—such as the Indian River Lagoon—has a positive effect on blooms forming every year. It is not clear if bacteria associated with HABs, capable of producing B12, or external sources of B12 act as a constant source of this necessary co-factor with which the algae can thrive on. This study set out to determine potential sources of vitamin B12 through analysis of extensive metagenomic datasets and other available metadata.

AMANDA BELIZAIRE

Taxonomic Identification of Hepatozoon Parasite in Gopherus Polyphemus

The gopher tortoise (*Gopherus polyphemus*) is a threatened keystone species of burrowing chelonian mostly found in southeastern USA. As a keystone, gopher tortoises have an important ecological role to house over 350 commensal species in their burrows. A major threat to their population's sustainability is haemogregarines: the most common haemoparasite. *Hepatozoon* sp. (Apicomplexa: Adeleorina) was identified at Florida Atlantic University Preserve (FAUP) in Boca Raton, Florida; however, the species has not been identified. I performed PCR and gel electrophoresis on the 18S rRNA gene region of *Hepatozoon* sp. on DNA isolated from gopher tortoise blood samples from FAUP and the Abacoa Greenway (Jupiter, Florida) to determine the phylogeny with other known *Hepatozoon* species that infect reptiles. I expect to produce evidence for the existence of the *Hepatozoon*, which would provide a better understanding of the existing blood parasite species within gopher tortoises, aiding in creation of better conservation methods.

GABRIELLA BOEHM

Testing the effects of COVID-19 cardiac performance in an endurance exercise assay using *Drosophila melanogaster*

COVID-19 continues to impact our society today, yet many questions have been left unanswered, including its impact on the cardiovascular system. To enhance our understanding, this study uses *Drosophila melanogaster* to examine the effects of COVID-19 on the cardiovascular system. This will be analyzed using an endurance exercise device called the Power Tower to assess the effects of prolonged exercise on flies expressing COVID-19 in cardiovascular tissue. It is expected, that with time, the flies will stop climbing, or slow their pace compared to the control flies, showing that COVID-19 impacts the cardiovascular system. Ultimately these findings will support further studies on the implications of the detrimental effects of COVID-19 on a cellular level.

ADAM BURJAN

Optimization of Lead Compounds Targeting RNA CUG Repeats Causing Myotonic Dystrophy

Current screening methods in drug discovery have inherent limitations that we seek to overcome. Optimizing a lead compound using traditional experimental techniques is excessively expensive and time-consuming. Synthesizing a modified version of a lead compound can take anywhere from a week to a month depending on the complexity of the modification. Therefore, we have developed an in-silico drug discovery pipeline to optimize lead compounds and have applied it to a lead compound known as I27, previously identified for its targeting of RNA CUG repeats (1). A combinatorial approach was employed to generate approximately 2.8 million derivatives, which were subsequently filtered based on the pharmacokinetic and toxicological parameters we established. After conducting MM/PBSA calculations, we predicted the binding free energies of each theoretical derivative to RNA CUG repeats. Initial results reveal 5178 derivatives with lower binding free energies, suggesting that they are better binders compared to the lead compound.

JACOB CARLSON

Assessing the Impact of Essential Oils on Seizure Recovery in Bang-Sensitive *Drosophila melanogaster*

Essential oils (EOs) are often portrayed as an effective homeopathic remedy for many disorders, including epilepsy. This experiment's purpose is to question the efficacy of EOs as a remedy for seizures, while disregarding potential physiological bias. Studying the effects of EOs on *Drosophila melanogaster* can provide an insight to human reactions, as there are homologous genes and pathways in seizures between the two. Bang-sensitive *Drosophila* are sensitive to mechanical stressors that facilitate a temporary epileptic or paralytic episode. Literature demonstrates specific diets in *Drosophila* can help reduce seizure activity in these mutants, such as a ketogenic diet. The Bang-sensitive flies were subjected to different diets with or without exposure to EO. A brief mechanical shock was administered, and the time to recover from a seizure position was measured. It is hypothesized that the use of essential oils with the ketogenic diet will reduce recovery time from a seizure.

DAKOTA COGLIATI

The Importance of Federal Policies Required to Regulate PFAS in Water Resources

Perfluoroalkyl and Polyfluoroalkyl substances (PFAS) have been dubbed "Forever Chemicals" due to the stability of the C-F bonds which allow them to have heat resistant, hydrophobic, and lipophobic properties. This promotes their extensive use in medicine, technology, stain-resistant fabrics, carpets, cosmetics, and food. Despite their utility, PFAS have raised concerns for decades due to their long-term harmful health effects to wildlife, humans, and the environment. Since their discovery, more than 4700 PFAS formulations have been created and used in consumer products, resulting in the contamination of drinking water resources. The objective of this thesis is to investigate the products that are causing PFAS contamination in water sources, the health risk that contamination poses, the regulations that have been implemented to date, as well as the necessary additional reforms required by the government to ensure the safety and health of all living things on earth.

ZACHARY COMELLA

The Screening of an shRNA Library of Human Pioneer Factors for their Effect on HIV Transcription

Nowadays approximately 40 million individuals live with the Human Immunodeficiency Virus (HIV) worldwide. Antiretroviral therapy (ART) against HIV limits viral replication but does not eradicate the virus. This is mainly due to the presence of long lived CD4+ T cells harboring transcriptionally silenced integrated provirus, hidden from the immune system and ready to reactivate. To develop novel strategies to block viral reactivation without treatment, we need an understanding of host factors contributing to HIV transcriptional regulation. Here we investigated the ability of pioneer factors (PFs) to modulate HIV transcription and latency. PFs are transcription factors that modulate the chromatin of their target genes by binding to DNA regions buried in nucleosomes. We designed a library of shRNA targeting 32 PFs and screened their ability to alter HIV transcription in the HIV latency model Jlat-10.6 cells. A set of PFs were identified and their role is currently being investigated.

JESSICA CORDINER

Desperation

Using Photoshop, I transformed an ordinary photo to match and enhance the theme of desperation and despair.

EDEN CUDAK

Comparing Effects of Fragile X Syndrome on Long and Short-Term Memory Through *Drosophila Melanogaster*

Fragile X Syndrome (FXS), characterized by the silencing of the Fragile X Messenger Ribonucleoprotein 1 (*fmr1*), is a neurodevelopmental disorder known for its deficiencies in learning and memory. Individuals with FXS cannot produce FMRP, a ribonucleoprotein responsible for proper brain development, experiencing traits similar to ADHD, autism, and anxiety, as well as deficiencies in long, short, and working memory. In order to test the effects of FXS on long- and short-term memory of *Drosophila Melanogaster* (fruit flies), we will conduct a variety of T-maze assays. The data is recorded separately for wild type and FXS flies, and will be compared to determine if FXS has any effect on short- or long-term memory. It is hypothesized flies with FXS will have worse memory overall and worse long-term memory than short-term memory. This study is important not only because of its uniqueness, as there is currently very little research on Fragile X Syndrome and its effects on memory, but the further study could aid in applications to humans with FXS, and they may allow for further research into ways to help with memory disorders in patients with Fragile X Syndrome.

PAIGE DEFOREST

Investigating the Role of Astrocytes in the Activity of Neural Networks

Recent advances have challenged the traditional view of glial cells as 'supporting cells,' instead suggesting they have a more active role. In fact, several studies have shown that dysfunction of astrocytes, the most predominant type of glial cell, can be found in pathological states such as Alzheimer's disease. This project aims to further explore the role of astrocytes in network activity. By using a computational model composed of neurons and astrocytes, we discerned distinct patterns of glial activity in networks with "asynchronous" behavior as compared to those with "synchronous" behavior. We then elucidated that astrocytes have a more profound impact in cases of synchronous activity. Additionally, we explored the use of artificial neural networks to recognize glial activity in different states. This study lays the groundwork for identifying abnormal glial activity, facilitating early recognition of pathologic network states.

ROSELYN DIAZ

Effect of Verbal Reminders and Actor Gender on Event Memory

This research study sought to test and verify the effects that verbal reminders and changes in actor gender have on event memory. It was designed to examine the role verbal reminders play in the consolidation or interference of a memory. Participants viewed a series of videos involving actors performing actions and speaking action phrases, and then a week later were asked to remember which actions had been performed. Participants were more likely to falsely recognize an actor performing an action if that actor had spoken an action phrase describing the performed action. If the gender of the actor who said the action phrase remained the same as the gender of the actor who was performing the action, the participant was more likely to accept the event. These results may be associated with inference caused by similarities in stimuli and binding errors.

REBECCA DICICCO**Cell-Type-Specific Consolidation of Learned Motor Memories in the Neocortex**

Motor learning is crucial for diverse behaviors, yet the neural mechanisms that consolidate the learning remain poorly understood. A recent study (Majumder et al., 2023) found that inhibiting Calcium/calmodulin-dependent protein kinase II (CaMKII) in pyramidal tract (PT) neurons, but not Intratelencephalic (IT) neurons, in the Anterior Lateral Motor cortex (ALM) disrupt motor learning. This suggests a cell-type-specific reliance on CaMKII for inducing synaptic plasticity during motor skill acquisition. This project aims to explore how the brain consolidates the acquired motor skill as a long-term memory. We hypothesize that following motor learning, CaMKII in PT, but not IT, cells activates the expression of immediate early genes (IEGs) Arc and c-fos, which may play a critical role in the storage of motor memories. Understanding the cell-specific roles in the ALM could provide insights into motor memory neural circuitry and diseases.

ALYSSA DIGIOVANNA**The Impact of Adventure Therapy on Later Coping for Veterans**

Service members have an increased risk for psychological distress but many are reluctant to seek treatment due to stigma. Adventure therapy may bypass that stigma, encouraging enrollment and teaching effective coping measures. The primary hypothesis being investigated was that participation in an adventure program with the Huts for Vets (HFV) organization will predict improvement in and continuation of the use of coping measures for veterans. Participants included 24 veterans from the HFV program from the summer of 2022 or 2023. Data collection occurred via survey. Preliminary results indicate that after participation in the HFV adventure program, 58.3% completely agreed that the mindfulness they learned was beneficial, 62.5% completely agreed that the readings from the trip were beneficial, and 45.8% either completely or mostly agreed that the yoga taught during the trip was beneficial. The current findings suggest that adventure therapy may offer benefits in coping for veterans.

ALLISON DOBULER

Does Signaling Mitigate the Seductive Details Effect?

The seductive details effect describes how including interesting, yet only tangentially related, material in educational text may hinder the learning of key concepts. However, educators may still want to include such material in order to garner interest from learners. This requires a mitigating factor of the seductive details effect. In this study, signaling, or including questions that target main ideas before each section of text, is evaluated as a possible mitigator of the seductive details effect. Including signaling while seductive details are present may improve scores on recall and transfer assessments based on texts about geoscience.

JORDAN DOYLE

The Effect of Environmental Stressors on Eating Disorder Symptom Severity

From 2019 to 2020, Florida Atlantic University participated in two waves of the Healthy Minds Study (HMS), which examines mental health. Participants completed the HMS in Winter 2019 (n = 4214), prior to the start of COVID-19, and in Spring 2020 (n = 3226). This study examined data related to COVID-19, other environmental stressors (e.g., financial, employment, and interpersonal), and eating disorder symptom severity. A multiple regression analysis with eating disorder symptom severity as the dependent variable and environmental/COVID stressors as the predictor variables found that the stressor variables overall were significantly related to eating disorder symptom severity. Further, academic impairment from emotional distress as well as emotional abuse and sexual abuse, were independently related to symptom severity. These results suggest that high levels of mental and emotional stress are strongly related to eating disorder symptom severity among college students.

HANNAH EPSTEIN

The Effects of Acute and Chronic Caffeine Exposure on Neuronal Function Using *Lumbricus terrestris*

Caffeine is one of the most commonly used psychoactive drugs in adolescents and young adults. Overconsumption of caffeine can have a significant effect on a person's mental and physical health. This study aims to expand upon previous studies that examined the effects of caffeine on neuronal function using the *Lumbricus terrestris*. We hypothesize that an acute administration of caffeine will have a more significant effect on neuronal function than a chronic administration. It is expected that an increased, acute caffeine administration would increase neuronal excitability, while a chronic administration would prompt the development of a caffeine tolerance. This research will greatly help us understand the effects of caffeine on brain activity. The results of this study could provide deeper insight into the effects of caffeine consumption at the cellular level of the neuron and implications for its effects on overall brain function.

NATALIA ESCOVAR

Assesing the Impact of Essential Oils of Seziure Recovery in Bang-Sensitive *Drosophila Melanogaster*

Essential oils (EOs) are often portrayed as an effective homeopathic remedy for many disorders, including epilepsy. This experiment's purpose is to question the efficacy of EOs as a remedy for seizures, while disregarding potential physiological bias. Studying the effects of EOs on *Drosophila melanogaster* can provide an insight to human reactions, as there are homologous genes and pathways in seizures between the two. Bang-sensitive *Drosophila* are sensitive to mechanical stressors that facilitate a temporary epileptic or paralytic episode. Literature demonstrates specific diets in *Drosophila* can help reduce seizure activity in these mutants, such as a ketogenic diet. The Bang-sensitive flies were subjected to different diets with or without exposure to EO. A brief mechanical shock was administered, and the time to recover from a seizure position was measured. It is hypothesized that the use of essential oils with the ketogenic diet will reduce recovery time from a seizure.

BROOKE ESTEVEZ

Micro-computed tomography-based visualization of bioturbation within sediment

Bioturbation is the process where organisms disturb sediment by burrowing, resulting in the release of toxic substances and the uprooting of seagrasses, which causes damage to marine ecosystems. The present study utilizes micro-computed tomography for 3D visualization of samples without invasive preparation. We aim to investigate bioturbation by quantifying evidence of bioturbation (E.g., burrows and exoskeletons) and analyzing the correlation between the quantity of bioturbation evidence and sediment type/grain size. Utilizing micro-CT, it is expected to generate 3D volumetric images, cross-sectional images, and visualization of the arrangement of structures within the samples. There is also likely to be different quantities of bioturbation evidence within samples collected from different locations, as one location has stagnant water, and the other has moving water. The data collected will provide insight into elemental cycling, to which bioturbation contributes, and will provide a basis for constraining the harmful effects of bioturbation.

SETH WYATT FALLIK

Voluntary Victim Intoxication in Sexual Assault State Statutes: A Content Analysis

Recent events, such as the #Metoo movement, have renewed sexual assault victims calls for change. Legal change has, unfortunately, been slow for sexual assault survivors voluntarily intoxicated during their victimization. To understand the legal remedies available for voluntarily intoxicated victims, this study explores state sexual assault laws across the United States of America. The results indicate existence of significant shortcomings in the interpretative value of and evidentiary requirements for voluntary victim intoxication cases. Policy implications from these results are discussed in the hopes of providing voluntarily intoxicated sexual assault victims greater access to justice.

NELL ROBERT FAVEUR

Investigation of Bacterial Horizontal Gene Transfer Within the Fecal Microbiome of The Gopher

Clostridium butyricum Type E, possessing the BoNT/E gene, is a human health pathogen of major concern. While the gut microbiome of Gopher tortoises is known to include *C. butyricum*, the potential presence of the pathogenic Type E strain in Florida habitats remains unknown. To begin investigating the prevalence of *C. butyricum* Type E in Gopher tortoises within the Abacoa Greenway, a polymerase chain reaction (PCR) assay targeting the *Clostridium* Clusters 1 & 2 was conducted on DNA isolated from gopher tortoise fecal samples to prioritize samples for BoNT/E follow up. Positive results suggested the presence of *Clostridium* species within my samples. I will also be assessing the presence of the *C. butyricum* botulinum neurotoxin (BoNT) gene. Further research in pathogenic bacteria is crucial for safeguarding the health of Gopher tortoises, and susceptible human patients.

KAYLAN FERNANDEZ

Exploring Therapeutic Potential of Natural Compounds and Micronutrients on Glioblastoma in *Drosophila melanogaster*

Drosophila melanogaster has been used to study various diseases and conditions, including the fast-growing, aggressive brain cancer - Glioblastoma Multiforme (GBM). Investigating the effects of natural compounds and micronutrients on the development of GBM tumors in *Drosophila* will enhance our understanding of the impacts of these substances on oncogenic propagation. Larvae were exposed to different combinations of micronutrients and natural compounds, namely epigallocatechin-3-gallate, curcumin, crocetin, artemisinin, and vitamin B12. The GAL4-UAS system was used in fly lines to promote tumorous growth of glial cells in larval brains. Using fluorescence imaging, third-instar brains were analyzed for surface area using ImageJ software. The tumor growth trends in individual substance tests are expected to be consistent with literature, however, this study aims to identify combinations that could have synergistic interactions that enhance or inhibit GBM progression. Such combinations have the potential to inform dietary decisions, food production regulations, and therapeutic procedures.

KAYLAN FERNANDEZ

Exploring Dehydration's Impact on Nerve Signals: A Study with *Lumbricus terrestris*

Dehydration reduces the water content in the extracellular fluid surrounding neurons, increasing concentrations of essential ions necessary for action potentials, such as sodium and potassium. This process can significantly affect the nervous system, potentially altering action potential waveforms. Therefore, studying dehydration's effects on earthworm action potentials could reveal mechanisms of neuronal dysfunction in dehydration, informing strategies for managing dehydration-related health issues. This study will conduct simulated and natural experiments using *Lumbricus terrestris* (earthworms). The simulated experiment will replace the extracellular solution with a saline solution to simulate dehydration. In the natural experiment, earthworms will be placed in soil with varying moisture levels. Electrophysiological changes will be recorded from individual neurons and amplitudes, durations, and shapes of the action potentials will be compared between experiments to assess dehydration effects. This study expects to find that dehydration should alter action potential waveforms, therefore proving the role of dehydration in the neuronal system.

LUNA FORERO

Development of Recombinant Protein Models to Evaluate Chemical Probes for Cysteine Oxidation

Oxidative stress is caused by the buildup of reactive oxygen species (ROS) within the cell. PARK7 (DJ-1), PDRX6, and GPX3 are three antioxidant proteins known for their chemically active cysteine residues that act as biochemical scavengers for ROS within cells. Post-translational cysteine redox modifications are mediated through a biochemically sensitive thiol group (-SH) and regulate redox-signaling pathways that manage ROS buildup, thereby preventing the onset of oxidative stress. These cysteine regulatory nodes, however, are quite sensitive and require specific chemical tools to monitor their status and activity, especially because the oxidative environment of a cell needs to be at a certain balance to both protect the cell from oxidative stress yet allow it to undergo destructive processes to prevent unrestricted cell growth. Our goal is to apply site-directed mutagenesis to cysteine residues and study the specificity of specially designed chemical probes that could aid in diagnosis and therapeutic development.

GABRIELLA FUNDERLICH

The Effects Anabolic Steroids Have on Health and Sports

This paper discusses the effects of anabolic steroids on the user's body and why these performance enhancing drugs are illegal in sports competitions. Sports are games of talent and skill, but when steroids are taken, the player has certain characteristics that allow them the unfair advantage to perform better than their opponent. While these steroids aid them in being a better competitor, there are detrimental health side effects that are not safe for the athlete. Evidence from research studies, such as Chinese Medical Journal and Sport Medicine, were used to determine the side effects. The results of these studies found that anabolic steroids cause negative health effects such as mania, hepatitis, delayed liver decay, angioliopoma, and more. These results are useful to deter the harmful use of anabolic steroids and keep sports at a level playing field.

DANIELA GARCIA-MORENO

Group Perception During Learning Tasks of Underrepresented Students

This study investigated the role of Social Identity Theory (SIT) in shaping how individuals in STEM perceived their groups, particularly considering gender and ethnic backgrounds. Prior studies indicated a tendency for people to prefer those who shared their gender or ethnicity, which could contribute to bias. The focus was on how group dynamics during a collaborative task affected these perceptions. Participants were grouped into triads for a computer-based task, with groups varying in gender and ethnic composition. Following the task, participants evaluated their group's interaction quality, their perception of the group, and the group's overall performance. It was expected that group perceptions would vary if groups were composed of underrepresented minorities in STEM. The findings from this research could inform strategies to enhance learning environments by fostering more inclusive and effective interactions.

SIDDHI GAVKAR

Interactions between Dopamine and Serotonin in a Mouse Model of Neuropsychiatric Disorders

The dopamine transporter (DAT) Val559 mutation was identified in individuals with neuropsychiatric disorders and results in anomalous dopamine efflux. DAT Val559 knock-in mice exhibit compensatory serotonergic hyperinnervation in a region-specific and sex-biased manner that may result from dopamine dysfunction during development. The goal of the current project is to utilize whole brain clearing and light sheet microscopy to uncover functional changes in serotonin signaling resulting from the DAT Val559 mutation across the entire murine brain. To do this, WT and DAT Val559 mice were treated with 5-HT releaser, fenfluramine, and isolated brains were cleared and stained for c-fos, a marker of neuron activation. By imaging and quantifying c-fos+ cells across the whole brain, identification of those circuits most impacted by expression of the DAT Val559 variant will be accomplished, which will allow for the generation of novel hypotheses regarding the neural substrates underlying behavioral phenotypes in DAT Val559 mice.

AIDEN GELETA

The Effect of Pyrethroid on Conduction Velocity and Threshold of *Lumbricus variegatus* giant fibers

This study aimed to investigate the effects of pyrethroids, a synthetic insecticide, on the conduction velocity and threshold of *Lumbricus variegatus*, the earthworm. Pyrethroids prevent inactivation of voltage-gated sodium channels and are commonly used to control insects, but its effects on earthworms are not understood. This study utilized two giant fibers, the Lateral and Medial Giant Fibers (LGF and MGF), to investigate the effects of pyrethroids on earthworm neurophysiology. We hypothesized that Pyrethroid exposure would negatively affect the neuronal functions of earthworms by increasing the threshold and decreasing conduction velocity. There were three conditions, two pyrethroid conditions and one control, with the neuron's propagation (CV) and excitability (threshold) measured. The data from our findings indicate that even at low concentration threshold levels were affected, while propagation seems to be comparatively less affected. These findings suggest that pyrethroid exposure could harm earthworms' neuronal functioning, disrupting the delicate balance of the ecosystem.

IBRAHIM GHEIT**Graph Neural Networks for the Identification of Novel Inhibitors of a Small RNA**

MicroRNAs (miRNAs) play a crucial role in post-transcriptional gene regulation and have been implicated in various diseases, including cancers and lung disease. In recent years, Graph Neural Networks (GNNs) have emerged as powerful tools for analyzing graph-structured data, making them well-suited for the analysis of molecular structures. In this work, we explore the application of GNNs in ligand-based drug screening for small molecules targeting miR-21. By representing a known dataset of small molecules targeting miR-21 as graphs, GNNs can learn complex relationships between their structures and activities, enabling the prediction of potential miRNA-targeting small molecules by capturing the structural features and similarity between known miRNA-targeting compounds. The use of GNNs in miRNA-targeting drug screening holds promise for the discovery of novel therapeutic agents and provides a computational framework for efficient screening of large chemical libraries.

AMPARO GODOY PASTORE**Exploring Deep Learning Approaches to Medical Image Analysis: A MATLAB "Cookbook"**

The ability to extract meaningful insights from medical images is paramount in healthcare. We introduce some MATLAB "how-to" recipes, aimed for researchers, students, developers, and practitioners in the field of medical image analysis. We illustrate modern approaches to medical image analysis using MATLAB's Medical Imaging Toolbox, Image Processing Toolbox, and Computer Vision Toolbox, among others. By leveraging modern examples from machine learning and artificial intelligence, specifically deep learning, the overarching goal is to empower future users with the skills to navigate the modern applications of medical image analysis, contributing to the broader discourse on the application of computational tools in the healthcare domain.

IZAN GONZALEZ FAYOS

Exploring Tactile Learning and Memory in Genetically Modified *Drosophila*: A Y-Maze Investigation

This study examines the influence of genetically modified flies (dunce and knockdown flies) on tactile learning and memory. The Y-maze setup involves a roughened arm indicating food and another smooth arm with a tasteless substance. The main question is whether these modified flies can effectively connect tactile learning and memory after being removed and put into another similar type maze. While results are pending, we anticipate observing if the flies remember the association between the rough area and food, choosing it in a new maze without food cues. This research addresses the broader issue of understanding the cognitive effects of genetic modifications in flies. If successful, it could contribute valuable insights into the link between genetic alterations and sensory-based learning, impacting our understanding of cognitive functions in genetically modified organisms.

LARAH GORAYEB

Detection and Prevalence of Hemolivia Haemoparasite Within the *Gopherus Polyphemus* Population

The gopher tortoise (*Gopherus polyphemus*) serves as a vital keystone species in its ecosystem benefiting various other animals. Yet these tortoises face threats from innumerable places like environmental changes, human activities, and haemogregarine parasites, more specifically Hemolivia from the Apicomplexa phylum, impacting many reptile species globally. This study investigates the prevalence of Hemolivia, in gopher tortoise populations at the Abacoa Greenway and Florida Atlantic University Preserve (FAUP) in Jupiter and Boca Raton, FL, respectively. By employing techniques including DNA isolation from gopher tortoise blood, PCR, and sequencing I aim to analyze the 18S rDNA region of Hemolivia and elucidate its relationship with other known species infecting gopher tortoises. Through this research, I aim to address current gaps in understanding Hemolivia infections and contribute to the broader comprehension of parasite dynamics within gopher tortoise populations.

NOAH GORMAN

Preliminary Assessment of Boat-Generated Wake Influence on the Ecological Structure of a Seagrass Meadow

Seagrass meadows are crucial coastal ecosystems for countless marine fauna and flora: with the decline of these ecosystems at home and abroad, understanding the array of threats they face represents the first step in mitigating further destruction and establishing effective restoration efforts. To this end, the purpose of this thesis was to provide a baseline dataset and preliminary assessment of the scale and intensity of boat-generated wakes on a severely reduced shallow-water seagrass meadow located in the southernmost portion of the Indian River Lagoon along a high-traffic recreational boating area. Baseline data provides novel insight into the potential influence of boat-generated wakes on the structure, ecological health, and diversity of the seagrass meadow when viewed with the context of locally changing benthic biota across time.

MIABETH GORODETZER-EDELMAN

The Fungal Gut Microbiome of *Gopherus polyphemus* of the Abacoa Greenway

The Gopher tortoise is a keystone species whose survival impacts dozens of burrow-dwelling species in their area. The gut microbiome remains an understudied area, especially within reptilian biology. With improvements to technology, the growth of gene sequence libraries around the world, and companies creating kits easing the extraction of DNA, there is potential to grow our understanding of this field. This study attempts to use these advancements to identify the fungal species found in the gut microbiome of the gopher tortoise. We isolated DNA from feces of three (3) tortoises from the Abacoa Greenway over the span of a month. The DNA samples were then sent to Zymo Research for sequencing of the nuclear ribosomal internal transcribed spacer (ITS) region of the rDNA. This region is commonly used as a barcode to identify species of fungi. We hope to find common species present and learn how they change over time.

MICHELLE GRAS

Examination of Sodium on the Nervous System of *L. Terrestris*

Sodium is well known for its pertinence in maintaining neurological and cardiac function. There is significant endorsement of low sodium diets by healthcare professionals due to problems like hypertension. However, populations who cannot meet daily sodium requirements or have autonomic nervous system disfunction (dysautonomia), suffer from hypotension, syncope, and neurological manifestations like brain fog, convulsions, and disorientation. Knowing this, sodium concentrations will be investigated to understand the neurological contribution to these health concerns. Utilizing *terrestris* the Canadian night crawler, worms will be chronically exposed using low to high concentrations of sodium, with the expectation that neuronal activity will be attenuated in low sodium conditions and augmented in high sodium environments. Findings from this experiment could partially explain neurological effects of low and high sodium diets.

AMANDA GUEVARA

A Review of Applied Behavior Analysis' Effectiveness and Ethical Implications

Autism is a developmental disorder that is on a spectrum, which means its symptoms vary in each individual. These symptoms are categorized into two main areas: social communication and interaction along with restricted or repetitive interests. There are a variety of interventions that treat autism, the most commonly practiced being Applied Behavior Analysis, a form of behavior therapy that uses a variety of techniques to help improve an individual's symptoms. For instance, the use of shaping to help build communication. Although this type of therapy is recommended, there have been ethical questions raised on whether it's used to benefit the individual or help society by masking their symptoms. There have also been concerns in whether this therapy is truly effective based on its original model, created by Ivar Lovaas. This project aims to review the literature discussing ABA and whether it should continue to be used.

SOPHIA GUILARTE

Soft Robotic Actuators for Magneto-Hall Effect Sensor Characterization and Prosthetic Applications

This research aimed to analyze recorded sensor responses to enhance sensor capabilities in prosthetics. Multiple sensor configurations with magnets and Hall effect sensor arrays were designed to detect torsional forces. A Tektronix digital oscilloscope was connected to the wiring, enabling comprehensive data collection. A jellyfish-shaped actuator was created by placing a 50/50 ratio of Ecoflex into a 3D printed mold and embedding a magnet inside. Waveform limit testing allowed for recording mV channels in response to the actuator's magnet passing by the sensors. Comparative analysis of channel activation rates evaluated torque perception accuracy, showing improved performance between sensor arrays and contributing to low-cost flexible sensors. This project expanded prosthetic sensing boundaries through experimentation and analysis with the goal of enhancing quality of life for individuals with limb differences.

KEVIN HALPERN

Examining the Potential Prevalence of Herpesvirus within Gopher Polyphemus in Abacoa

Gopher tortoises (*Gopherus polyphemus*) have declined in population within the southeastern region of the U.S. They have become an isolated species due to the surge in urbanization. Despite their protection in preserves, the dense isolated populations have increased infections, causing another threat to the species. One of these diseases, herpes simplex, has targeted their respiratory pathways. It is uncertain if the virus affects the tortoises in Southeastern Florida, mainly the Abacoa Greenway preserve in Jupiter, Florida. DNA was isolated from nasal and blood samples to determine if it was present in this region. PCR was used to amplify the herpesvirus DNA polymerase gene involved in the virus' replication. This experiment will give us insight into the prevalence of the herpes virus. Future experiments can help determine whether there is a correlation between the virus and tortoise mortality/morbidity rates.

KALEIGH HARBIN

Exposure Effects of Common Pesticides on Neurophysiology in *Lumbricus terrestris*

The nervous system plays a vital role in an organism's ability to maintain normal function and survival. Electrical properties of neurons can serve as indicators when that function is altered, providing implications of the effects on whole animal function. Threshold and conduction velocity are two characteristic measurements of assessing changes in neuronal function. This study investigates how exposure to pesticides at varying durations affect neuronal activity. To accomplish this, earthworms were exposed to soil contaminated with pesticides for different durations of exposure see how the duration of pesticide exposure affects the excitability and action potential propagation of the giant fibers of *Lumbricus terrestris*. The expected results are the pesticides will negatively affect neuronal function, leading to a decline in neuronal function and possibly even survival. These results will represent how common household pesticides can affect neural activity and overall health of living organisms, including humans.

KALANI HERNDON

Exploring How Genetic Variation Within the Foraging (for) Gene in *Drosophila melanogaster* Affects Ethanol Preference, Tolerance, and Aggression

Understanding the genetic basis behind Alcohol Use Disorder (AUD) is crucial to identify at risk groups and tailor treatment towards them. Despite extensive research, many alcohol related genetic processes have yet to be completely elucidated. Recent research has implicated Protein Kinase cGMP-Dependent 1 (PRKG1) as a stress-induced risk factor for alcohol abuse. To better comprehend the role PRKG1 may play in AUD in humans, this study examines the genetic variation within the foraging (for) gene in *Drosophila melanogaster*; there are three existing polymorphisms: fors (sitter), forR (rover) and fors2 (sitter mutant). Previously published literature has demonstrated differences in aggression between these groups. After determining ethanol preference using a CaFe assay, ethanol tolerance and aggression assays will be performed. If changing ethanol consumption concentrations has an effect on the flies, it is predicted that the rovers who consume greater amounts of ethanol will show more aggressive behaviors compared to the sitters.

BLAIZE HICKS

Exploring Tactile Learning and Memory in Genetically Modified *Drosophila*: A Y-Maze Investigation

This study examines the influence of genetically modified flies on tactile learning and memory. Many studies have investigated learning and memory using the *Drosophila melanogaster*, but few have incorporated tactile learning elements which factor in many NDDs. The Y-maze setup, which influences tactile learning, involves a roughened arm and a smooth arm with stimuli at each end. The main question is whether these modified flies can effectively connect tactile learning and memory after being removed and put into another similar maze. While results are pending, we anticipate observing if the flies remember the association between surfaces and stimuli, choosing them in new mazes without food cues. This research addresses the broader issue of understanding the cognitive effects of genetic modifications in flies. If successful, it could contribute valuable insights into the link between genetic alterations and sensory-based learning, impacting our understanding of cognitive functions in genetically modified organisms.

JASPER HOOKER

SARS-CoV-2 Effects on Gustation in *Drosophila melanogaster*

In 2020, 60% of COVID-19 patients experienced gustatory dysfunction in the United States. The project aims to understand the impact of the SARS-CoV-2 variant on the gustatory system in *Drosophila melanogaster* using the Capillary Feeder (CaFe) assay. *Drosophila melanogaster* shares 75% of human disease genes and allows for selective gene manipulation to incur desired effects. The CaFe assay will assess the severity of gustatory suppression caused by viral genes by measuring food preference using capillaries holding a sweet sucrose solution and a bitter quinine and sucrose solution. The predicted result of the study is that the flies expressing the genes that induce SARS-CoV-2 cannot detect sweetness from bitterness by showing the difference in consumption between the solutions. Studying SARS-CoV-2's effects on gustatory differentiation is crucial for risk mitigation, showing possible therapeutic targets, and long-term treatment. Our efforts could positively contribute to preventive measures against the virus's negative effects.

SHARADA IYER

The Effects of Polystyrene Microplastic Consumption on Reproduction and Survival Rate of *Drosophila melanogaster*

Plastic plays an increasingly important role in today's world as industries, households, and many other aspects of society use plastic for many practical uses. However, as plastic enters the ecosystem, it starts to degrade into microplastics, contaminating the environment, including the food and water that organisms consume. In this study, *Drosophila melanogaster* was used to explore the effects, if any, that polystyrene microplastic consumption have on health, survival, and reproduction based on one control group and three experimental groups with different polystyrene concentration levels in the fly food (0.10%, 1.00%, and 10.00%). The preliminary results show that there was a reduction in reproduction and pupae count in experimental flies compared to the control group. The results are essential to understanding the general health effects that microplastics have on humans considering their genetic similarities.

PRANAV JAMBULINGAM

Assessment of the Role of Glia in the Evolution of Brain Function and Behaviors in *Astyanax Mexicanus*

While the roles of glia in neural function are well-studied, how evolutionary changes in glia contribute to adaptive behaviors remains unknown. *Astyanax mexicanus* is unique among model systems because it is a single species with two evolutionarily divergent forms: eyed surface fish and eyeless cavefish. Cavefish differ from surface conspecifics in their behavior, physiology, and morphology. This project uses fluorescent RNA probes in Hybridization Chain Reaction to identify subsets of different glial populations, and we will soon use Tol2-based transgenesis to generate transgenic lines. We expect to find significant differences in glial makeup between surface fish and cavefish, and we hypothesize, based on the known role of glia in neural function, that these differences, in part, drive behavioral differences. This will be the very first assessment of the role of glia in behavioral and neural evolution.

WESTIN JOHNSON

Development and Testing of a Small WEC for Numerical Simulation Validation

Wave energy converters (WECs) are marine renewable energy devices designed to harness the potential and kinetic energy present in waves and convert it into electrical energy. This energy can then be stored or directed to power coastal cities or offshore installations. In this presentation, I will discuss a small-scale (~2m diameter) wave energy converter developed to gather open-water performance data for validating the numerical simulation of a 4-body oscillating body type WEC design. This WEC underwent numerical simulation using both WEC-Sim and ProteusDS, and these results were subsequently compared to the in-water testing data to validate the accuracy of the simulation. This research was conducted as part of the REU program in Marine Renewable Energy at FAU.

LIBERTY JUNO

The Occurrence, Neuroanatomy, and Morphometrics of Slickhead *Leptochilichthys* in the Gulf of Mexico

Leptochilichthys is a genus of rare deep-sea slickheads with three species: *L. agassizii*, *L. microlepis*, and *L. pinguis*. The described distribution of *L. microlepis* is the Indo-West Pacific region off Japan and northwestern Australia, but recent cruises have identified specimens resembling *L. microlepis* in the Gulf of Mexico (GoM), representing the first appearance in the Atlantic Ocean. This wide distributional difference suggests the possible divergence of *L. microlepis* into an undescribed species that is found in the northern GoM. The current study explores the anatomical differences between *L. cf. microlepis* specimens collected in the GoM and specimens in the Indo-West Pacific through microCT imaging and morphometrics. Preliminary results demonstrate increases of vertebrae in *L. cf. microlepis*, although the continuation of this study will serve to conclusively determine any differences. These findings will contribute novel information on the neuroanatomy and skeletal system of *Leptochilichthys* and possibly describe a new species.

AVINASH KANAKAM

An Integrated Workflow for the Analysis and Quantification of Context Dependent Feeding Behavior

The neural basis of behavior relies on the activity patterns of specific neurons that contribute to the behavior observed. Neurons in the insular cortex are required for complex feeding behaviors, but how their activity contributes to behavioral changes is unknown. This proposal aims to develop a workflow that efficiently analyzes animal behavior data as well as neural activity data to produce results based on their combination. This combined system will take advantage of contemporary hardware and software: a fiber photometry system to gather neural activity data, a camera setup to gather videos for establishing when behavior occurs, and Python libraries to combine neural activity and behavioral data. This will allow for us to create strong correlations between neuronal populations and observed behaviors in different contexts, which can give us new comprehension of how different areas of the brain and specific populations of neurons may contribute to complex behaviors.

ANJALI KANNAN

Olfactory Rosette Microstructure in Blacktip Sharks (*Carcharhinus Limbatus*)

The shark olfactory system contains paired rosettes composed of tissue folds called lamellae, which are covered in sensory (scent-detecting) and nonsensory epithelium. Lamellar organization has not been investigated in terms of rosette position in the blacktip shark. We used scanning electron microscopy (SEM) to analyze the microstructure of the olfactory lamellae of blacktip sharks (N=4; *Carcharhinus limbatus*). We quantified how much each lamella's surface area was devoted to sensitivity by counting the number of secondary folding (which increases surface area) and measuring the coverage of sensory epithelium. We are investigating the amount of lamellar sensory tissue throughout the rosette, and we expect to find an increase in secondary folding and sensory epithelium surface area in the rosette's center, as previous studies showed. The study will expand knowledge in the field of olfactory microstructure in sharks, and allow future researchers to better understand how these variations may impact odorant detection.

MARLI KNOX

Isolating Direct Neuronal Projections from the Mouse Perirhinal Cortex to the Hippocampus

The contribution of the hippocampus, a critical brain structure for long-term memory, is remarkably conserved between mice and humans. Episodic memories formed in hippocampus integrate spatial information with item/object information from perirhinal cortex (PRh). Whether the mouse perirhinal cortex (PRh), particularly its rostral deep layers (IV-VI), directly projects to the CA1 region of the dorsal hippocampus is unclear. Retrograde viral tracer virus injections into the dorsal CA1, coupled with whole-brain clearing and 3D imaging with light-sheet microscopy will permit comprehensive tracing of neuronal populations and projections. Direct anatomical projections will be selectively manipulated via viral expression and activation of inhibitory designer receptors exclusively activated by designer drugs (DREADDs). Specifically, we aim to elucidate the role of direct PRh --> CA1 projection neurons in object memory. Results to date support the view that PRh neurons project to the CA1 of dorsal hippocampus directly and indirectly via neighboring regions to support memory.

JOSIE LEALI

Stress Indicators in Hatchling Leatherback (*Dermochelys coriacea*), Loggerhead (*Caretta caretta*), and Green (*Chelonia mydas*) Sea Turtles in Relation to Holding Conditions

Sea turtle species including leatherbacks (*Dermochelys coriacea*), loggerheads (*Caretta caretta*), and green turtles (*Chelonia mydas*) are often collected for research, leading to a stress response in the animal. One method in which sea turtles are collected involves excavating hatchlings from their nests 72 hours post-emergence, holding them in a dark cooler for 12 hours, or more, and then releasing them the following night. Under ideal circumstances, the hatchlings re-enter a state of torpor, but oftentimes the animals take a long time to reach this period of inactivity, if it even occurs. For this project, a series of tests were conducted upon capture and again before release to determine the relation between stress and holding conditions in these animals. Tests included measurements, blood samples, health assessments, and behavioral observations. This project is important to understand the effects of holding conditions on sea turtles in order to make recommendations to improve protocols.

NIKKI LEALI

Improving Medical Diagnosis Classification Accuracy through Deep Learning Detection of Poor Quality Images

The global healthcare system faces the challenge of providing accurate diagnoses using imaging data, and machine learning techniques have shown promising results; however, many medical images have quality issues, like out-of-focus or uneven illumination, which can cause misdiagnosis. This study proposes a convolutional neural network to identify regions of low-focus-quality in dermatological medical images, ensuring poor-quality images are detected and removed prior to making artificial-intelligence-driven diagnoses. We furthermore developed a transfer learning model using ResNet-152 that classifies skin lesions as benign or malignant to evaluate the poor-quality image separation model. The classifier model's overall accuracy from before, during, and after data augmentation, which we used to create poor-quality images, was tested. This study's findings have proved the effects of poor-quality images on the accuracy of medical image classification models, showcasing the importance of removing poor-quality images from machine learning training sets with the aim of reducing the misdiagnosis risk.

EMERSON LEE

Freeze Frame Meditation and Decision-Making

While mindfulness and loving-kindness meditation have been shown to affect decision-making in a work setting, little research has examined meditations specifically tailored to decision-making in the context of personal life events. The current study examined the effects of a modification of Heart Math Institute's Freeze Frame meditation as well as a version of Inner Smile from AcuEnergetics on wellbeing, stress, and decision-making in college students. Emotional state and subjective impact questionnaires were used. Data collection is still ongoing. We will examine the relationship between stress, wellbeing, and the subjective impact of the meditation on decision-making for a personally identified current stressful life situation. The implications of our results on decision-making and whether expanding clinically validated meditation types available is useful will be discussed.

MATTHEW LEGARE

Remote Camera-Trap Survey of the Under-Roadway Animal Corridors in the Abacoa Greenway

Habitat fragmentation is one of the greatest threats to animal biodiversity and population strength. Habitat fragmentation has affected the species in the Abacoa Greenway since its construction in 1997. Ecological consultants formulated a plan to combat the negative effects of habitat fragmentation. This plan encompassed the concept of wildlife-specific corridors, to connect the fragmented habitats. The results of this study suggest that these corridors do provide connectivity to the habitats, allowing animals to safely travel their daily, seasonal, and annual home ranges despite the influence created by human infrastructure.

MARISSA LIPPINKHOF

Conditioned taste aversion reveals lateralization of the murine insular cortex

The insular cortex (IC) is integral to bodily sensation, emotional processing, autonomic and motor control, and decision-making. The IC receives neural signals and connects with the limbic system, thus contributing to overall body awareness. To understand how the IC functions during aversive stimuli in mice, we conducted a conditioned taste aversion (CTA) using the EZ-Clear protocol, an immunofluorescent staining method that allows whole-brain imaging compared to slice imaging. During CTA, we paired a novel taste with lithium chloride and induced aversion, revealing memory-based learning and lateralization of the IC. Neural activity tracked with an enhanced green fluorescent protein (EGFP) marker revealed increased expression in the right IC post-CTA. Neuron visualization was accomplished with FoSTrAP capturing actively translated mRNA in activated neurons and EGFP marking neurons for pathway analysis. This study contributes insights into IC lateralization in taste aversion while presenting a novel approach to neural activity visualization and analysis.

LAURA-LEE MCCOMIE

This thesis investigates the ethical implications surrounding the sudden death of a 46-year-old male patient from glioblastoma, a highly aggressive brain tumor. The analysis focuses on the intricate details of the case, dissecting the events that transpired, and identifying the medical and moral mistakes that were made. Further, this thesis critically examines the decisions made by both the healthcare professionals and the patient, and the deficiencies in diagnosis, communication, and treatment strategy in the case. Because of delayed diagnosis and inadequate treatment, the patient suffered an untimely death. By unraveling the complexities of this case, this thesis seeks to contribute a nuanced perspective to the discourse on medical ethics, by offering insights into areas that demand improvement, both in this particular case and in medicine more generally. Failures at multiple levels resulted in the patient deteriorating rapidly and missing the chance to say goodbye to his loved ones. In this thesis, I suggest that by fostering a compassionate and patient-centered approach to healthcare, we can provide more optimal care to individuals facing glioblastoma and similar formidable conditions.

JOSUE MALDONADO-ZELAYA

Using SNAP for Early Behavioral Intervention

Research has shown that adolescents and young adults who become serious, violent, and repeat offenders typically begin their delinquent behavior as young adolescents and even in childhood. There are many reasons why children misbehave and display misconduct behavior in both the classroom and at home. Whether it's because they were victims of bullying, living in low-income households, or victims of physical, emotional, and/or sexual abuse, these early life stressors and types of environments can influence children to go down a path of delinquency. Children who engage in such behavior can cause stress and harm to both their families and themselves. To combat childhood delinquency and conduct disorder behavior, many institutions and programs offer behavioral intervention services designed to stop problem behaviors by rewarding good behaviors. This thesis analyzes the history, methods, structure, and criticisms of one specific behavioral intervention service type, SNAP.

SOFIA MARTINEZ

Development of a GIS-based Approach to Seaport Operability Assessment of Projected Sea Level Rise Scenarios

Seaports are major players in local and global supply chains, but they are vulnerable to sea level rise (SLR), compromising their functionality and safety. This study aims to develop a tool for assessing seaport operability under different SLR scenarios, using Port Everglades in Florida as a case study. The tool will automate the geoprocessing workflow established by the methodology in Gracia et al. (2019) paper using Python scripting and ArcPy modules by using high-resolution LiDAR digital elevation models, freeboard requirements, and mean water level projections as inputs to generate port operability maps for various time frames and SLR projections. The expected outcome of this study is for the tool to be packaged into a web GIS application for public access. This study aims to supply port administrators with a tool that can visualize and detect the impact of SLR on berthing areas and to support future planning efforts made.

RYAN MAYER

Effect of Roundup® on Lumbricus terrestris Physiology

In modern agriculture, glyphosate-based products are the most commonly used herbicides. Earthworms are a major marker of environmental health and are often used in ecotoxicological reports. Previously, Roundup®, a commercially available product, has been shown to reduce physical activity and reproduction in the earthworm *Lumbricus terrestris* after chronic exposure. Here we examine the impact of acute and chronic Roundup® exposure on nerve conduction velocities and body mass in *Lumbricus terrestris*. Specifically, we will test earthworms at three time points: prior to exposure to herbicide and after 5 days and after 10 days. To determine the impact of herbicide concentration, we will administer the vehicle without herbicide, with the recommended application concentration and at 5-fold concentration. We expect to see declines in nerve conduction velocity and body mass based on dose and chronicity of exposure. This technique could find use in assessing the impact of herbicides on earthworms.

JULIA MDUFFEE

A look through chemistry history: Why We Tasted and Smelled Chemicals and When We Stopped

Historically, chemists used taste as a tool and smell for chemical identification rooted in ancient diagnostic medicine. With limited analytical tools available, taste and smell were used to describe synthesis of novel compounds and was a part of chemistry instruction within educational institutions. As analytical chemistry evolved, and new technologies were developed, the need for using taste and smell in a laboratory setting was eliminated. However, its use persisted as it was ingrained into educational practices, and the health effects of ingesting chemicals were not understood, contributing to the continuation of its use. In modern chemistry, ingestion of chemicals in a laboratory is strictly prohibited. This shift in perspective came in the late 1960s- early 1970s and is reflected in lab manuals, publications, and policy. Today, there is emphasis on the health and safety of chemists and measures are implemented to ensure chemicals are not intentionally or accidentally ingested.

LIZBETH MONCADA

Exploring Effective and Sustainable Synthesis Routes for Enantioselective Chlorolactonization using Retrosynthesis

Chlorolactonization, the formation of a lactone ring from a carboxylic acid and a chlorinating agent, is an understudied area in organic chemistry. Existing methods for halolactonizations are limited, expensive, and often rely on sophisticated instrumentation and techniques. Moreover, the available library of products is minimal, and attempts to attain high levels of enantioselectivity have been unsuccessful. Retrosynthesis is an effective method for synthesizing organic compounds by starting with the product and identifying the necessary reagents. With retrosynthesis, we aim to design efficient substrates to investigate novel methods for chlorolactonization with the objective of reducing costs, enhancing product yields, and improving enantioselectivity.

ERIC MORALES

Investigating the Opioid Binding Receptor in Human T Lymphocytes

The mechanism behind chronic opioid drug effects on the human immune system is largely understudied, despite the rise in both clinical and recreational opioid use. While opioid exposure is known to have many effects on the immune system, it is unclear which cell-surface receptors are responsible for these effects. This project aims to provide insight into these receptor targets in T lymphocytes, cells that play a significant role in adaptive immunity. By systematically reviewing previous publications and conducting a meta-analysis, we evaluated the existing evidence regarding the presence of opioid receptors on T cells. By providing insight into the T lymphocyte receptor target for opioids, additional research can be directed towards identifying this receptor and further characterizing opioid effects on the immune system. Ultimately, this will support efforts in developing safer and more effective opioid analgesics which avoid immune-system-related side effects.

GABRIELLA NUNEZ

Factors That Contribute to the Declining Number of Veterinary Students Pursuing a Career in Equine Medicine

In recent years, the percentage of veterinary students entering equine medicine has dropped from 5.7% in 2003 to below 1.5% today, creating a shortage of equine veterinarians. Many factors have been identified, including low salary, lack of experience/mentorship, extensive workload, and poor working environments. What is not known is the correlation between these factors, as well as additional factors that may be identified. This study focuses on the perceptions of equine medicine in comparison to other veterinary specialties from the eyes of veterinary school students. Ten graduating veterinary school students were interviewed in three focus groups. The transcripts of these focus groups were deidentified and analyzed with thematic coding and constant comparative analysis. Through this analysis, factors that affect veterinary students' decisions to enter the equine medical field were identified. This research will provide targets for change in veterinary medicine curriculum and practice structures to reduce the shortage of equine veterinarians.

NARESH PADMANABAN

Brain-wide Mapping of Adaptive Feeding States in *Astyanax mexicanus*

Regulation of appropriate food intake requires coordination of both peripheral and brain systems sensing caloric need and satiety. Feeding disorders in human populations are driven by complex gene and neural networks, and naturally occurring genetic variation can have potent influence on these disorders. The Mexican tetra, *Astyanax mexicanus*, is a powerful model for investigating the role of naturally occurring genetic variation in behavioral trait differences. *A. mexicanus* is a single species consisting of an eyed surface fish and multiple independently evolved populations of blind cavefish. Our group and others have shown that cavefish populations have independently converged on hyperphagia and obesity. In this study, we will use a combination of brain mapping in fed and starved surface and cavefish to map regions of the brain that associate with feeding. Together, this study will identify how brain-periphery systems underlying feeding, with potential implications for obesity in humans.

OHM PARIKH

The Effect of PKM ζ Loss-of-Function on Spatial Learning and Memory

Protein kinase M zeta (PKM ζ) has been proposed as the "memory maintenance molecule." However, the lack of isozyme-specific tools for this molecule limits our understanding of its role which has led to controversy within the field. In this project, we engineered a chemogenetic inhibitory system by introducing a point mutation in the PKM ζ gene, rendering the protein sensitive to a PP1-analog drug. By using this novel system, we aim to study the effects of acute loss-of-function during hippocampal-dependent learning and memory tasks in mice. We hypothesize that memory consolidation is perturbed by local inhibition of the molecule in the hippocampus following spatial learning.

KHUSHI PATEL

Fear-Elicited Emotional Responses in Infants and Brain Development

This longitudinal study investigates fear responses in infants aged 6-10 months and its relationship to brain development. Fear experiences may shape brain development, impacting later behavior and social development. Therefore, this study looks into the individual temperament differences with emotional/brain responses being measured across development. The study involves 20 participants in which infants will undergo a distressing standardized assessment called "Lab-TAB" and will be recorded on multiple cameras for a behavioral analysis, coding for gaze direction, approach-withdrawal behaviors, and facial expressions. Anticipated results suggest lower fear responses at 6 months but with individual variability, if fear is higher in some infants compared to peers, their levels may continue to rise across age. By examining fear-elicited emotional responses and their relation to brain development, this study aims to provide insights into the potential long-term consequences for psychopathology risk, contributing to a better understanding of precursors to anxiety across early development.

ZOE PAYNER

Human Remains: The Conflict of Benefits and Ethics

Human remains have been displayed in museums and studied in universities for hundreds of years in the context of judicial proceedings, education, and public health. However, recent laws, such as NAGPRA in the United States, have introduced moral and ethical issues to the scientific community and public. An increase in public interest and legal support have greatly increased hesitations in museums and universities. I will present benefits of the study and exhumation of human remains in forensic investigations, specifically in cases of mass genocide and missing persons. Public health and educational advantages, both in the museum and university setting, will also be examined as examples of benefits provided by the use of human remains. I will demonstrate that with proper stewardship, the benefits of human remains outweigh associated cultural sensitivities, as well as the ethical and moral hesitations.

KATIE POQUETTE

Effects of Amphetamine Exposure on Dopamine Transmission using mutated *Caenorhabditis elegans* from the Million Mutations Project

Amphetamine (Amph) is a common psychostimulant drug used to treat a variety of neurological disorders, such as ADHD and narcolepsy. This drug is also known to be highly addictive when used recreationally due to its ability to increase the levels of extracellular dopamine (DA) released in the brain's reward center. The mammalian dopaminergic pathway is a multipart and complex system. For this reason, simpler model systems are often used. Here we perform a screen to identify novel proteins involved in the mechanism of action of Amph by using mutated *Caenorhabditis elegans* obtained from the Million Mutation Project (MMP). Preliminary data show the VC20048 and VC40358 lines exhibit an altered behavioral response to Amph suggesting that these lines express a mutation(s) in a gene required by Amph. Ongoing experiments will be directed to identify and validate the gene of interest.

ELLA PROTZ

Gelatinases are important for CD4+ T-cell metabolic reprogramming

Detection of *Mycoplasma agassizii* and *Mycoplasma testudineum* in Abacoa's Gopher Tortoise aggregation.

MADISON PUZDER**Exploring Understudied Modes of GPCR Regulation**

G protein-coupled receptors (GPCRs) are surface receptors that initiate important cellular processes, such as those invoked by hormones and neurotransmitters. As the largest family of membrane proteins, GPCRs have become attractive drug targets, accounting for 40% of marketed drugs. However, GPCR processes are further regulated by proteins along the signaling axis. To completely understand GPCR actions, a thorough knowledge of the underlying biology is needed. This study focuses on how three protein families, i.e., regulators of G-protein signaling (RGS), α -arrestins, and sorting nexins, regulate GPCR signaling. Using a yeast model with a conserved GPCR system, protein overexpression and genetic knockout experiments were performed, providing insights into regulatory mechanisms. Additionally, by using the μ opioid receptor (MOR) as a model GPCR, the relevance of these findings in neurological GPCR signaling are shown. Overall, this study emphasizes the importance of downstream GPCR regulation and how dysregulation influences drug-mediated actions.

PRIYA RAJU**Optimizing iTRF for Maximum *Drosophila Melanogaster* Lifespan Extension**

Obesity and aging-related diseases present significant global health challenges. Intermittent time-restricted feeding (iTRF) shows promise in managing these conditions, with potential benefits including weight loss, improved metabolic health, and extended lifespan. Ulgherait et al. (2021) elucidated the molecular basis of iTRF's effects, highlighting the role of circadian-regulated autophagy in *Drosophila melanogaster* lifespan extension. This study aims to enhance understanding by exploring various iTRF parameters in *Drosophila*, such as altering sucrose or protein concentrations during fasting and adjusting fasting and feeding window durations. Findings will inform strategies for optimizing iTRF's therapeutic potential. Moreover, applying the optimized iTRF protocol to amyloid-beta-expressing flies may unveil its efficacy in extending lifespan in disease models.

KATELYN RAMSAHAI

Synthesizing RNase Recruiters

Ribonuclease-targeting chimera (RIBOTAC), a RNA targeting molecule, is a potential technology that can degrade disease relevant RNA. A RIBOTAC is a heterobifunctional compound consisting of three main parts: RNase recruiter, RNA binder, and a linker joining these two modules. RNase recruiters bind to RNase, and bring the enzyme in proximity to the RNA to be degraded, bound by the RNA binding module. Synthesis of RNase recruiters is an integral part of developing experimental compounds. Both Solid Phase Peptide Synthesis (SPPS) and solution synthesis are used to synthesize RNase recruiters which are next purified by column chromatography. Various RNase recruiters and RIBOTACs are in synthesis in order to assess the general applicability to this technology in degrading different disease relevant RNAs, both human and viral, thus opening a path to new therapeutic strategy.

GABRIELLE RUIZ

Analysis of Bacterial Diversity in Response to Natural Factors of Gopherus Polyphemus

The microbiome plays a significant role in immune system health; it aids in the recovery of nutrition and is important for the prevention of pathogens. The microbiome is largely unknown, especially in reptiles, like the gopher tortoise. To understand how the bacterial population changes over time outside of the organism, fecal samples were harvested from three gopher tortoises in the Jupiter Abacoa greenway (days 0-7, weeks 2, 3, and 4). The fecal samples were left in their initial location outdoors and covered with a mesh tent to protect them from small animals. DNA was isolated from the samples and sent to ZYMO laboratories for amplification/sequencing of the 16S rRNA gene. We expect to see an increase in the number of bacterial colonies within the first week followed by a plateau and a decrease in the final weeks. This research will help us better understand changes in the fecal microbiome over time.

JULIE SAMPAIO

Flora of Refúgio das Águas, a private reserve in Minas Gerais, Brazil

I studied the flora of Refúgio das Águas, a 300-hectare (741-acres) private reserve in Gouveia, Minas Gerais, Brazil that includes diverse ecosystems such as waterfalls, savannah, grasslands, rocky terrain, and valleys. This property is mostly undisturbed, apart from a few areas having cattle grazing and a house with roads leading to it. Most of the area is uncultivated and secluded for many years. I conducted a plant survey of the property for five days, photographing plants and posting them to the website iNaturalist. So far, 174 plant species have been identified, including six of the 14 species of orchids. This survey demonstrates the type of plant species naturally thriving in natural areas in this region.

CLAIRE SANFORD

Emotional Development In Infants Six Through Ten Months Old

This study aims to investigate fear in infancy through understanding individual variation in brain waves and the differences in right frontal EEG asymmetry at-rest and when infants are presented with fearful events. Fear is an adaptive response under conditions of danger yet it is important to observe how fear changes in individuals throughout development and in response to experiences as heightened fear is a precursor for anxiety. Infants were assessed in the lab at 6-, 8- and 10-months. The infant's vocalization behaviors during spider and stranger-approach conditions are being coded for level of distress. Frontal lobe EEG activation is also measured at-rest and during the conditions. Our analysis is designed to examine a suspected correlation between emotional responses and changes in functional brain patterns in individual infants as they develop. The findings have the potential to enable the identification of emerging risk factors for anxiety during development.

MELANIE SAROZA-PLACENCIA

Comparing Effects of Fragile X Syndrome on Long- and Short-Term Memory through *Drosophila Melanogaster*

Fragile X Syndrome (FXS), characterized by the silencing of the Fragile X Messenger Ribonucleoprotein 1 (*fmr1*), is a neurodevelopmental disorder known for its deficiencies in learning and memory. Individuals with FXS cannot produce FMRP, a ribonucleoprotein responsible for proper brain development, experiencing deficiencies in long-term, short-term, and working memory. To test the effects of FXS on long- and short-term memory of *Drosophila Melanogaster* (fruit flies), we will be using a T-maze with a conditioning period with positive and negative reinforcement and subsequent testing to further research long- and short- term memory in FXS. It is hypothesized flies with FXS will have worse memory overall, and worse long-term memory than short-term memory. This study is not only novel, but further studies could aid in applications to humans with FXS, and they may allow for further research into ways to help with memory disorders in patients with Fragile X Syndrome.

NICHOLAS SHAFFER

A Retrosynthetic Workup of a Chlorolactone Following Chlorocyclization

Chlorolactonization is a reaction that involves the intramolecular cyclization of a compound containing a hydroxyl group and double bond, which can be chlorinated through multiple additional reagents. Halolactonization reactions are harnessed for their ability to produce regioselective natural products. However, the use of chlorine in halolactonization has yet to be explored significantly. Via retrosynthesis, various reactions have been completed to generate the necessary starting materials needed for chlorolactonization. Multiple precursors to chlorolactones were created using a saponification mechanism and Dies-Alder reaction. With these stock solutions, a series of later chlorocyclizations were used to generate the desired chlorolactone effectively. Additionally, we plan to manipulate experimental conditions, such as the reagent used to deprotonate our hydroxyl group and the recrystallizing solvent used to obtain our reagents. We hypothesize that these retrosynthetically derived reagents are more effective in yielding more significant amounts of the desired stereoisomer of the chlorolactones we seek to obtain.

ABIGAIL SHEPARD**Effects of Saturated and Unsaturated Fats on Neuronal Activity**

Neuropathy, a condition describing the damage of nerves, is a common symptom of prediabetes and diabetes. In America, 80 million citizens have prediabetes, and one-third of these citizens will progress to type-2 diabetes. When examining the causes of prediabetes, elevated levels of saturated fatty acids have a positive correlation with this disease. This experiment looks at the effect of saturated and unsaturated fats on neural activity factors, such as threshold and conduction velocity, using *Acheta domestica*, the cricket. Three experimental groups will have saturated, unsaturated, or a transfer from saturated to unsaturated fats in their food and tested after six days. If there is an effect of adding unsaturated foods to the typical cricket diet, switching from saturated to unsaturated fats should result in improved cognitive function. These findings can contribute to our understanding of how a healthy diet, or a change in diet, can affect human and cognitive health.

SARAH SINGH**Detection of *Mycoplasma agassizii* and *Mycoplasma testudineum* in Abacoa's Gopher Tortoise Aggregation**

Gopher tortoises (*Gopherus polyphemus*) face severe declines, particularly in Florida, due to Upper Respiratory Tract Disease (URTD), causing symptoms ranging from nasal and ocular issues to lethargy and even death. *Mycoplasma agassizii* and *Mycoplasma testudineum* are two identified causative agents of URTD; therefore, my research examined each bacteria's presence in the tortoise aggregation at Range VI of the Abacoa Greenway. Pathogenic DNA presence was examined via PCR by amplification of the 16S rRNA gene from nasal swab samples. Antibody detection of previous exposure was tested via ELISA from blood plasma samples. Evidential findings will demonstrate the presence of *M. agassizii* either currently (PCR) or previously (ELISA). The presence of *M. testudineum* will be evident via ELISA solely, as its presence has only been found in Northern Florida. From these significant findings, exploration of treatment for these pathogens, and the administration of wellness checks on the tortoises can be implemented.

JILLIAN SIVERLY

Cultural frame switching: The role of language and culture in attitudes towards mental illness

There is a growing body of evidence that the beliefs of bilingual individuals vary based on the language used, in a phenomenon known as cultural frame switching. The current study investigated the influence of language and culture on attitudes towards mental health using the Language Experience and Proficiency Questionnaire, Beliefs Towards Mental Illness Scale, Treatment Seeking Behavior Scale, Abbreviated Multidimensional Acculturation Scale, and Religious Mental Health Stigma Scale. Participants completed the survey in English or Spanish based on their self-reported language proficiency, with Spanish-English bilinguals being randomly assigned to one of the two conditions. The impacts of survey language administration on each of the scales will be examined to either support or negate the theory of cultural frame switching.

NATALIE SOUZA

Exploring the Role of Inflammatory Cytokines and p38 α MAPK in Autism Spectrum Disorder: Implications for Serotonergic Signaling

Autism Spectrum Disorder (ASD), a complex neurodevelopmental disorder, affects 1 in 36 children in the U.S. and is approximately 3.8 times more prevalent in boys than girls. Marked by social deficiencies and repetitive, restricted behaviors, ASD is associated with hyperserotonemia in approximately 30% of cases, a condition characterized by elevated blood serotonin (5-hydroxytryptophan, 5-HT) levels that has been understudied in females due to ASD male bias. 5-HT, a neuromodulator, regulates mood, social behavior, sleep, and gut health. The presynaptic 5-HT transporter (SERT) closely controls extracellular 5-HT availability, and its activity is upregulated by inflammatory cytokine signaling. Moreover, the p38 mitogen-activated protein kinase (MAPK) pathway is known to increase SERT transport activity, leading to elevated 5-HT uptake and establishing prospects for therapeutic strategies. Altogether, these connections will be further investigated in a mouse model with the SERT Gly56Ala substitution that exhibits the discussed biochemical and behavioral traits parallel to ASD symptoms.

LEIGHTON STACK**Presence Of Nematodes in *Gopherus polyphemus* in the Abacoa Greenway**

Endo-parasitic nematodes infect the gastrointestinal tract of their reptile hosts including the Gopher polyphemus species. Gopher tortoises are a keystone species recognized as a threatened species in Florida. Gopher tortoise's health is negatively affected by these parasites that cause many diseases and symptoms. We used convenience sampling to collect fecal samples from tortoises of the Abacoa Greenway over the past two years. Isolated DNA from the fecal samples was amplified using PCR for a consensus sequence of nematode 18S rRNA gene. Visualization of the PCR reactions via gel electrophoresis revealed amplification of the appropriately sized DNA suggesting that nematode DNA was likely present. Sanger sequencing will be used to verify the identity of the amplified DNA. This research will demonstrate the prevalence of parasitic nematodes in the *Gopherus polyphemus* population and confirm if nematodes are affecting the tortoises inhabiting the Abacoa Greenway.

MACIEJ TADLA**Comparing Species Distribution of Barnacles in the Intertidal Zones at Jupiter Inlet in Jupiter, Florida and North Jetty Beach in Nokomis, Florida**

Intertidal organisms are important to the marine ecosystems. Many of these organisms are bioindicators which provide information on changes in the environment. The main organism group that will be monitored are the barnacles in the intertidal zones. Barnacles are filter feeders which grab particles from the water leaving clean water. This study is aimed to determine population distribution and species richness of different species of barnacles in two different locations, one found on the West coast of Florida and the other location in the East coast of Florida. One location will be Jupiter Inlet in Jupiter, FL which is on the East coast, and the second location will be North Jetty Beach in Nokomis, FL which is on the West coast. Data is being compared between these two locations and additional data is being collected such of salinity, dissolved oxygen, temperature, and pH.

MICHAEL THAYER

Is Airbnb Impacting Home Prices? Evidence from Fort Lauderdale

Airbnb has attracted significant attention from municipal governments due to its potential to influence housing affordability. This paper assesses the role of Airbnb concentration on home prices in Fort Lauderdale from October 2021 to December 2022 using a first difference fixed effect model and data scraped from the Airbnb website via InsideAirbnb. The results from the model suggest higher Airbnb concentration leads to higher home prices. For a home priced between the 35th and 65th percentile, an additional one percent of Airbnb concentration causes prices to increase by 3.5 percent. Furthermore, three-plus bedroom homes are more impacted by higher Airbnb concentration than homes with two or fewer bedrooms.

ELENA TONKIN

Anaplasma phagocytophilum's effect on Gopher Tortoises of South East Florida

Recent studies have revealed *Anaplasma phagocytophilum* as a new pathogen that has started to affect gopher tortoise populations throughout Florida. This study investigated how the pathogen, *A. phagocytophilum*, has potentially begun to spread amongst the gopher tortoises in the Abacoa Greenway and the Florida Atlantic University Preserve (FAUP). To investigate these tortoises, blood samples were taken from multiple specimens from Range VI of the Greenway and FAUP. DNA isolated from these samples were then analyzed for the presence of *A. phagocytophilum* utilizing PCR and gel electrophoresis, followed by Sanger sequencing. This research will demonstrate whether *A. phagocytophilum* has made its way to the Greenway or FAUP and begun to infect the gopher tortoise populations. My findings aim to address whether this pathogen has truly begun to spread further south or not.

HANNAH VARGHESE

Genetic Variance Present in Toll-like Receptor 2 of *Gopherus polyphemus*

Gopher tortoises (*Gopherus polyphemus*), a keystone species of Jupiter, Florida's Abacoa Greenway Preserve, face many health risks, such as Upper Respiratory Tract Disease (URTD), caused by *Mycoplasma agassizii* infection. While URTD's effects differ among tortoise populations, Abacoa's tortoises display much lower fatality rates, the causes of which are unclear. This study explores genetic variance in Toll-like Receptor 2 (TLR2) as a possible contributor to lower fatality rates from URTD infection. TLR2 is involved in the immune response to gram-positive bacteria in other tortoise species but is not currently sequenced in *Gopherus polyphemus*. I extracted genomic DNA from gopher tortoise blood, amplified TLR2 via PCR, and analyzed the sequence in comparison to other tortoise species. Any sequence differences between *G. polyphemus* and the related species should be explored as potentially correlated with reduced URTD fatalities in Abacoa's gopher tortoise population.

ANIRUDHH VENKAT

Quantifying Unresearched Coastal Carbon Cycle Components Using Satellite Remote Sensing

Dissolved Organic Carbon (DOC) from marine sediments is an overlooked aspect of coastal carbon budgets, especially in regions with seasonal hypoxic zones like Louisiana and Texas coasts. Algal blooms fueled by Mississippi River discharge cause hypoxia, leading to mass die-offs and carbon release from sediments into the water column. NASA satellite data tracks sediment-derived DOC during and after storms, overcoming obstacles like water column penetration and stratification. This data, along with oceanographic parameters, reveals sediment-derived DOC's presence in the northern Gulf of Mexico, significantly impacting coastal carbon budgets. Understanding sediment-derived DOC improves coastal carbon cycle models, informs climate change mitigation, and highlights its utility in similar hypoxic coastal systems. This approach underscores satellite data's power in environmental monitoring and management.

MIA VILA

Behavioral and Neural Impairments in Adult Mice with Prenatal Oxycodone Exposure

Chronic use of opioids during pregnancy can result in neonatal abstinence syndrome in the newborn, as well as developmental and behavioral deficits during childhood. The long-term consequences during adulthood are unclear but preclinical models suggest enduring cognitive behavioral problems. In a mouse model, we identified sex specific heightened impulsive-like behavior in adults with prenatal oxycodone exposure. We hypothesized that this behavioral change is subserved by changes in connectivity of the orbitofrontal cortex (OFC), a brain area implicated in impulse control and value encoding. Using cell type specific retrograde viral tracing method, we characterized brain wide presynaptic partners of the OFC that revealed hyperconnectivity with the basolateral amygdala in adult male mice with prenatal oxycodone exposure. Ongoing research is aimed at determining any relationship between the behavioral and connectivity changes. The findings of this study are providing important insights into the long-term behavioral and neural consequences of prenatal opioid exposure.

JOHN VO

Acute Stress and Chronic Stress and its Effects on Feeding Behavior in Mice

Eating disorders (ED) are found to display comorbidity with mood disorders, such as anxiety and depression, with a notable common risk factor is stress. Indeed, clinical studies tend to describe acute stress as anorexigenic, whereas chronic stress is more orexigenic. Yet little is known about stress and ED relationships at a brain level. In conjunction, there is growing evidence that the insular cortex (IC), a brain region known as a hub integrating multiple internal and external stimuli, is involved in anxiety as well as over-eating behaviors. I aimed to understand how corticosterone, the stress hormone, impacts feeding and IC activity in mice. We found that mice ate less when acutely exposed to corticosterone; the relationship associated with a decreased IC activity reflected by decreased cFos expression. However, when treated chronically, they increase their food consumption. Together, these results suggest that stress hormone modulates IC activity, thus shaping eating behaviors.

MIKAYLA WIGLESWORTH

Examining the Effects of a College Support Program for Foster Youth

Foster children age out of the system at 18 years of age. This is a vulnerable age to be cast out into society without prospects of shelter, food, a job, and education. To bridge this gap, some colleges provide programs for foster youth to help them succeed in society. One of these organizations is Champions Empowering Champions. The organization provides a support network, skill development, civic engagement, and financial and functional assistance such as textbooks, school supplies, rent subsidy, personal hygiene products, living essentials and more. We studied the experiences that students at FAU have with Champions Empowering Champions and how this organization impacts those that are a part of it by asking members to take a survey about the benefits they have received, suggestions for change, and the impact they believe they receive by participating.

MATTHEW ZOLL

An Analysis of the Biodiversity and Vertical Ecology of Scopelarchid and Evermannellid Fishes in the Gulf of Mexico

Scopelarchidae and Evermannellidae are families of deep-sea fishes. Currently there are 5 Scopelarchid species in the Gulf of Mexico (*Rosenblattichys hubbsi*, *Scopelarchoides danae*, *Scopelarchus analis*, *Scopelarchus guentheri*, and *Scopelarchus michaelisarsii*) and 3 Evermannellid species (*Coccorella atlantica*, *Odontostomops normalops*, and *Evermannella indica*). Not much is known about the ecology of either of these families, including if any species do a daily vertical migration. The aim of this project is to determine whether any species of Scopelarchid and Evermannellid fishes do a daily vertical migration, as well as to confirm the biodiversity of Gulf specimens caught by the DEEPEND Project.



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Harriet L. Wilkes
Honors College

Harriet L. Wilkes Honors College
Florida Atlantic University
5353 Parkside Drive
Jupiter, FL 33458

561.799.8620

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