Welcome to Tower Day 2025!

April 25

Join us for a day of academic dialogue and celebration at Columbus State University. Tower Day is an annual celebration of CSU undergraduate research and creative endeavors. CSU students from different disciplines will present their research and creative endeavors in the form of fifteen minute oral presentations, poster presentations, and five minute talks, both virtually and in person.

This program is designed as an initiative to give CSU students an opportunity to share their research outside of the classroom. Our event has keynote presentation by NY Times Best Selling Author, professional development workshops, poster presentations, oral presentations, and mentor-led talks.

Program At-A-Glance

8:45am-9:20am — Welcome - Tower Day Conference Opening
Lite breakfast provided (Blanchard A)

FRIDAY MORNING SESSIONS

9:00am-11:00am — Student Poster Presentations
A series of brief talks about research and scholarly endeavors of faculty
Blanchard A

9:00am-11:00am — Oral Presentations- Session I
"Unleashing Curiosity: Mentor-Student Collaboration in Cutting-Edge Research" - A series of brief talks about research and scholarly endeavors of faculty
Room 209/210

9:30am-11:30am — Graduate Faculty Presentations- Session I
"Beyond Boundaries: Mentors-Student Partnerships in Solving Real-World Challenges" - A series of brief talks about research and scholarly endeavors of faculty
Room 215-216

9:30am-11:30am — Fine and Visual Arts- Session 1
A series of art demonstrations
Room 214

9:30am-11:30am — Oral Presentations- Session II
"Beyond Boundaries: Mentors-Student Partnerships in Solving Real-World Challenges" - A series of brief talks about research and scholarly endeavors of faculty

Room 215-216

9:30am-10:15am — Mentor Led Session II
"Cultivating Scholars: Mentorship and Student Research Excellence in Ecology"
312-313

KEYNOTE LUNCHEON

11:30am-11:50am — Lunch

12:00pm-1:00pm — Keynote Session - *"Celebrating the Impacts of Science and It's Force in the World"*
Cunningham Hall's Main Stage

12:00pm - 12:55pm — **Mr. Sam Kean**
Author

FRIDAY AFTERNOON SESSIONS

1:00pm-3:00pm — Oral Presentations- Session III
"Research Renaissance: Empowering Student Scholars Through Mentorship" - A series of brief talks about research and scholarly endeavors of faculty
Room 209/210

9:30am-10:15am — Mentor Led Session I
"Cultivating Scholars: Internship Revelations"
Room 211

1:00pm-1:50pm — Faculty Research Session I
A series of art demonstrations
Room 214

1:00pm-3:00pm — Oral Presentations IV - Mentor Led Session I

	"Cultivating Scholars: Student Research Excellence and Career Relevancy" Room 215/216
1:00pm-3:00pm	Graduate Faculty Presentations- Session II "Cultivating Scholars: Graduate Research - A series of brief talks about research and scholarly endeavors of faculty Room 310-311
1:00pm-1:50pm	Professional Development Session I "Success Post Undergraduate: Fellowship and Professional Development" Room 312/313

Detailed Schedule

Poster Presentations

Session I
TIME: 9:00-9:50 am – Blanchard A

PS1-1 Apoorva Kollaram, Gabriela Mieles, Chayce Schuler
Purification of Recombinant GFP - Preptin Fusion Proteins [Abstract]
Mentor(s): Jonathan Meyers
Major: Chemistry

PS1-2 Autumn Markland, Victoria Hardy
Anti-cancer Compounds Based on Natural Imidazole Compounds [Abstract]
Mentor(s): Kerri Shelton Taylor
Major: Chemistry

PS1-3 Blys Brinkley
Interviews with Professionals in the Psychology Field [Abstract]
Mentor(s): John Roop
Major: Psychology

PS1-4 Janaza Hutchins
Impact of Social Stigma on Sexual Minorities [Abstract]
Mentor(s): Rebecca Toland
Major: Health Science

PS1-5 Brezana Elliott, Shelley Le
The Origin of Diverse Pathotypes of E Coli. Isolated from the Chattahoochee River Waterways in Columbus, GA and Phenix City. AL [Abstract]
Mentor(s): Ensaf Taha
Major: Biology

PS1-6 Britney Yann, Ashleigh Killebrew, Avery Williams, Madison Kinninger, Colin Miller, Nic Taylor, Imani Brown, Mikal Martin, Ta'Mya Talley, Courtney Garrett, Lauren Barnes, Adam Cobis-Ribeiro
Encouraging Growth One Seed at a Time: Servant Leadership Class of 2025 Senior Project [Abstract]
Mentor(s): Laura Pate, Courtney Loughlin

Major: Biology, Communications, Kinesiology, Physical Education, Mathematics, Music Performance, English, Business Managment

PS1-7 Cason Trawick, Amber Elder
An In-Depth Analyssis of Musculoskeletal Health Among College Students [Abstract]
Mentor(s): Erica Taylor
Major: Kinesiology

PS1-8 Delta Flowers, Liam Aycock, Toph Swafford
Using Optical Emission-Line and X-Ray Data to Assess Physical Properties of Supernova Remnants in the Large Magellanic Cloud [Abstract]
Mentor(s): Rosa Williams
Major: Earth and Space Science

PS1-9 Dennis Moore
Injury Prevention in College Populations [Abstract]
Mentor(s): Erica Taylor
Major: Kinesiology

PS1-10 Edwin Espinosa Vazquez
Diabetes [Abstract]
Mentor(s): Rebecca Toland
Major: Interdisciplinary Studies

PS1-11 Elizabeth Fry, Melanie Tapia, Jenny Siders
How to Achieve a Female Orgasm [Abstract]
Mentor(s): Rebecca Toland
Major: Health Science

PS1-12 Emma Elder
Respiratory Issues With Old Age [Abstract]
Mentor(s): Bridgett Oliver
Major: Interdisciplinary Studies

PS1-13 Emma Elliott
How Endometriosis and Polycystic Ovarian Syndrome Can Cause Infertility [Abstract]
Mentor(s): Rebcca Toland
Major: Health Science

PS1-14 Ericka King
Is Suicide Among the Elderly Population Warranted or Preventable? [Abstract]
Mentor(s): Rebecca Toland
Major: Nursing, Health Science

PS1-15 Grace An George
The Effects of Pregnancy on a Woman's Body [Abstract]
Mentor(s):
Major: Health Science

PS1-16 Guilherme Ghisleni
Albinism is a disappearing trait [Abstract]
Mentor(s): Rebecca Toland
Major: Health Science

PS1-17 Hailey McGee, William Dunagan
Conducting Surveys on Psychological and Physical Barriers to Rehabilitation: Understanding Factors That Hinder Recovery and Contribute to Re-in [Abstract]
Mentor(s): Erica Taylor
Major: Kinesiology

PS1-18 Hallie Tanner
Where Are the Students? An Analysis of Chronic Absenteeism in Atlanta Schools [Abstract]
Mentor(s): Paul Vincent
Major: History

PS1-19 Mary Streat, Troy Keller
Developing Techniques on Assessing Culvert Length Impacts on Water Quality [Abstract]
Mentor(s): Troy Keller
Major: Natural Sciences

PS1-20 Lauren Bonicoro, Hollings Manderson
Treatment of Obsessive-Compulsive Disorder Using Inference Based Cognitive Behavioral Therapy [Abstract]
Mentor(s): Hillary Ellerman
Major: Clinical Mental Health Coun.

PS1-21 Eric Vicente, Cole Lassiter, Crow Bisson, Nam Luu and Dheeraj Kolla
EcoSense: AI-Powered Air Quality App at Your Fingertips [Abstract]
Mentor(s): Rania Hodhod
Major: Computer Science

PS1-22 Taylor Thompson
Genetic Comparison of Physa acuta snails [Abstract]
Mentor(s): Clifton Ruehl
Major: Biology

PS1-23 Carolyn Smith, Cameron Head, CJ Williams
Human Sexuality [Abstract]
Mentor(s): Rebecca Toland
Major: Health Science

PS1-24 Hannah Simmons
The effect of natural products on the growth of triple-negative breast cancer stem cells [Abstract]
Mentor(s): Ramneet Kaur
Major: Biology

PS1-24 Kayla Reed
From Classroom to Career: The Need for Healthcare Mentorship Programs for Black Female Students [Abstract]
Mentor: Rebecca Toland

Session II
TIME: 10:00-10:50 am – Blanchard A

PS2-1 Blys Brinkley
Event-Related Potentials Correlated with State/Trait Anxiety using Auditory Stimuli [Abstract]
Mentor(s): Rebecca Dunterman
Major: Psychology

PS2-2 Jiane Louella Rabara
Skill Demands in Emerging Technologies for Entry-Level Accountants [Abstract]
Mentor(s): Cindy Ticknor
Major: Accounting

PS2-3 Josh Adams
Investigating the Impact of Roundup Exposure on Hearing in Channel Catfish (Ictalurus punctatus) [Abstract]
Mentor(s): Daniel Holt
Major: Biology

PS2-4 Julia Wise, Christina Wise
Investigating the Correlation Between Regular Moderate-Flow Menstrual Products Based on Brand and the Levels of Endocrine-Disrupting Chemicals (EDCs) [Abstract]
Mentor(s): Kerri Shelton Taylor
Major: Chemistry

PS2-5 Jyah Morrell
Understanding How Seniors Deal with Grief and Loss [Abstract]
Mentor(s): Rebecca Toland
Major: Health Science

PS2-6 Lauren Jenkins, Kayla Bridges
A Cross-Sectional Study Comparing the Impact of Acute Aerobic Exercise and Meditation on Mental Health in College Students [Abstract]
Mentor(s): Erica Taylor
Major: Kinesiology

PS2-7 Lauren Prohaska
Cultural Variations in Sexual Education and Teen Pregnancy Rates [Abstract
Mentor(s):
Major: Health Science

PS2-8 London Van Every
Derivatization of Per- and Polyfluoroalkyl Substances to Analyze Muscle Tissue Samples of Fish in the Chattahoochee River and its Tributaries [Abstract]
Mentor(s): Daniel Holley
Major: Chemistry

PS2-9 MacK Tandoh
Studying the relationship between sleep quality and mental health [Abstract]
Mentor(s): Erica Taylor
Major: Kinesiology

PS2-10 Mariah Stepney
Maternal Mortality Among Black Women in Georgia: The Role of Implicit Bias in Healthcare [Abstract]
Mentor(s): Rebecca Toland
Major: Health Science

PS2-11 Meghan Koh
The Effect of Non-steroidal Anti-Inflammatory Drugs on Kidneys [Abstract]
Mentor(s): Jonathan Meyers
Major: Chemistry

PS2-12 Madeleine Carrao, Jose Delgado, Kelly Franks, Micheal Jenkins, Dazmun Lindsey
Monitoring Active Galactic Nuclei/Blazar Conditions Utilizing Small and Medium Scale Observatories [Abstract]
Mentor(s): Rosa Williams
Major: Earth and Space Science

PS2-13 Moses Hutchens
Why is it Important for Seniors to Stay Fit? [Abstract]
Mentor(s):
Major: Health Science

PS2-14 Nick Beck
Erectile Dysfunction: Causes, Diagnosis, And Treatment Options [Abstract]
Mentor(s):
Major: Health Science

PS2-15 Seongmi Chung
A Phytochemical Analysis of Secondary Metabolites in Eupatorium Serotium [Abstract]
Mentor(s): Daniel Holley
Major: Chemistry

PS2-16 Taryn Owens, Kordell Brown
Impact of Sex Education Policies on Teen Pregnancy and Birthrates: A Comparison of Georgia and California [Abstract]
Mentor(s):
Major: Health Science

PS2-17 Tiffany Golden
Feasibility of Quantifying the Ionic Products of an Electrolysis Cell Powered by a Photovoltaic Panel [Abstract]
Mentor(s): Rajeev Dabke
Major: Chemistry

PS2-18 Tommasina Hughley
The Effects of UTI's on Seniors [Abstract]
Mentor(s): Rebecca Toland
Major: Interdisciplinary Studies

PS2-19 Von Blocker
Capturing Carbon via Mineralization of Rock in a Laboratory Setting [Abstract]
Mentor(s): Clinton Barineau
Major: Chemistry

PS2-20 WJ Bailey
Free Energy of Folding Red Fluorescent Protein [Abstract]
Mentor(s): Jonathan Meyers
Major: Chemistry

PS2-21 Yasmeen Jefferson
Infidelity [Abstract]
Mentor(s):
Major: Health Science

PS2-22 Zachary Brundidge
Gender is a Plaything: Exploring Societal Conceptions of Gender by Examining American Dolls and Action Figures [Abstract]
Mentor(s): Doug Thompson
Major: History

PS2-23 Jessica Cegarra Arraiz
Intelligent Water Level Detection System [Abstract]
Mentor(s): Leslie Haines
Major: Criminal Justice

PS2-24 Kameriya Johnson, Kay Douglas

How does Social Media impact the sexual behavior of teenagers [Abstract]
Mentor(s): Rebecca Toland
Major: Kinesiology

Student Oral Session I

"Unleashing Curiosity: Mentor-Student Collaboration in Cutting-Edge Research"
Time: 9:00 AM- 11:15 AM – Room: 209/210
Session Chair: Breniah Graddy

OS1-1 9:00-9:15 Trenton Jones, Lydia Ray
Hypervisor Hunt: Uncovering Hidden Traces of Crime in a Virtual Machine [Abstract]
Mentor(s): Lydia Ray
Major: Cybersecurity

OS1-2 9:15-9:30 Kevin Kelly, Julie Ballinger
Enhancing Sarracenia leucophylla Germination: The Role of Water and Substrates [Abstract]
Mentor(s): Julie Ballinger, Ramneet Kaur
Major: Biology

OS1-3 9:30-9:45 Takiaya Nelson, Nylah Phillips
Filamentous Growth of Aeromonas hydrophila as a Survival Mechanism Under Environmental Stress [Abstract]
Mentor(s): Ensaf Taha
Major: Biology

OS1-4 9:45-10:00 Alyssa Schmitz, Tara Clarkson, Samuel Thrower
Uncovering Experimental Clues: The Role of Chemistry in Combing the Analysis of Latent Fingerprints and Arson Investigations [Abstract]
Mentor(s): Kerri Taylor
Major: Kinesiology, Chemistry

OS1-5 10:00-10:15 Jonah Simpson, Brennan Widner
Exploration into Cryptology: Developing an Asymmetric Encryption Algorithm [Abstract]
Mentor(s): Lydia Ray
Major: Computer Science

OS1-6 10:15-10:30 Taylor Wicklund
The Relationship Between Heterophil-to-Lymphocyte Ratios and the Reproductive Success of Female Eastern Bluebirds [Abstract]

Mentor(s): Jennifer Newbrey
Major: Biology

Student Oral Session II

"Beyond Boundaries: Mentors-Student Partnerships in Solving Real-World Challenges"
Time: 9:30 AM- 11:15 AM – Room: 215/216
Session Chair: Amauire Hall

OS1-1 9:30-9:45 Aleha Korzen
Effects of riparian floral invasive diversity on aqueous chlorophyll a in the tributaries of the Chattahoochee River, Columbus, GA area [Abstract]
Mentor(s): Ashley Desensi
Major: Biology

OS2-2 9:45-10:00 Caleb Parham
An Assessment on the Relationship between sleep and Physical/Mental Fatigue [Abstract]
Mentor(s): Erica Taylor
Major: Kinesiology

OS2-3 10:00-10:15 Rico Mora
For Wealth, Power, and Belief: Conversion to Islam Under Early Arabic Rule [Abstract]
Mentor(s): Eric Spears
Major: History

OS2-4 10:15-10:30 Kamaya Foster
Scholarly Struggles: Navigating Education in Financial Hardship [Abstract]
Mentor(s): Florence Wakoko
Major: Pyschology

OS2-5 10:30-10:45 Hayden Bennett
Battlefields of the Culture War: Games as a Living Text [Abstract]
Mentor(s): Doug Thompson
Major: History

OS2-6 10:45 -11:00 Tamari Shepard

A Sociological Analysis of Parental Drug Use on Child Development: Lessons Learned [Abstract]
Mentor(s): Florence Wakoko
Major: Sociology

OS2-7 11:00 -11:15 India Mobley
Bridging the Gap: How Financial Aid Disparities Shape College Enrollment for American Middle-Class Families Amidst Rising Income Inequality [Abstract]
Mentor(s): Masako R. Ojura
Major: Political Science

Mentor-Led Session II

"Cultivating Scholars: Mentorship and Student Research Excellence in Ecology" – Poster Session
Time: 9:30 AM- 11:15 AM – Room 312/313
Moderator: Clifton Ruehl

ML2-1 9:30-11:15 Rachel Barnett, Eva Fernandez-Perez, Brittany Yann
Soil organic content between tree species along an elevational gradient [Abstract]

ML2-2 9:30-11:15 Kolby Broadnax, Vosh Cosby, Daveyon Streeter
Phytoplankton along a depth gradient at Lynnhaven Pond [Abstract]

ML2-3 9:30-11:15 Amiya Johnson, Kierstin Davis, Mailayna Reyes
Spatial and Temporal Variation in Temperature of Lynnhaven Pond [Abstract]

ML2-4 9:30-11:15 Kevin Kelly, Ashley Smith
Plant Biodiversity Along Ecotones at Lynn Haven Pond [Abstract]

ML2-5 9:30-11:15 Mitdalia Alonso, Alexandria Chambers, Kasey Karabasz
Nutrient Composition Effects on Snail Foot Morphology and Fecundity [Abstract]

ML2-6 9:30-11:15 Lisa Palmer, Garrett O'Neill
The Influence of Terrestrial Macroinvertebrates and Abiotic Factors on Nutrient Recycling in Leaf Litter [Abstract]

ML2-7 9:30-11:15 Kiley Nansel
Trade-offs between Intraspecific Competition vs. Predator Avoidance [Abstract]

Fine and Visual Arts

TIME: 9:30-11:30 am – Room 214
Session Chair: Garret Stephenson

ART1-1 9:30am- 9:50am
Rohan Shah
What are we losing when we use AI? The consequences of a culture of indulgence. [Abstract]
Mentor(s): NA
Major: Communications

ART1-2 10:05am- 10:25am
Cristhel Corpeno
Terra Guatemala Kite Making Kit [Abstract]
Mentor(s): Samantha Yoo
Major: Art

ART1-3 10:30am- 10:50am
Johnathan Falls, Logan Le
Chabot Conversations [Abstract]
Mentor(s): NA
Major: Art

Graduate/Faculty Session I

"Beyond Boundaries: Mentors-Student Partnerships in Solving Real-World Challenges"
Time: 9:30 AM- 11:15 AM – Room 310-311
Moderator: Michelle Jones/Yesem Kurt Peker

GF1-1 9:45-10:00 Gaurob Saha
Optimizing Large Language Models: QLoRA-Based Fine-Tuning for LLaMA 2 Using 4-Bit Quantization. [Abstract]

Mentor: Rania Hodhod

GF1-2 10:00-10:15 Qi Zou
Mechanical design and analysis of a novel single-loop eight-bar linkage mechanism with infinite bifurcation points [Abstract]

GF1-3 10:15-10:30 Arpan Bosmia
Exploring New Teachers' Preparedness for Student Behavior Management [Abstract]
Mentor: Anna Hart

GF1-4 10:30-10:45 Jennifer Lovelace
Faculty Perceptions of What Works (and what doesn't) in Doctoral Retention [Abstract]

GF1-5 10:45-11:00 Rahul Raj, Yesem Kurt-Peker
Homomorphic Encryption for Statistical Confidentiality [Abstract]

GF1-6 11:00-11:15
Shanda Patterson
"Intervention to Educate on the Benefits of Semaglutide Use to Fight Obesity, Heart Disease, and Type 2 Diabetes: The Trifecta Effect" [Abstract]
Mentor: Gwendolyn Miller

Keynote Luncheon

Theme: *"Celebrating the Impacts of Science and It's Force in the World"*

12:00pm-12:55pm Sam Kean, NY Times Best Selling Author

Speaker Biography

Official bio: Sam Kean spent years collecting mercury from broken thermometers as a kid, and now he's a writer in Washington, D.C. His stories have appeared in The Best American Science and Nature Writing, The New Yorker, The Atlantic, Slate, and Psychology Today, among other places, and his work has been featured on NPR's "Radiolab", "Science Friday", and "All Things Considered," among other shows. The Bastard Brigade was a "Science Friday" book of the year, while Caesar's Last Breath was the Guardian science book of the year. The Disappearing Spoon was a runner-up for the Royal Society book of the year. Both The Violinist's Thumb and The Dueling Neurosurgeons were nominated for PEN's literary science writing award.

Citation: Sam Kean – Sam Kean

Student Oral Session III

" Research Renaissance: Empowering Student Scholars Through Mentorship"
Time: 1:00 PM- 2:45 PM – Room: 209/210
Session Chair: Breniah Graddy

OS3-1 1:00-1:15 Sal Woessner
The Panopticon of Gender: A New Foucauldian Critique of "Attack Helicopter" [Abstract]
Mentor(s): Judith Livingston
Major: Interdisciplinary Studies

OS3-2 1:15-1:30 Austin Davis
The Relationship of Nutrition Quality on Depression and Anxiety [Abstract]
Mentor(s):
Major: Kinesiology

OS3-3 1:30-1:45 Blys Brinkley
Does Repetition of the Correct Answer During Feedback Facilitate Learning? [Abstract]
Mentor(s): John Roop
Major: Psychology

OS3-4 1:45-2:00 Celeste Grantham
Creativity and Imagination in ADHD Classroom Experiences: A Hands-On Lesson Demonstration [Abstract]
Mentor(s): Andrea Frazier
Major: Elementary Education

OS3-5 2:00-2:15 Collin Miller
Dissolved Heavy Metal Concentrations in the Muscle Tissue of Bluegill (Lepomis macrochirus) in the Chattahoochee River Drainage, Columbus, Georgia [Abstract]
Mentor(s): Micheal Newbrey, Samuel Abegaz
Major: Biology

OS3-6 2:15-2:30 Kaylan Moudy
Georgia vs. Alabama: How the State's Response to the Dobbs Decision Affect Women's Prisons [Abstract]
Mentor(s): Patrice Kerner

Major: Criminal Justice

OS3-7 2:30-2:45 Oliver Odde, Yasser Mahmoud
Economic Impact of the Arts and Culture Industry in the Columbus GA-AL MSA
[Abstract]
Mentor(s): Fady Mansour
Major: Management Information Systems

Faculty Research Session I

"Subject Matter Experts: Faculty Research Display"
Time: 1: 1:00 PM- 2:15 PM – Room 214 and 3rd floor walkway

Student Oral Session IV

"Unleashing Curiosity: Mentor-Student Collaboration in Cutting-Edge Research"
TIME: 1:00 PM- 1:30 PM – Room 215/216
Session Chair: Patricia Kerner/Lydia Ray

OS4-1 1:00-1:15 Stephanie Smith
"Behind Barbed Wire: The Forgotten History of German and Italian POWs in the American South" [Abstract]
Mentor(s): Gary Sprayberry
Major: History

OS4-2 1:15-1:30 Dalton Warren
The effects of natural products on the growth of docetaxel resistant Androgen Independent Prostate Cancer stem cells [Abstract]
Mentor(s): Ramneet Kaur
Major: Biology

Mentor-Led Session I

"Cultivating Scholars: Student Research Excellence and Career Relevancy"
Time: 1:30 PM- 2:45 PM – Room 215/216
Moderator: Lydia Ray/Patrice Kerner

The Forensic Files: Unlocking Secrets from Seized Devices
ML1-1 1:30-1:45 PM Niy'Asia Williams, Camille Vickers
"Kitty Exploitation Case" [Abstract]
Mentor(s): Lydia Ray

ML1-2 1:45-2:00 Seth Dileonardo, Ari Betan-Snook, Joshua Garcia
"Illegal Drug Dealing Case" [Abstract]
Mentor(s): Lydia Ray

ML1-3 2:00-2:15 Greg Seabrook, Devante Corbin, Jagrishi Settipalli
"Lone Wolf Case" [Abstract]
Mentor(s): Lydia Ray

Benefits of Experiential Learning as Showcased by Students
ML1-4 2:15-2:45 Bella (Makayla) Rempel, Guadaulpe Cazares, Lendasia Hall, India Mobley, Nasen Washington, Nayton Garcia [Abstract]
Mentor(s): Patrice Kerner

Mentor-Led Session III

"Cultivating Scholars: Internship Revelations"
Time: 1:00 PM- 2:45 PM – Room 211
Moderator: Ramneet Kaur/Clifton Ruehl

ML3-1 1:00-1:15 Daveyon Streeter
TBA
Mentor(s): Monica Frazier

ML3-2 1:15-1:30 Mitdalia Alonso
Effects of minimum, maximum, and 24-hour thermal gradients on age and growth characteristics of Smallmouth Bass (Micropterus dolomieu)
Mentor(s): Micheal Newbrey, Jennifer Newbrey

ML3-3 1:30-1:45 Nylah Phillips
Identification of pathogenic bacterial strain of Aeromonas hydrophilia isolated from GreenSun Fish (Lepomis cyanellus) collected from Weracoba Creek in Columbus GA
Mentor(s): Ensaf Taha, Micheal Newbrey

ML3-4 1:45-2:00 Brezana Elliot
"The Origin of Diverse Pathotypes of E Coli. Isolated from the Chattahoochee River Waterways in Columbus, GA and Phenix City, AL" [Abstract]
Mentor(s): Ensaf Taha, Ashley Desensi

ML3-5 2:00-2:15 Shelley Le
Horizontal gene Transfer between Human and Animal Commensal Escherichia Coli Strain Identified by Molecular Tools
Mentor(s): Ensaf Taha, Ashley Desensi

ML3-6 2:15-2:30 Madison Norrell
Vet Internship
Mentor(s): Clifton Ruehl

ML3-7 2:30-2:45 Ashley Smith
A comparison of parasite loads in largemouth bass (Micropterus salmoides) from three water bodies of the Chattahoochee River [Abstract]
Mentor(s): Harlan Hendricks, Elizabeth Klar

ML3-7 2:45-3:00 Laneche Ghee
Aveanna Healthcare Internship [Abstract]
Mentor(s): Monica Frazier

Graduate/Faculty Session II

"Cultivating Scholars: Graduate Research"
Time: 1:00 PM- 3:00 PM – Room: 310/311
Session Chair: Yesem Kurt-Peker/Michelle Jones

GF2-1 1:00-1:15 Ligia Domenech
Us According to Them: Stateside Portrayals of Puerto Ricans and Their Culture, 1898-2010 [Abstract]

GF2-2 1:15-1:30 Sarah Braswell
"SLO" Down, I've Got You in My "SI"ghts: Crafting Supplemental Instruction Outcomes for Student Success [Abstract]
Mentor: Melissa Young

GF2-3 1:30-1:45 Luka Wilmink, Marshall Williams, Jitha Priya Kambhampati, and Walker Smith
Adaptive Game-Based Learning for Children with ADHD: A Fuzzy User Model Approach [Abstract]
Mentor: Rania Hodhod

GF2-4 1:45-2:00 Mohammad Jafari
Machine Learning-Driven Control of Autonomous Vehicles for Solar Panel Cleaning Systems in Agricultural Solar Farms [Abstract]

GF2-5 2:00-2:15 Akshith Nukala, Shashank Kammanahalli Chandra Sekhara, Mcandrew Okwei
AI-Driven Fault Detection and Prediction in Building Energy Management: A Scalable Cloud-Based Approach [Abstract]
Mentor: Mohamed Riduan Abid, Yesem Kurt Peker

GF2-6 2:15-2:30 Jocelyn Richard
Utilizing Narrative Video Messages to Recruit Generation Z in Higher Education [Abstract]
Mentor: Chris Robinson

GF2-7 2:30-2:45 Kendall Forde

Using the College Choice Model to Examine Why HBCU Graduates choose to attend PWI for Advanced Studies [Abstract]
Mentor: Christopher LeMieux

Professional Development Session I

"Success Post Undergraduate: Fellowship and Professional Development"
Time: 1:00 PM- 2:15 PM – Room: 312/313

PD1-1 1:00-1:30 National Scholarship Committee
Undergraduate/Graduate Fellowship and Scholarship

PD1-2 1:45-2:15 CSU Career Center
CV, Resume and Jobs…Oh My!

PD1-3 2:15-2:45 CSU Core Course Redesign
CSU's Core Course Design Institute has been designed with insights from successful models at research universities. Our goal is to affirm, challenge, inspire, and build genuine community among faculty to create meaningful learning experiences for students in general education courses. Session participants will take part in a top-rated activity modified from the Core Course Institute to see how we address career-ready competencies in the classroom.

Abstract Index

PS1-1 Apoorva Kollaram, Gabriela Mieles, Chayce Schuler

Purification of Recombinant GFP - Preptin Fusion Proteins

Abstract: Preptin is a 34 residue peptide hormone, extracted from secretory granules of pancreatic ß cells. It has demonstrated promise as a therapy for two common diseases: osteoporosis and diabetes. The study aims to delve deeper into the metabolic pathway of preptin. The secondary structure and metabolic mechanism of preptin remain unknown. To begin to understand the metabolic capabilities of preptin, we are pursuing a structure-activity relationship (SAR) study of the peptide via alanine scanning mutagenesis. The following preptin residues were all singly mutated to alanine and analogs were expressed as green fluorescent fusion proteins in E. coli: P17A, V18A, G19A, W27A, R28A, Q29A. Currently, we are optimizing purification of the fusion protein in preparation of site-specific cleavage and isolation of the mutated analogs. By studying the effects of these mutations, we aim to determine which amino acids in preptin's primary structure are vital to its metabolic activity.

PS1-2 Autumn Markland, Victoria Hardy

Anti-cancer Compounds Based on Natural Imidazole Compounds

Abstract: We (Victoria Hardy and Autumn Markland) are developing a comprehensive review on imidazole-based compounds of natural origin, primary/secondary metabolites, the most common groups of compounds, and their properties, such as the imidazole ring. The intent of this presentation is to learn about the compound's occurrence, general/predicted properties, and advantages. The review will be a fluid development comparing imidazole derivatives of natural origin with antinociceptive/lethal properties from the last 4 years. This review would include both purely extracted products but also those modified by synthesis.

PS1-3 Beatrice Brinkley

Interviews with Professionals in the Psychology Field

Abstract: This study is meant to assist undergraduate psychology students better understand the differences/similarities between three applied professions in their field. This includes clinical psychologists (CP), licensed professional counselors (LPC), and licensed clinical social workers (LCSW). At Columbus State University, past research focused on different majors and their job opportunities (law). Questions all varied between the studies, but one of the takeaways is that each person had their own individual perspective. Few studies have ventured further into the psychology field and its opportunities. In the present study, a sample of individuals was randomly selected through multiple websites. The sample size was ten clinical psychologists, eight licensed professional counselors and seven licensed clinical social workers. Two interviews were conducted in person, six were via email, and the rest were over a phone call. Participants were gathered from various websites including Psychology Today, American Psychological Association, and business specific websites. An email was sent out initially to gather whether

each individual wanted to participate in this study. We received few responses from Psychology Today. The highest number of responses were received from business specific websites. The data was compiled after information and interviews were gathered. The results of this study included a variety of answers between the professionals, with only some overlapping. One of the biggest takeaways from this study is that not every person, job, or experience is the same. It is up to the student to interpret the results and decide what profession may work best for them in the future.

PS1-4 Janaza Hutchins

Impact of Social Stigma on Sexual Minorities

Abstract: Social stigma towards sexual minorities, that is, LGBTQ+ individuals, prevails in both traditional and current settings, leading to discrimination, rejection, and marginalization. In traditional times, homosexuality was criminalized, and even with improvement over years, continues to promote unhealthy social attitudes. Stigma prevails in new forms, such as interpersonal rejection, institutionally, and through cultural biases. In this research, psychological, social, and health implications of stigma, including its intersection with race, disability, and socioeconomic factors, have been discussed in detail. Greater mental complications in terms of mental health, social disconnection, and restrictions in access to care have disproportionately been experienced by LGBTQ+ individuals. Minority stress theory explains in detail why long-term exposure to stigma generates psychological tension, suicidal ideation, and substance abuse. Besides, workplace bias, educational barriers, and rejection at home widen socioeconomic gaps even more. Maintaining such a state through media, religiosity, and legislative policies has been discussed with advocacy and legislative reform in view. Stigma can be countered with legislative protection, affirmative education, and access to LGBTQ+-affirmative mental care. By enhancing social acceptance and supportive structures, communities can counteract unhealthy consequences of stigma and enable a healthy life for LGBTQ+ individuals. In conclusion, this study reiterates the necessity for ongoing studies, legislative reform, and awareness programs in developing an accepting society in which sexual minorities can thrive.

PS1-5 Brezana Elliott, Shelly Le

The Origin of Diverse Pathotypes of E Coli. Isolated from the Chattahoochee River Waterways in Columbus, GA and Phenix City. AL

Abstract: Escherichia coli (E. coli) is a gram-negative, facultative anaerobic bacterium found in the gastrointestinal tracts of humans and animals. Its presence in waterways is linked to contamination and is listed by the Environmental Protection Agency (EPA) under the 303D list of impaired waters, indicating non-compliance with water quality standards. Waterways in Columbus, GA, and Phenix City, AL, have been impaired by fecal coliforms since 1998 and 1999, respectively.

Water samples were collected from five sites each in Columbus and Phenix City. Diluted samples were cultured on MacConkey agar to isolate gram-negative bacteria, which were

further cultured and tested for antibiotic susceptibility using the Kirby-Bauer method. Coliform contamination was assessed using mEndo and mFC agars with membrane filtration techniques. DNA was extracted from isolates, and Polymerase Chain Reaction (PCR) amplification was followed by gel electrophoresis and sequencing to characterize E. coli strains.

While analysis is ongoing, initial findings show isolated gram-negative bacteria from MacConkey agar samples. Early antibiotic susceptibility testing reveals variability in resistance patterns. Preliminary coliform tests show the presence of both total and fecal coliforms at several locations, but quantification is still in progress. DNA extraction and PCR amplification are underway, with sequencing and full analysis yet to be completed. The study will further evaluate antibiotic resistance patterns and complete molecular characterization of the E. coli strains.

PS1-6 Britney Yann, Ashleigh Killebrew, Avery Williams, Madison Kinninger, Collin Miller, Nic Taylor, Imani Brown, Mikal Martin, Ta'Mya Talley, Courtney Garrett, Luaren Barnes, Adam Cobis-Ribeiro

Encouraging Growth One Seed at a Time: Servant Leadership Class of 2025 Senior Project

Abstract: Each year, the senior class of the undergraduate Servant Leadership Program at Columbus State University plans and executes a service project in Columbus. The project is designed to provide students with an opportunity to apply the skills and knowledge they have acquired through the program outside of the classroom and address needs in the local community.

The Class of 2025 has chosen to work with the George Washington Carver (GWC) Victory Garden and Farm, an initiative of Turn Around Columbus. The primary goal of this project is to aid in their efforts to alleviate the burden of food insecurity and provide a safe space for the community to gather and have fellowship. Guided by the slogan "Encouraging growth one seed at a time," the senior class envisioned a project that would continue to benefit the farm and the surrounding community after their graduation and the project's close. The seniors have served the GWC Victory Garden and Farm by aiding in the execution of a suicide awareness event, a fall festival, and a community clean-up along the MLK Jr. Learning Trail. The class has also spent substantial time volunteering at the GWC Victory Garden and Farm to understand the community's needs best. The 2025 senior project hopes to accomplish its goal by constructing a covered seating area with benches and planters to promote increased community engagement and provide weather protection for visitors. This year's seniors are also committed to raising awareness of the George Washington Carver Victory Garden and Farm and its mission.

The Class of 2025 raised $13,000 via the Uptown Tree Trail. The funds raised will be used to purchase much-needed supplies and to meet other needs at the GWC Victory Garden and Farm.

PS1-7 Cason Trawick, Amber Elder

An In-depth Analysis Of Musculoskeletal Health Among College Students

Abstract: Musculoskeletal health is a topic that college students quite often neglect; if they do not use what they naturally have, they will eventually lose it. With intentional and repeated exposure to high-impact forces, collegiate athletes are put in more situations where their musculoskeletal system is required to adapt, which is the primary focus of this investigation. During a survey conducted during the 2009-2014 athletic seasons, "1,053,370 injuries were estimated to have occurred during an estimated 176.7 million athlete-exposures to potential injury (i.e., one athlete's participation in one competition or one practice)" (Kerr et al., 2015). If this continued conflict in the musculoskeletal system prompts the body to increase bone mineral density, there will be lasting practical implications for the entire population, athlete and non-athlete both. Markers of musculoskeletal health will be assessed in this study to determine what relationships there are between sport participation and injury prevention. It is assumed that student athletes will exhibit a greater bone mineral density in this study, but the primary goal is to use this information in creating injury countermeasures or prevention strategies. Additional equipment that will be used includes a scale and the adjustable measuring system for height and weight – as well as the Functional Movement Screen (FMS). Multiple questionnaires will also be issued to participants to obtain general health information, along with injury history and emotional status. All of the data collected in the study will be used in analysis of current methods of injury prevention to determine if there are any better avenues of prevention in light of new associations found; if there are adjustments made to modern standards, they will be explained, and if there is not enough evidence gathered to support any adjustment to the current recommendations, this will also be explained.

PS1-8 Delta Flowers, Liam Aycock, Toph Swafford

Using Optical Emission-Line and X-Ray Data to Assess Physical Properties of Supernova Remnants in the Large Magellanic Cloud

Abstract: Supernova remnants (SNRs) in the Large Magellanic Cloud (LMC) provide an excellent opportunity to investigate shock-driven processes in distinct gas populations. In this study, we focus on two primary populations: the very hot, low-density gas, examined through archival XMM-Newton X-ray data, and the cooler, denser gas traced by recently obtained optical emission-line data from the DeMCELS project. DeMCELS is a survey utilizing the Cerro Tololo Inter-American Observatory's 4m Blanco Telescope with the Dark Energy Camera (DECam). By comparing how shocks propagate through these two gas populations, we will assess key physical properties such as SNR size, shock temperatures and velocities, and gas pressures. This comparative approach aims to refine our understanding of SNR evolution and explain the role these remnants play in shaping the interstellar environment of the LMC.

PS1-9 Dennis Moore

Injury Prevention in College Populations

Abstract: When evaluating athletes in different populations, injury prevention is something that is heavily looked over in my opinion. Studies show that injury prevention can significantly reduce the frequency of injuries, although it cannot eliminate injuries in entirety. This study is made to investigate different athletes and students that participate in preventive injury test that

will test different ROM and joint stability to decipher how healthy the participants are. That leads to the question at hand; If a person does injury preventative movements, will it truly minimize injury and allow one to see imbalance? The first thing the participant will need to do is sign a few consent forms that allow the proctors to commence the test on them. After those agreements, the participant will perform different ROM and stability tests that will be used as an injury preventative measure to try to identify any problems. Preferably the FMS test. Each test will be scored on a 0 to 3 scale, with 0 being immense pain that would result in immediate stoppage of that movement on that side and 3 being the movement performed perfectly with no pain at all. There will be 7 functional movements that will need to be done with a few different clearing tests to make sure there are no injuries or pain after some of the tests. At the end the participant will receive a score between 0-21 and a passing score being at least 14. Whether a passing or failing score, this test can only test stability identify some imbalances and injuries but not all because most of the test are basic movements.

PS1-10 Edwin Espinosa Vazquez

Diabetes

Abstract: Diabetes is a chronic disease that affects how the body uses glucose for energy. There are two main types: type 1 diabetes (T1D) and type 2 diabetes (T2D). T1D occurs when the body's immune system destroys insulin-producing cells in the pancreas, leading to little or no insulin production. T2D is a chronic condition in which the body becomes resistant to insulin or does not produce enough of it, resulting in high blood sugar levels. Elderly individuals with diabetes may experience symptoms such as fatigue, weight loss, skin infections, headaches, numbness, and tingling. If diabetes is not properly managed, it can lead to serious complications. In some cases, seeking treatment may be too late, or antibiotics may struggle to combat infections due to the body's weakened state. By 2025, the percentage of elderly individuals with diabetes is expected to reach approximately 5.4%, with an estimated 300 million adults living with the disease worldwide. Many of these cases occur in developing countries. This marks a significant increase from the 4.0% prevalence observed in 1995. Among adults aged 65 and older, around 29.9% are affected by diabetes. Diabetes was first recognized around the 1500s by ancient Egyptians, but the term "diabetes" was not coined until the 2nd century. The first successful use of insulin to treat diabetes occurred in January 1922. One shocking fact about diabetes is that many people can have the disease for years without realizing it.

PS1-11 Melanie Tapia, Jenny Siders

How to Achieve a Female Orgasm

Abstract: The female orgasm is an intricate reaction of the vaginal muscles caused by peak genital pleasure during vaginal stimulation. The debate is whether it oral, mental, or vaginal orgasms are the most satisfactory and how is a female orgasm best achieved. This study evaluates questionnaires completed by a multitude of women on their personnel experience of sexual orgasms and conducts research on blood data drawn from women during different orgasmic experiences to compare hormone levels before excitation, during an orgasm, and after

sexual arousal. A women's prolactin level indicates the quality of an orgasm. The International Society for Sexual Medicine found post excitement prolactin levels increased by 25% and 48% for non-genitally stimulated orgasms and genitally stimulated orgasms. Data showed both orgasmic experiences produced the same physiological experience. Another study done by Oxford University conducted a questionnaire using the Female Sexual Function Index and found 90% of women had quality emotional contact during intercourse and 62% of women achieved orgasm by external stimulation during or after vaginal intercourse. Research proves mental arousal, and external excitation is key for achieving exceptional pleasure however the best long-lasting orgasm is achieved vaginally.

PS1-12 Emma Elder

Respiratory Issues with Old Age

Abstract: The importance of this topic is to spread awareness of the respiratory issues with the older generations. Many people as they get older develop many common respiratory diseases due to many different reasons. Especially with those who have smoked in the past, developed a weaker immune system, have an underlying health issue, and decline within their lungs. I chose this topic to bring awareness to those who have respiratory issues because a lot of people do not realize how many people (especially elders) are actually affected with a respiratory issue. I have seen many elders be on medications for their heart and a respiratory issue that goes against each other and causes either a respiratory attack or an issue with their blood pressure. Our elders suffer from COPD, asthma, chronic pneumonia/ bronchitis, shortness of breath, etc. Many of these are treatable with a good treatment plan but also with a doctor that listens to them. In my paper I want to talk about the differences with each respiratory issue, how it affects the elders day to day life, and how we can make living with a respiratory disease/ sickness easier.

PS1-13 Emma Elliot

How Endometriosis and Polycystic Ovarian Syndrome Can Cause Infertility

Abstract: Polycystic ovarian syndrome (PCOS) and endometriosis are two prevalent conditions that affect reproductive health and are often linked to infertility. Endometriosis, which modifies the structure and function of the pelvis and produces mechanical barriers that stop the ovum from being released and transported, is indicated by ectopic endometrial tissue growth. Hormonal abnormalities and progesterone resistance impede implantation, while inflammation and altered immunological responses further impair the survival of sperm and embryos. Although surgery may restore fertility, even mild cases can result in temporary sterility. Fertility is also greatly impacted by PCOS, which is characterized by hyperandrogenism, insulin resistance, and ovulatory dysfunction. The frequency of unpredictable ovulation and poor-quality eggs makes conception challenging. Medication therapy and lifestyle modifications can enhance ovulatory function and reproductive outcomes for women with PCOS. These conditions show the complex relationships between immunological, mechanical, and hormonal factors that lead to infertility.

Developing successful treatments requires an understanding of these pathways. As of right now, endometriosis can be treated surgically, and both disorders can be treated with assisted reproductive technologies like IVF. With the right care and assistance, many women with PCOS or endometriosis can have healthy pregnancies despite these obstacles. To maximize fertility potential and enhance reproductive outcomes for those who are impacted, early identification and treatment are crucial.

PS1-14 Ericka King

Is Suicide Among the Elderly Population Warranted or Preventable?

Abstract: Growing old is perceived differently among world cultures. In some cultures, elders are revered and celebrated. However, in some cultures, growing old is dreaded and feared. Current Western culture depicts aging negatively through media, beauty marketing, and in general society. The elderly population is also a lost population as they are often forgotten about and overlooked. With aging comes with illness, depression, change in activities of daily living, financial stressors, isolation, societal changes, and death of loved ones and eventually self. Chronic illness(es) can make it harder for the elderly to maintain autonomy or to maintain or sustain the quality of life that they are accustomed to having. Inability to partake in activities of daily living can increase stress for many and cause depression in the elderly population. A fact that cannot be overlooked is the increase of suicide among the elderly population, with elderly men committing suicide at a higher rate. Is assisted suicide necessary in some cases or should people contain with treatment despite not improving? This research will define what constitutes as elderly, suicide, assisted suicide, review evidence through secondary research to determine whether suicide by individual or assisted suicide among the elderly population can be prevented or whether it is reasonable, and identifying risk factors that can help medical providers determine whether their patient(s) are at risk or need to be connected with additional resources.

PS1-15 Grace An George

The Effects of Pregnancy on a Woman's Body

Abstract: Women’s bodies are extraordinary. Creating a human inside the womb can be a beautiful thing but can also cause a lot of damage. Pregnancy affects the body mentally, physically, and emotionally. This paper dives deeper into the effects of pregnancy and closely examines what it does to the body. The goal is to answer the question of what happens and how long the effects will last. This paper is a systematic review of other studies that have been performed and documented. After doing research, it was found that depression and anxiety are increased during and after pregnancy in women. Postpartum depression is common among women, especially if they have pre existing mental conditions. The cardiovascular system changes drastically, increasing in volume so there is more oxygen circulating throughout the body. Organs shift as the baby grows and the cervix dilates to prepare for the baby to come out. Hormonal changes also occur, oftentimes making these other changes in the body happen. In the US in 2022, over 3.6 million babies were born, meaning almost as many women were pregnant. It is important for the general public, and more importantly, women who are

considering having children and their partners to know the effects. This paper aims to present that information in a clear, concise way and provide clarity for those who do not know the full extent.

PS1-16 Guilherme Ghisleni

Albinism is a disappearing trait

Abstract: Albinism is a genetic disorder characterized by a deficiency in melanin production, leading to visual impairments, heightened susceptibility to ultraviolet radiation, and increased health risks. This study examines whether the prevalence of albinism is declining due to genetic drift, environmental pressures, and reduced reproductive viability. While albinism follows an autosomal recessive inheritance pattern, its apparent decrease in specific populations raises concerns regarding its long-term presence and the medical challenges associated with it. This research reviews genetic predispositions, population dynamics, and environmental factors contributing to the potential reduction of albino traits. A multidisciplinary approach is utilized, incorporating genetic analysis, epidemiological data, and rehabilitative considerations for individuals with albinism. Methodologies include reviewing clinical studies, statistical modeling of population genetics, and case studies assessing health outcomes in individuals with albinism. Preliminary findings indicate that while albinism remains present in genetic pools, vision impairments, dermatological vulnerabilities, and social factors may contribute to its decreasing prevalence. This research underscores the importance of medical interventions, rehabilitation strategies, and inclusive healthcare approaches to improve the quality of life for individuals with albinism. Understanding the physiological and functional implications of albinism is crucial for developing effective rehabilitation programs that address mobility challenges, visual impairments, and overall health risks.

PS1-17 Hailey McGee, William Dunagan

Conducting Surveys on Psychological and Physical Barriers to Rehabilitation: Understanding Factors That Hinder Recovery and Contribute to Re-in

Abstract: Many individuals face barriers that prevent proper injury healing and increase the risk of re-injury. Rehabilitation is essential for active individuals, yet psychological and physical obstacles can hinder recovery. This study will assess these barriers and their contributions to prolonged rehabilitation and ongoing injuries.

Physical barriers examined will include limited mobility, persistent pain, improper rehabilitation strategies, slow healing, and increased re-injury risks. Psychological barriers will focus on lack of motivation, confidence issues, and mental health conditions such as depression and anxiety. Research suggests a lack of understanding of how psychological resistance and physical limitations together elevate the risk of re-injury.

Surveys will be conducted with individuals who have undergone injury rehabilitation. The surveys will include questions such as, "What have been your past experiences with rehabilitation processes and practices?" These will assess psychological factors affecting beliefs and motivation levels regarding rehabilitation as well as deeper insights into personal rehabilitation experiences.

It is hypothesized that individuals with higher psychological stress levels and significant physical limitations will experience prolonged rehabilitation and higher re-injury rates. The findings of this study will contribute to existing research by highlighting how psychological and physical barriers impact recovery. Furthermore, it will inform individuals on improving recovery outcomes through personalized rehabilitation strategies and psychological support.

PS1-18 Hallie Tanner

Where Are the Students? An Analysis of Chronic Absenteeism in Atlanta Schools

Abstract: Atlanta, as a major metropolitan area, faces several challenges regarding student attendance, which has led to issues in educational outcomes and long-term sucess for many. The term that can be used to address this issue is chronic absenteeism which describes a student who has missed over 10 percent of a school year. One can argue that it can be attributed to many various factors such as issues with transportation, accessibility, economics, and even COVID still having its lasting impact. Through the use of Geographic Information Systems (GIS), we can see a visual guide into the reasoning and reality of the situation. Using census data, community surveys, and transportation maps, this research will show the visual examples of the issues Atlanta currently faces. The goal of this research is to offer an educated and researched explanation into the reason why inner-city Atlanta students have such high rates of absenteeism. By indentifying geographic and socioeconomic trends, this research aims to provide insight into potenial solutions through policy changes, infrastructure improvements, or community-based initatives.

PS1-19 Mary Streat, Troy Keller

Developing Techniques on Assessing Culvert Length Impacts on Water Quality

Abstract: Urbanized watersheds typically have streams with elevated pollutant concentrations, altered discharge, lowered biodiversity, and human-made structures (e.g., culverts, bridges, and dams). Culverts, large pipes, are widely used in urban environments to transport rivers below human infrastructure. There is strong evidence that culverts cause downstream erosion and fragment populations of aquatic organisms such as fish, crayfish, and salamanders. While it is recognized that culverts have decreased light availability and limited natural substrates, there are few studies detailing how culverts impact water quality. To address this gap in the literature, we propose to use water quality sensors to characterize how culverts influence water quality parameters, such as turbidity, dissolved oxygen, pH, and temperature. By understanding how culverts influence urban stream water quality, we can identify potential mechanisms by which culverts impact biodiversity in streams. Results of this study could be used to help justify culvert removal or redesign.

PS1-20 Lauren Bonicoro, Hollings Manderson

Treatment of Obsessive-Compulsive Disorder Using Inference Based Cognitive Behavioral Therapy

Abstract: Traditional cognitive behavioral therapy (CBT) has long been considered an acceptable course of treatment for obsessive-compulsive disorder (OCD). However, CBT has

been shown to leave behind residual symptoms after treatment. A more recent method of treatment, inference-based cognitive behavioral therapy (I-CBT), uncovers the doubts behind a client's obsessions. With the growing rate of OCD diagnoses, it is crucial that counselors are able to adequately treat this disorder, teaching their clients how to replace unhealthy narratives with more realistic ones. This presentation will highlight the key aspects of I-CBT that are essential in treating the full scope of symptoms for clients with OCD.

PS1-21 Eric Vicente, Cole Lassiter, Crow Bisson

EcoSense: AI-Powered Air Quality App at Your Fingertips

Abstract: Air quality is a critical factor in our daily lives. The oxygen in the air enables our bodies to function properly, but insufficient oxygen or the presence of harmful gases, such as sulfur dioxide and nitrogen dioxide, can have severe consequences for our health. This research aims to develop EcoSense, an innovative mobile application designed to assess air quality in real-time using basic atmospheric sensors, with the goal of improving public health and raising environmental awareness. By providing users with accurate, up-to-date information on pollution levels, EcoSense empowers individuals to make informed decisions to protect their health. At the core of EcoSense are advanced artificial intelligence techniques, including Naive Bayes and fuzzy decision trees, which ensure high levels of accuracy and reliability in air quality assessments. This presentation will provide a general overview of EcoSense, with a specific focus on its intelligent components.

PS1-22 Taylor Thompson

Genetic Comparison of Physa acuta snails

Abstract: Recent studies have discovered that rapid evolution can occur over relatively small spatial scales (kilometers) despite environmental connections that should provide gene flow opportunities. Despite living in close proximity, small differences in biotic and abiotic features of the environment may be enough to produce differences between groups through divergent natural selection. Phenotypic differences occurring over a small spatial scale can show local adaptation of species for their specific area in their habitat. In this research I will examine the morphological and genetic differences in the pond snail (Physa acuta) that is ubiquitous throughout North America. One group will be collected from a flowing section of streams and another group will be collected from a corresponding reservoir below the stream collecting site on those same streams. Shells will be analyzed using geometrics morphometrics while tissue will be used to determine genetic differences by mapping out the genome of snails taken from these two different areas of the same stream.

PS1-23 Carolyn Smith, Cameron Head, Cj Williams

Human Sexuality Abstract

Abstract: Question - Should religious doctrines—specifically Protestant Christianity, Catholicism, Islam, and Judaism—play a role in shaping an individual's perception of human sexuality from a psychological, ethical, and sociocultural perspective?

Significance of Work - Religious doctrines have historically played a significant role in shaping societal norms and individual beliefs, particularly regarding human sexuality. Protestant Christianity, Catholicism, Islam, and Judaism each offer distinct ethical and moral perspectives on sexual behavior, influencing personal identity and cultural attitudes. This paper's goal is to examine whether religious teachings should shape an individual's perception of sexuality, considering psychological, ethical, and sociocultural implications specifically targeted towards college students. By analyzing the data and research conducted for this project, the intent is to generate some sort of conclusions about CSU's student population on the question of should religion influence a person's view on sexuality.

PS1-24 Hannah Simmons

The effect of natural products on the growth of triple-negative breast cancer stem cells

Abstract: Triple Negative Breast Cancer is a very aggressive form of breast cancer, and there is no targeted treatment available for this subtype of breast cancer. Chemotherapy drugs like docetaxel are prescribed for TNBC patients. Chemotherapy is cytotoxic and has various side effects, as it cannot differentiate between normal fast-dividing cells and fast-dividing cancer cells. Docetaxel kills most cancer cells, but some cells are resistant to docetaxel. These resistant cells survive; they express cancer stem cell markers and are responsible for cancer relapse. In this project, we are studying if the chemicals in natural products like ginger, turmeric, herb (ashwagandha), grapefruit, lemon peel, etc., can kill docetaxel-resistant TNBC stem cells. We are working with prominent chemicals in natural products like Withaferin A in Ashwagandha, Curcumin in turmeric, 10-Gingerol in ginger, etc. Preliminary data was collected using an online molecular docking tool, Patch Dock, and analyzed using a molecular visualization system called Pymol. Possible interactions were found between chemicals in the natural products and overexpressed proteins (CD24, KIF11, and KIF14) in docetaxel-resistant cells. We are in the process of making the triple-negative breast cancer cell lines (MDA 231 & 468) resistant to docetaxel and verify the potential of these natural products ability to kill the docetaxel-resistant TNBC stem cells. Natural products are well tolerated by the human body, and they will be a great substitute for chemotherapy which is toxic for the human body.

PS1-25 Kayla Reed

From Classroom to Career: The Need for Healthcare Mentorship Programs for Black Female Students

Abstract: "Despite growing diversity in the U.S. population, Black women remain underrepresented in healthcare leadership roles. Barriers including limited access to mentorship, systemic bias, and financial constraints, contribute to disparities in career advancement. This research examines the role of culturally competent mentorship programs in addressing these barriers and fostering a diverse healthcare workforce. Drawing from peer-reviewed literature, workforce development models, and Critical Race Theory, this review highlights the impact of mentorship on professional retention, leadership development, and the quality of healthcare delivery in marginalized communities. Findings indicate that mentorship programs designed with cultural awareness improve confidence, networking opportunities, and career trajectory for

Black women in healthcare. Furthermore, institutions that prioritize diversity in leadership create more inclusive environments, leading to better patient-provider relationships and health outcomes for underserved populations. Critiquing existing policy interventions programs who often fall short with inadequate funding and a lack of sustained mentorship structures can help with improvement with exposure to healthcare careers for Black students. To bridge these various gaps, this paper proposes a policy framework integrating mentorship into academic and professional training, with incentives for institutions to support underrepresented students and early-career professionals. Investing in mentorship as a long-term strategy, healthcare systems can cultivate a workforce that reflects the diverse populations it serves. This research underscores the need for targeted policies that not only increase representation but also dismantle systemic barriers that hinder career progression for Black women in healthcare."

PS2-1 Beatrice Brinkley

Event-Related Potentials Correlated with State/Trait Anxiety using Auditory Stimuli

Abstract: This study aims to discover a biomarker for anxiety with the use of event-related potentials (ERPs) and auditory stimuli. ERPs are the recording of electrical energy produced from the brain in response to stimuli. Prior research has focused on anxiety, visual stimuli, experimental tasks, and how ERP components relate to them. These tasks include the Erikson flanker, oddball paradigm, emotional stroop, and a dot probe task (Botelho et al., 2023). However, few of the studies used auditory stimuli. This study proposes that the P2, P3, and late positive potential (LPP) ERP components will have greater amplitude when unpleasant auditory stimuli are presented in comparison to neutral stimuli, especially in higher anxiety participants. P2 is studied for its relationship with attention and perceptual reasoning, P3 to memory and attention, and LPP to emotional material (Brown et al., 2012; Ishida et al., 2018; Luck, 2014; Polic, 2007). The State Trait Anxiety Inventory was used to assess participants' current and persistent anxiety. Then, participants passively listened to two blocks of mixed emotional auditory stimuli (neutral and unpleasant). The sounds were chosen from the International Affective Digitized Sound System that ordered sounds by emotional valence and arousal. The unpleasant sounds were marked by low valence and high arousal. The neutral sounds were marked by median valence and low arousal. After both blocks were presented, the Anxiety Measure, which uses four questions to assess current anxiety, was administered. This study has received approval from the Institutional Review Board (IRB) and data collection has begun. It is hoped that this research will contribute to our understanding of anxiety, its relationship with ERPs, and how auditory stimuli might influence the relationship.

PS2-2 Jiane Louella Rabara

Skill Demands in Emerging Technologies for Entry-Level Accountants

Abstract: Technological innovations are now recognized as major drivers in various business sectors, including the accounting industry. This phenomenon is largely attributed to the rise of systems like blockchain, machine learning, and accounting software, which have increased business efficiency and prompted higher investments in corporate technology. Yet, similar investments in human capital development, particularly in skill-building, have not been as

prominent. This study examines recent research on the demand-side perspective, focusing on theories of technologies having both labor-saving and labor-augmenting effects. The systematic literature review shows how these advancing technologies disrupt the job market for entry-level accounting professionals, reducing the demand for traditional accounting tasks while creating new opportunities that require advanced technological skills. Ultimately, the future of accounting lies not in resisting technological change, but in redefining the role of professionals with emphasis on the acquisition of digital competencies.

PS2-3 Josh Adams

Investigating the Impact of Roundup Exposure on Hearing in Channel Catfish (Ictalurus punctatus)

Abstract: Pesticides are applied to U.S. agricultural crops at a rate of approximately 225 million kg of active ingredient per year. While the acute effects of pesticide exposure on humans are well-documented, their impact on fish sensory systems remains poorly understood despite evidence of adverse effects from pesticide runoff in aquatic ecosystems. Anecdotal reports suggest that prolonged exposure to glyphosate, the active ingredient in Roundup, may cause hearing loss in humans. This research investigates the impact of acute exposure to the common agricultural herbicide Roundup (glyphosate-based formulation) on hearing sensitivity in farm-raised Channel catfish (Ictalurus punctatus). We conducted a randomized controlled trial in which catfish were exposed to 3 mg/L Roundup for 96 hours, with auditory function assessed using the auditory brainstem response (ABR) technique. Hearing thresholds at frequencies ranging from 100 to 2000 Hz were measured and compared to a control group subjected to identical conditions without Roundup exposure. A repeated measures ANOVA was used to analyze threshold differences between groups. Preliminary findings indicate that a 96-hour exposure to this concentration of Roundup does not significantly affect auditory sensitivity in Channel catfish. While these results suggest resilience of the auditory system to short-term, low-dose Roundup exposure, we plan to conduct further studies to determine potential long-term impacts and effects on other sensory modalities such as olfaction, where the sensory epithelia is more exposed to the external environment.

PS2-4 Julia Wise, Christina Wise

Investigating the Correlation Between Regular Moderate-Flow Menstrual Products Based on Brand and the Levels of Endocrine-Disrupting Chemicals (EDCs)

Abstract: Endocrine-distributing chemicals can disrupt the body's average hormone balance, as they can have adverse reactions when interacting with the estrogen receptors in the brain. The presence of endocrine-distributing chemicals (EDCs) in menstrual products can cause a range of health concerns for women. Hormone imbalance, infertility, and gynecological conditions are the primary concerns of EDCs in feminine products. Endometriosis and polycystic ovary syndrome (PCOS) are a few examples of gynecological conditions that EDCs can cause. There is insufficient research on the long-term effects of prolonged exposure to EDCs in feminine care products. Different brands may contain higher levels of EDCs than others, and with this project, women can find which brands to avoid. Endocrine-distributing chemicals present in menstrual

products cause a wide range of concerns since the urogenital region is a mucosa surface. Mucosal surfaces have permeable skin that is suspectable to absorption of harmful chemicals with limited filtration. EDCs mimic the natural hormones produced, causing various health problems. EDCs can disrupt the sex steroid hormones produced by the ovaries, estrogen, androgen, and progesterone. Alterations in the production of these hormones can affect puberty, the menstrual cycle, and reproduction. EDCs can also interfere with the body's endocrine system by binding to different hormone receptors, which block the natural hormone process. The average female will have a menstrual period that lasts 3 to 7 days while changing menstrual products every 4 to 8 hours. Menstrual products are not the only items that contain EDCs; every individual is exposed to pesticides, pollutants, and certain plastics that also include them. Multiple exposure sources have become a global concern as each EDC has a different effect on the body. Gas chromatography-mass spectrometry will be used to identify the endocrine-distributing chemicals present in feminine care products.

PS2-5 Jyah Morrell

Understanding How Seniors Deal with Grief and Loss

Abstract: Death is a depressing topic to talk about. It's something everyone experiences at least once in their lives. Grief and loss can be hard to handle and heavy to carry.As people age, they are going to be dealing with a number of losses, including friends, family, spouses, peers and others that are close to them. For seniors, dealing with grief and loss can be especially complicated. This paper examines how death and loss can affect a seniors emotional, psychological and physical well-being. This paper explores how older adults navigate death, grief, and loss and examines the emotional and mental challenges that are associated with dealing with death. Additionally, this paper highlights how having social connections, healthy coping mechanisms and a strong support system can help a person adapt and adjust to the passings of those around them. Understanding how older adults deal with and process loss is essential to improving mental health services, creating strong support systems and promoting healing.

PS2-6 Lauren Jenkins, Kayla Bridges

A Cross-Sectional Study Comparing the Impact of Acute Aerobic Exercise and Meditation on Mental Health in College Students

Abstract: According to the National College Health Assessment, approximately 34 percent of college students have been diagnosed with anxiety. Researchers also discovered an additional 25 percent of students were diagnosed with depression. Mental health issues are continuing to rise within the college student population. Aerobic exercise has demonstrated its effectiveness in the reduction of anxiety symptoms by releasing serotonin and dopamine, enhancing mood and relaxation. This study will focus on the comparison and effectiveness of both acute aerobic exercise and meditation on anxiety and mood in this population. Furthermore, it will determine whether acute aerobic exercise sessions reveal a stronger relationship with improved mental health than meditation sessions. Participants will be chosen from the student population and will be randomly assigned into 2 groups: one group will participate in a 15-minute aerobic

exercise session; specifically walking at a low to moderate pace selected by the participant, and the other group will participate in a 15-minute meditation session. All participants will be required to complete the Physical Activity Readiness Questionnaire (PAR-Q), to assess their eligibility to engage in exercise. Both groups will complete psychological surveys before and after the sessions to assess mood, anxiety, and stress; also, the HR of participants will be measured during the sessions. The hypothesis of this study suggests that the findings will emphasize the benefits of both interventions on mental health, with a stronger relationship between the reduction of anxiety and acute aerobic exercise. Moreover, the findings are expected to spotlight the benefits and importance of the impact aerobic exercise has on amplifying the well-being of college students. More research can be conducted to explore the long-term effects of these interventions.

PS2-7 Lauren Prohaska

Cultural Variations in Sexual Education and Teen Pregnancy Rates

Abstract: Do cultural variations in sexual education around the world influence teen pregnancy rates and why? This study explores the differences in sexual education offered in several countries and how these affect teen birth rates. Societal norms, access to sexual education, social stigma, and religion are all examples of factors that influence the effectiveness and implementation of sexual education. Generally, countries with higher teen birth rates have cultural taboos or stigmas surrounding sexual health education that interfere with the effectiveness of this education for young people. In exploring these differences, it is important to discuss why this is an issue affecting teen birth rates and propose policy changes to improve these rates. In the United States, Hispanic and black teens are faced with higher pregnancy rates than their white peers due to cultural differences. Australia's population is faced with the same issue where Indigenous Australians have higher teen birth rates than non-indigenous teens. Patterns like this help point out disparities in sexual education and how the different cultural methods and stigmas influence teen birth rates. Such patterns also help identify trends throughout the years and decide what policies are most effective. For instance, In Sweden, teen birth rates are significantly lower, and they implement a comprehensive sex education program that emphasizes early education on contraceptives, relationships, and cultural differences. With the use of case studies from different nations, this research underlines the need for sexual education programs that are more accessible and culturally sensitive while promoting general principles of health and wellness.

PS2-8 London Van Every

Derivatization of Per- and Polyfluoroalkyl Substances to Analyze Muscle Tissue Samples of Fish in the Chattahoochee River and its Tributaries

Abstract: Per- and polyfluoroalkyl substances (PFAS) are man-made 'forever chemicals,' meaning they don't naturally break down once they enter the environment. They often enter a water supply through improper waste disposal or human activity, where they may accumulate within the bodies of aquatic life. This research aims to analyze fish flesh samples from the Chattahoochee River via gas chromatography-mass spectrometry (GC-MS) for the presence of

PFAS. Currently, the goal of this project is to develop a method of preparing the flesh samples for analysis. To do this, non-Chattahoochee test samples will be deliberately injected with a known mixture of PFAS. Organic solvents will be used to extract the PFAS from the fish, which will then be derivatized for detection via GC-MS. This analysis, when compared to the original mixture of PFAS injected into the sample, will show the reliability of the method. It will also be used to determine the loss of PFAS during the preparation, derivatization, and analysis process. This development will ultimately yield a reliable method for flesh sample analysis and allow the true PFAS content to be extrapolated from the Chattahoochee flesh sample data. Once the method is refined, the samples from Chattahoochee River fish can be analyzed to determine the presence, identity, and amount of PFAS in the flesh. Since fish of varying species and catch locations will be tested, this data will not only illustrate the overall severity of PFAS pollution in the Chattahoochee River, but also help determine which species and parts of the river have been impacted the most.

PS2-9 McDonald Tandoh

Studying the relationship between sleep quality and mental health

Abstract: Sleep quality plays a major role in maintaining stable mental health. Research suggests there is a relationship between poor sleep quality and increased stress, anxiety, and depression; these listed factors are a small subset of a larger group of negative effects. This study aims to examine the relationship between sleep quality and mental health by analyzing variables like sleep disturbances, psychological distress, sleep quality, physical activity, and stress levels. Ideally, to achieve the best quality of life, sleep hours should be between 7-9 hours. According to Sleepfoundation's sleep quality research, there seems to be a 42% to 44% report of sleep deprivation among student-athletes in the U.S. showcasing the prevalence of poor sleep hygiene practices. Poor sleep quality, whether lack of 7 hours or interrupted sleep cycles, can lead to decreased cognitive efficiency, emotional instability, and decreased coping abilities. The target group will center on D2 track and field student-athletes with ages ranging from late teens to late twenties. The groups will consist of freshman, sophomore, junior, and senior students with a variety of backgrounds to offer more diversity in data collection. For data collection, gathering information from sleep quality, stress, and mood state questionnaires, as well as using sleep-tracking or sleep diaries to identify bouts of interrupted sleep, can help identify signs of insomnia and other mental health issues that would bring light to the negative associations with decreased sleep and hopefully invite better sleep hygiene practices. There should be a relationship between improved mental health conditions and sleep quality, which should positively affect athletic performance. By understanding the relationship between sleep quality and mental well-being, there can be improvements in quality of life and overall well-being as well.

PS2-10 Mariah Stepney

Maternal Mortality Among Black Women in Georgia: The Role of Implicit Bias in Healthcare

Abstract: Maternal mortality is a critical public health issue in the United States, disproportionately affecting Black women. Black women are three to four times more likely to

experience pregnancy-related deaths than white women, with the disparity being especially severe in Georgia, where maternal mortality rates among Black women are among the highest in the nation. This paper explores the multifaceted factors contributing to these disparities, including systemic racism, socioeconomic barriers, and implicit bias in healthcare settings. Implicit bias, defined as unconscious stereotypes and attitudes influencing healthcare decisions plays a pivotal role in the neglect of Black women's symptoms, inadequate pain management, and delays in life-saving interventions. These biases are compounded by structural barriers such as limited access to maternal care in rural areas and Medicaid coverage gaps, further exacerbating the crisis. The paper reviews current research on implicit bias and its impact on maternal health outcomes for Black women, emphasizing the need for systemic change. Key interventions include implicit bias training for healthcare providers, expanding Medicaid coverage to ensure continuity of care postpartum, and improving access to culturally competent maternal health services. Organizations such as the Black Mamas Matter Alliance (BMMA) are leading efforts to advocate policy changes and community-based solutions to address these disparities. Through the lens of Critical Race Theory (CRT), this paper highlights the systemic inequities shaping maternal health outcomes. It proposes actionable strategies to reduce maternal mortality among Black women in Georgia. By addressing the root causes of racial disparities in maternal health, this work underscores the importance of advancing equity in healthcare for all women.

PS2-11 Meghan Koh

The Effect of Non-steroidal Anti-Inflammatory Drugs on Kidneys

Abstract: Non-steroidal anti-inflammatory drugs (NSAIDs) are a type of medication often used to reduce inflammation, pain, and fever. They work similarly to steroids without causing the magnitude of adverse effects that steroids cause. Some commonly used NSAIDs are ibuprofen such as Advil or Motrin, Aspirin, Aleve, Celebrex, and Voltaren. Multiple studies have shown that taking NSAIDs long term or in high doses can cause kidney problems. NSAIDs are especially harmful to individuals with underlying conditions like gastrointestinal issues, kidney disease, asthma, heart disease, diabetes, and other common diseases and disorders. NSAIDs work by inhibiting an enzyme called cyclooxygenase (COX) in which there are two forms, COX-1 and COX-2. COX works by converting arachidonic acid into prostaglandins which in turn regulate salt and water homeostasis in the kidneys. Inhibition of arachidonic acid conversion by COX results in an increased risk of blood clotting, degradation of stomach lining, and interruption in kidney function ultimately disturbing homeostasis. This review highlights the importance of consuming NSAIDs responsibly considering one's underlying health conditions.

PS2-12 Madeleine Carrao, Jose Delgado, Kelly Franks, Micheal Jenkins, Dazmun Lindsey

Monitoring Active Galactic Nuclei/Blazar Conditions Utilizing Small and Medium Scale Observatories

Abstract: As students of the NASA STEM Space Grant Program at Columbus State University, we are observing and analyzing data in the study of Active Galactic Nuclei (AGNs), particularly

"Blazars," using the main telescope of the WestRock observatory. We aim to detect AGNs with small/medium-sized observatories confirming the observations taken with larger instruments and reported in the literature. These observations will evaluate the efficacy of smaller observatories in making observations that can contribute to this field of study. We will use customized Python scripting to determine the best observable AGNs in the current observation cycle- and by extension, gather additional research data on known variable stars and their immediate surroundings. Our objective is to create observability charts from the data gathered from these detected AGNs in our cycle, expanding the path forward for future observation and examination.

PS2-13 Moses Hutchens

Why is it Important for Seniors to Stay Fit?

Abstract: Fitness is important to all but is indeed important to seniors. Partaking in fitness positively contributes to seniors in all fascists of life. Seniors attempting to stay fit is essential as it improves their mental health, physical health, and social well-being while stimulating independence and longevity. Mentally, exercise helps relieve depression and anxiety, boosts cognitive function, and improves sleep. Staying active also promotes better balance and mobility, reducing the risks of falls and making daily duties easier. Regular exercise strengthens muscles and bones, improves heart health, weight management, and enhances joint function. These help reduce the risk of conditions like fractures and arthritis. Socially, participating in group activities helps with engagement and reduces feelings of loneliness. Groups like fitness classes and clubs provide an environment where older adults can gain new friendships and relationships with likeminded people. In this research, I will present evidence and reasons as to why seniors continuing to participate in fitness provides many perks and improves one's overall living.

PS2-14 Nick Beck

Erectile Dysfunction: Causes, Diagnosis, And Treatment Options

Abstract: Erectile dysfunction (ED) is a medical condition affecting men worldwide, characterized by the consistent inability to achieve or maintain an erection sufficient for sexual performance. This review examines the multifactorial etiology of ED, encompassing physiological, psychological, and lifestyle factors. Key physiological contributors include cardiovascular disease, diabetes mellitus, hormonal imbalances, and neurological disorders. While psychological factors such as stress, anxiety, and depression also play significant roles. Diagnostic approaches are discussed, highlighting the importance of comprehensive medical history assessments, physical examinations, and targeted laboratory tests. Treatment options range from pharmacological interventions, such as phosphodiesterase type 5 inhibitors, to advanced surgical procedures, including penile prostheses and vascular surgery. Emphasis is placed on individualized treatment plans and the consideration of patient and partner satisfaction. Future directions in ED management, including regenerative medicine and novel pharmacological agents, are briefly outlined. This review aims to provide a concise overview of ED to inform clinical practice and guide future research endeavors.

PS2-15 Seongmi Chung

A Phytochemical Analaysis of Secondary Metabolites in Eupatorium Serotium

Abstract: Phytochemistry, a branch of natural products chemistry, investigates bioactive compounds derived from natural sources, offering valuable insights into drug discovery. Secondary metabolites, which serve as natural defense mechanisms in plants, have demonstrated significant medicinal potential. For example, salicylic acid from Salix (Willow) bark, originally recognized for its antifungal properties, was later modified into aspirin for analgesic use.

This study explores Eupatorium serotinum, an herb historically used in antipyretic teas, to identify novel bioactive compounds. Using Dry Column Vacuum Chromatography (DCVC) with a gradient solvent system, secondary metabolites are isolated and separated. The resulting fractions are tested for growth inhibition against prostate and breast cancer cell lines and analyzed via Gas Chromatography-Mass Spectrometry (GC-MS). By integrating traditional medicinal knowledge with modern analytical techniques, this research aims to uncover bioactive compounds with pharmaceutical potential.

DCVC, a highly efficient and environmentally friendly separation method, allows for superior isolation of chemical constituents while reducing solvent usage. This study contributes to the growing field of natural product research by identifying bioactive compounds from E. serotinum that may support the development of future therapeutics.

PS2-16 Taryn Owens, Kordell Brown

Impact of Sex Education Policies on Teen Pregnancy and Birthrates: A Comparison of Georgia and California

Abstract: This study examines the relationship between state-level sex education policies and teen pregnancy and birth rates, with a focus on the differences between Georgia and California. California's comprehensive sex education approach provides extensive information on sexual health, contraception methods, and reproductive choices. In contrast, Georgia's abstinence-only program excludes instruction on contraception, emphasizing sexual abstinence until marriage. This comparative research explores how these differing educational frameworks impact adolescent behavior, with a focus on healthcare accessibility, societal attitudes toward contraception, and the role of education in shaping decision-making. The findings suggest that comprehensive sex education, as practiced in California, equips youth with critical knowledge, enabling them to make informed decisions and ultimately reducing the rates of teen pregnancy and birth. Conversely, Georgia's abstinence-based approach appears to contribute to higher teen pregnancy and birth rates, reinforcing the need for inclusive and comprehensive sexual education. The study advocates for broader implementation of comprehensive sex education programs across the United States to promote reproductive health awareness and decrease unplanned pregnancies among teens.

PS2-17 Tiffany Golden

Feasibility of Quantifying the Ionic Products of an Electrolysis Cell Powered by a Photovoltaic Panel

Abstract: A miniature photovoltaic panel was illuminated with a strip of LEDs. The assembly was housed in cardboard box to minimize the exposure to the ambient light. The DC current produced by the panel was monitored and fed to an electrolysis cell. The electrolysis cell contained two platinum wire electrodes and buffered aqueous iodide solution served as an electrolyte. $S_2O_3^{2-}$ (aq) was used as an analyte. The desired mass of the powder was dissolved in the electrolyte. Upon electrolysis, I^-(aq) oxidized to I_2(aq) at the anode. Electrolytically produced I_2(aq) chemically oxidized the $S_2O_3^{2-}$ (aq). The end point of this titration was visually determined by the change in the color of the starch indicator from colorless to blue-black. The electrolysis cell was promptly disconnected at the end point of the titration.

PS2-18 Tommasina Hughley

The Effects of UTI's on Seniors

Abstract: A urinary tract infection or UTI is a bacterial infection of the urinary tract system. It starts at the urethra but when left untreated, it can advance its way to the kidneys. It can lead to renal failure. Further damage can lead to an infection in the bloodstream which can lead to sepsis. UTIs are the second –most common type of infection in older adults. As we get older, our bladder and pelvic muscle weakens causing urinary retention and incontinence. If urine stays in the urinary tract for too long, bacteria can increase. Some bacteria can make its way from the bowel or bladder to the urinary tract causing a UTI. Conditions such as diabetes, vaginal atrophy, prostate hyperplasia can make seniors vulnerable to UTIs. Caregivers should be aware of a few classic symptoms such as: drowsiness, behavioral change, aggression, lethargy, pain, or burning upon urination, frequent urination, delirium, fever, blood in urine, back pain, cloudy urine or urine with an odor. Whether seniors are living at home, assisted living centers, or nursing homes, changes in their behavior should not be dismissed. A UTI can cause confusion in our older adults. Preventive measures and looking for classic symptoms can prevent these infections from occurring. Dismissing something as simple as frequent urination can lead to renal failure or bacteria in the bloodstream. If a UTI is diagnosed early antibiotics can cure most infections and the patient can have a favorable outlook.

PS2-19 Von Blocker

Capturing Carbon via Mineralization of Rock in a Laboratory Setting

Abstract: Global atmospheric carbon concentrations have significantly increased since the industrial revolution. Since CO_2 is a powerful greenhouse gas, increasing atmospheric carbon has resulted in a measurable increase in the Earth's average temperature, which in turn drives climate change. While numerous processes store and release atmospheric carbon, many of the geologic, hydrologic, and biologic systems that buffer atmospheric carbon concentrations will take hundreds to thousands of years to reverse the effects of carbon emissions from the burning of fossil fuels. Accordingly, significant research has been focused on Carbon Capture

and Storage (CCS) methods, which have the goal of reducing atmospheric CO2 by extracting it and storing it in geologic systems isolated from the atmosphere. One such CCS project, the CarbFix project in Iceland, captures carbon by injecting CO2 saturated fluids into subsurface basalts, where the carbon is taken up during mineralization of carbonates (e.g., calcite) in pore space. This specific type of CCS project, however, has restricted applications due to limits in the geographic extent of basaltic rocks in continental settings. In this project, we will test the potential for carbon mineralization in metamorphosed basaltic rocks (e.g., greenstone, amphibolite) common to mountain belts around the planet. Using a series of custom-built, pvc pressure chambers, we plan to experimentally determine whether or not metabasalts from the Columbus region (Phenix City gneiss) and central eastern Alabama (Hillabee Greenstone) will capture CO2 through carbonate mineralization over periods of 3, 6, 12, and 18 months.

PS2-20 William Bailey

Free Energy of Folding Red Fluorescent Protein

Abstract: Red Fluorescent Proteins are a common type of protein used to track gene expression within cells. The proteins release a signal when excited, allowing for easier visualization of gene transcription and expression. Just as with other proteins, RFPs are in an equilibrium state of folding and unfolding. The likelihood of being folded rather than unfolded is directly connected to the stability of the protein. While most proteins are stable and do not naturally unfold, slight unfolding does occur, commonly referred to as 'breathing'. This 'breathing' occurs very quickly, posing a challenge to determining the free energy of folding. In order to calculate the free energy of folding for RFP, UV spectrometry and other instrumental techniques are used to quantify the difference. By using a mathematical model developed to determine the free energy from data collected from spectrometry, the free energy of RFP folding was calculated

PS2-21 Yasmeen Jefferson

Infedility

Abstract: Love is something everyone has experienced at least once in their life. They don't have to be married to experience it. They just have to be in a committed relationship. The question is why some people experience infidelity. A person may an affair due to stress (from work or relationship problems), dissatisfaction with self or partner, addiction (a powerful motivation due to being a sex addict or having an addiction to something else and using as a cover up), a social norm, lack of fulfillment (emotionally or physically), and many more reasons. Because a person may experience these things, a person wants to look at others for someone who can fulfill something that they lack in the relationship that they are in. But for others, that may be the case. They just want to have one due to the fact that they can. They think that they are untouchable and that they are "top dog". They have options so they don't feel the need to settle down.

Study Objective: What is the cause of infidelity and how does it affect someone sexually?

Methodology: You can look at qualitative and qualitative data. You can look at reasons at why someone has cheated (qualitative) and how many times someone has cheated (quantitative). You can also look at different types of infidelity: emotional and physical.

Results: Research has shown that men cheat more than women (though that gap is closing), if someone is not religious, they tend to cheat more, if they have a higher level of education, they are more likely to cheat, if someone has a higher level of income, they are more likely to cheat, if someone has a high body count, they tend to cheat, and much more results are found. Also, the person who has been cheated on may experience low self-esteem and depression. They often feel like they aren't enough and/or they may feel like no one would ever love them.

Discussion: Infidelity is a complicated issue and there are many types of infidelity. There are also many reasons why someone might cheat. There are many emotions that a person may feel after getting cheated on. Understanding the cause and effect of cheating can help us better navigate and produce effective ways to have a healthy relationship.

PS2-22 Zachary Brundidge

Gender is a Plaything: Exploring Societal Conceptions of Gender by Examining American Dolls and Action Figures

Abstract: Throughout history, toys have been a staple of human life. In their simplest form, toys are a means of engaging in play; a way to escape reality and place oneself in a new world. On a higher level, toys communicate aspects of our lives. They offer a reflection of our communities, cultures, and environments. One of the most important toys in history is the doll. A doll is a small figure of a human being typically used as a child's plaything. On the surface, a doll seems like a simple toy that can be played with by anyone. However, the image you have of a child playing with a doll is undoubtedly that of a little girl. The opposite is true if you were to think of what kind of child would be playing with an action figure, typically a little boy. Action figures are a type of posable doll meant to represent a fictional character known for vigorous action. Gendered divisions have long existed with toys and play, beginning in the days of hunter-gather societies. Dolls and action figures are the best modern illustration of that gendered binary, especially within American society. The best representations of this binary in American dolls are Mattel's Barbie and Hasbro's G.I. Joe. In my paper, I wish to investigate the concept of gender as expressed through dolls and action figures and what messages about gender they convey. To examine these ideas, I will be looking at dolls and action figures focusing on the accessories that accompany them, their capacity for movement, and the jobs they symbolize.

PS2-23 Jessica Cegarra Arraiz

Intelligent Water Level Detection System

Abstract: Monitoring water levels in natural water bodies is crucial to manage water resources, prevent floods and drought. The traditional methodology that requires professional workers to conduct manual measurements in lakes and rivers can easily result in random measurement

errors and there are a lot of concerns on the safety of workers. The aim of this project is to explore other alternatives by developing an automatic and intelligent water level detection system while improving efficiency and avoiding hazardous accidents on workers. This whole system includes an Arduino Mega 2560 as the main micro controller, a water level sensor, a buzzer and a liquid crystal display (LCD) display unit. The system is capable of constantly measuring the water level and the real-time water level is displayed on the LCD module. The buzzer will be triggered to alert workers once the water level is beyond the predefined normal range (the minimal and maximal water level heights). A group of tests under different conditions will be implemented to evaluate effectiveness and efficiency and accuracy in monitoring changing water levels. This compact and highly integrated Arduino-based water level monitoring system can potentially be scalable for implementation in hydrological monitoring stations.

PS2-24 Kameriya Johnson, Kay Douglas

How does Social Media impact the sexual behavior of teenagers

Abstract: The impact of social media on adolescents' sexual behavior is an increasingly significant area of research, as social media platforms can both positively and negatively influence teenagers' sexual knowledge and decision-making. With its widespread reach, social media plays a key role in shaping adolescent behavior, particularly around sexual health. This literature review synthesizes two major studies that examine both the beneficial and harmful effects of social media on adolescent sexual behavior. The first study emphasizes how exposure to sexual health messages on social media can improve sexual decision-making, leading to a higher likelihood of using contraception or condoms during sexual encounters. For example, one study found that adolescents exposed to sexual health content were 2.69 times more likely to use contraception ($p < .05$) and 2.49 times more likely to use condoms ($p < .08$) during their most recent sexual encounter. However, the second study explores the negative impacts of excessive social media use, such as increased screen time, peer influence, and risky sexual behaviors like premarital sex, sex chatting, and low self-efficacy, with a heightened likelihood of engaging in unsafe sexual practices ($p < .05$). Given these findings, the primary goal of this review is to assess the role of social media in both promoting safe sexual practices and contributing to risky behaviors. The significance of this work lies in the need to understand how social media can influence sexual health and behaviors in order to inform educational strategies and policy recommendations. While social media can be an effective tool for sexual health education, its potential to encourage risky behaviors highlights the importance of balanced interventions that leverage its positive aspects while reducing the negative effects. Comprehensive, medically accurate sexual education and support programs are necessary to help teenagers navigate this dual impact and make informed sexual decisions.

OS1-1 Trenton Jones, Lydia Ray

Hypervisor Hunt: Uncovering Hidden Traces of Crime in a Virtual Machine

Abstract: A virtual machine (VM) is an emerging technology that’s becoming increasingly popular due to the convenience of using multiple different operating systems within a single

computer, operated by a special software layer called hypervisor. While convenient, VM is a complex technology that uses many layers of abstraction making forensic investigation of cybercrimes involving VMs extremely challenging. Digital footprints may be hidden in the layers of multiple operating systems and the hypervisor. Some VM data may vanish when the VM is shut down. Additionally, a VM image may be fragmented or encrypted. The field of VM forensics is in its early stage of development and thus presents huge potential for experimental research.

When I introduced this topic briefly in my undergraduate Digital Forensics course, Trenton, a student, became very curious and wanted to investigate the following research questions:
1. When an attacker hacks a virtual machine from a remote location, what kind of footprints do they leave inside the VM and in the host machine? How to uncover these footprints?
2. When a malware infects a virtual machine, what kind of traces does it leave inside the VM and the host machine? How to uncover these traces?

Together we created a project with the following plan:
A. Create an experimental setup with a hacked and infected virtual machine by February 28.
B. Apply various digital forensic techniques to uncover the traces of the two specific cybercrimes March 31.
C. Deliverables:
> Write a paper to disseminate our findings with the VM research community by April 31;
> Create a class project for undergraduate students and a manual based on our discoveries by May 15.

On Tower Day, Trenton and I will share experiences and insights from our research venture driven by our curiosity and passion.

OS1-2 Kevin Kelly, Julie Ballenger

Abstract: This research investigates optimal germination conditions for Sarracenia leucophylla, carnivorous plants adapted to nutrient-poor environments. Given the increasing concerns about habitat loss and climate change, it is crucial to understand the germination requirements for plant conservation. The study focuses on substrate selection and water treatments required for the highest germination rates. Seeds will undergo a 6-week cold stratification at 3.8° C before being planted in three substrates: peat moss/perlite, peat moss/sand/sphagnum, and coco coir/perlite. Water treatments include distilled water, distilled water with GA3, and an H2O2/water mix. Germination and growth will be monitored for 60 days, with data collected on plant height, leaf types, and dry weight. Hormone testing will assess Gibberellic acid (GA) and Abscisic acid (ABA) levels during germination stages to better understand their impact. The study anticipates that peat moss with GA3 treatment will yield the highest germination rates, contributing valuable insights for both horticultural and conservation efforts aimed at preserving S. leucophylla.

OS1-3 Takaiya Nelson, Nylah Phillips

Filamentous Growth of Aeromonas hydrophila as a Survival Mechanism Under Environmental Stress

Abstract: Aeromonas hydrophila is a versatile bacterium known for its pathogenic potential in both aquatic and terrestrial environments. Recent observations have suggested that environmental stressors may induce a filamentous growth form, potentially contributing to the bacterium's survival and resistance mechanisms under adverse conditions. This study examines the development of filamentous growth in A. hydrophila as a survival strategy in response to unfavorable environmental factors. Laboratory-grown A. hydrophila strains were propagated over a 7-day period, with samples collected at 1, 2, 4, and 7-day intervals. The samples were dehydrated and analyzed using scanning electron microscopy (SEM) to monitor the morphological changes associated with filamentous growth. This research aims to provide insight into the potential role of filamentation in enhancing the bacterium's ability to withstand environmental stress and its survival mechanisms in fluctuating conditions. Further studies are needed to explore the molecular mechanisms underlying this transition and its ecological implications for A. hydrophila in natural environments.

OS1-4 Alyssa Schnitz, Tara Clarkson, Samuel Thrower

Uncovering Experimental Clues: The Role of Chemistry in Combing the Analysis of Latent Fingerprints and Arson Investigations

Abstract: Preserving latent fingerprints for forensic analysis during debris testing is a problem that has arisen in several cases by the Georgia Bureau of Investigation's (GBI) Forensics Department. Latent fingerprints are valuable pieces of evidence and the goal is to help understand how to "keep" the composition/ characteristics of the fingerprint so it can be studied for physical review purposes (latent print identification) and arson (heat and combustion). There are studies on the components of a fingerprint and the best ways to reveal latent fingerprints on various surfaces. However, research is limited on if moderate heat (70°C) and certain chemicals (TFT/3PT) affect the fingerprint along with the components (amino acids & fatty acids) and characteristics (minutiae) on glass. To answer this question, qualitative and quantitative data needed to be obtained by using images, cyanoacrylate fuming, infrared (IR) spectroscopy, gas chromatography-mass spectrometry (GC-MS), and thermogravimetric analysis (TGA). The results will be able to determine if it is possible to split a fingerprint for arson and identification.

OS1-5 Jonah Simpson, Brennan Widner

Exploration into Cryptology: Developing an Asymmetric Encryption Algorithm

Abstract: A look into current and past asymmetric encryption techniques that can be strengthened using unique algorithm layering. The project answers the question: How to deploy industry-standard and/or legacy encryption techniques with additional layers of security? The group overcomes the topic by intensive research into data manipulation by base notation, conversion by type, and simple foundational encryption such as transposition. Building on key exchange protocols from the Diffie-Hellman model, the project creates a simple server-client messaging connection that utilizes a custom layer of message encryption before packaging for

transport to the recipient. By combining the two methods, the project submits an example of the strengths of layered security.

OS1-6 Taylor Wicklund

The Relationship Between Heterophil-to-Lymphocyte Ratios and the Reproductive Success of Female Eastern Bluebirds

Abstract: The health of breeding birds can impact their reproductive success, with birds in better health often producing more offspring than those in poor health. One common way that researchers quantify the health of a female bird is by using hematology, specifically white blood cell counts. Heterophils and lymphocytes are common types of white blood cells in birds. By comparing the ratio of heterophils to lymphocytes researchers can determine if a bird is in good health or not. When a bird is in poor health, the number of lymphocytes is lower than the number of heterophils. This ratio can also be used to predict susceptibility to disease, chance of survival to the next breeding season, and growth rates of nestlings. For my research, I am investigating the relationship between heterophil to lymphocyte ratios of female Eastern Bluebirds (Sialia sialis) and their reproductive success. I predict that when a female bird is immunocompromised, there will be negative impacts on their overall reproductive performance. Specifically, I expect that female bluebirds that are found to be in poorer health (i.e., have a higher heterophil-to-lymphocyte ratio) will have smaller and fewer clutches, lay fewer viable eggs, and produce fewer surviving fledglings than females in better health. Using three years of previously collected data on female bluebirds' clutches, I will be able to explore the link between female health and how successful they were in hatching their eggs, raising their nestlings, and successfully fledging their chicks.

OS1-1 Aleha Korzen

Effects of riparian floral invasive diversity on aqueous chlorophyll a in the tributaries of the Chattahoochee River, Columbus, GA area

Abstract: Invasive plant species pose a significant threat to biodiversity, ecosystem stability, and water quality in riparian zones. Despite their importance, there is lack of comprehensive data on floral invasives in the riparian areas of the Chattahoochee River tributaries in Columbus, GA. This study aims to inventory these invasive plant species and assess their impact in chlorophyll a compared to native biodiversity. We selected study sites using probability sampling: Weracoba Creek and Lindsey Creek, with Flat Shoals Creek serving as the control. Data collection during the late growing season employed the Carolina Vegetation Survey (CVS) method to inventory plant species and assess environmental conditions. Chlorophyll a concentrations were measured as a proxy for nutrient loading, indicating the impact or riparian nitrogen and phosphorus on water quality and ecosystem health. By analyzing species composition and chlorophyll a concentrations, we anticipate identifying a higher concentrations of chlorophyll a in areas dominated by invasive species compared to a native-dominated control area. This research provides critical insights into managing riparian zones and highlights the need for targeting restoration efforts to mitigate the impact of invasive species and promote ecosystem resilience.

OS2-2 Caleb Parham

An Assessment on the Relationship between sleep and Physical/Mental Fatigue

Abstract: In this study we will assess the relationship on how inadequate sleep can affect mood regulation, mental fatigue and physical activity output. Studies have shown that an average person needs at least 7 hours of sleep to rejuvenate their energy.In a data collection article , 43% of college students reported having less than 7 hours of sleep. Twenty percent of college students with academic impediment had difficulties sleeping.In another data collection article 55% of college students reported having 7-9 hours of sleep per night feeling very well rested the next day. The researcher believes that students who sleep fewer than the average number of hours experience a significant decline in their physical and mental well-being. The participants are traditional college students (ages 18-25). Two questionnaire surveys will be used to help assess the participants. One before the aerobic exercise on the treadmill for 15 minutes, and another one afterwards. This assessment will measure signs of depression, sleep disturbance, and sleep quality.

OS2-3 Rico Mora

For Wealth, Power, and Belief: Conversion to Islam Under Early Arabic Rule

Abstract: Beginning in the seventh century CE, the Middle East underwent extensive and gradual political, cultural, and social transformations. The arrival of new Islamic polities fueled the expansive transformation and set in motion changes which would re-shape the region's cultural, social, and religious landscape. The new religion of Islam prompted extensive changes. Conversion to Islam represented a myriad of new opportunities and possibilities for the convert. Through surveying a range of primary sources which include written correspondence from Jacob of Edessa (d. 708 CE), Caliph Umar II (d. 720 CE), and the Christian Patriarch Isho'yahb (d. 659 CE), as well as hagiographical work and historical chronicles, a clearer picture of the reasons for conversion to Islam can be gauged. Conversion primarily occurred out of economic motivation or social advancement and change: economic prospects and social mobility was far more possible through conversion to Islam than without. Conversion opened the door for many to escape poor circumstances, whether destitution or familial/marital problems. The actual process of conversion was, however, less clear and defined, and thus prompted many to question what a sincere conversion to Islam actually looked like.

OS2-4 Kamaya Foster

Scholarly Struggles: Navigating Education in Financial Hardship

Abstract: Imagine the deep sense of turmoil an individual feels while striving for self-improvement, only to be weakened or depleted every step of the way. College proposes dreams of a better future, endless opportunities, and unlocked doors upon achievement. However, for some students these dreams quickly fade away as they're dragged down by their financial struggles. Despite their academic ambition, many students battle a silent struggle daily, due to the crushing weight of poverty. This is a widespread issue that severely affects their ability to thrive academically, regardless of their intelligence, incredible resilience, and determination to overcome. These students face overwhelming challenges that delay or even derail their

academic progress. Financial constraints limit their access to vital resources, and the mental and physical toll of chronic stress is a constant burden. The impact of poverty on academic performance is both heartfelt and extensive. Students from lower-income families consistently fall behind their more fortunate peers, a gap evident in academic achievement statistics. According to the U.S. Department of Education (2023), around 23% of undergraduate students and 12% of graduate students experience food insecurity. This significant impact of poverty can detrimentally affect students' academic performance (McKibben et al., 2023). This research paper examines the numerous difficulties posed by poverty and its attendant effects on academic performance among college students. The central guiding question is: "How does poverty affect the academic performance of college students?". The relationship between socioeconomic factors and academic performance is discussed using a conceptual framework of selected variables to uncover hidden systems and advocate effective solutions to mitigate the problem.

OS2-5 Hayden Bennett

Battlefields of the Culture War: Games as a Living Text

Abstract: Tabletop Roleplaying Games (TTRPGs) function as living texts, reflecting the evolving values of society. Dungeons & Dragons is no exception. This paper examines the significant shifts in the TTRPG industry from 2019 to 2021, focusing on the response of Dungeons & Dragons and its community to the Black Lives Matter movement. It explores how the movement influenced the game's writing and design, as well as the divisions that emerged within the player base in reaction to the company's response.

OS2-6 Tamari Shepard

A Sociological Analysis of Parental Drug Use on Child Development: Lessons Learned

Abstract: Parental drug use has complex effects on child development, influencing emotional, cognitive, and social well-being. This paper is based on my desk-top research conducted in partial fulfillment of the requirements for my Sociological Theory class. It examines the impact of parental substance abuse through theoretical frameworks of the works of popular sociologists like George Meade and Karl Marx, such as social learning theory, attachment theory, and structural strain theory. Children raised in households affected by drug use often experience instability, neglect, and exposure to adverse socioeconomic conditions, leading to developmental challenges such as poor academic performance, emotional distress, and increased risk of substance abuse in later life. The study describes the conceptual framework to show demographic factors and structural conditions such as family structure, social support networks, and public policies could reduce these effects. Given the multifaced nature of the problem, this study recommends a multidisciplinary approach to addressing the societal consequences of parental drug use on future generations. In my desktop research, I was able to conclude that more children's development is being impacted by parental drug use than I originally thought. Over 12% of children in the US have at least one or more parents that currently abuse substances. Around the world anywhere from 5-20%, depending on the location, of children suffer from the same issues happening in the United States. Based on my

research, I would recommend increasing the number of resources available for both the parents struggling with the substances and the children affected by it. By helping the parents kick their addiction and providing therapy for the children, the long term effects can be combated.

OS2-7 India Mobley

Bridging the Gap: How Financial Aid Disparities Shape College Enrollment for American Middle-Class Families Amidst Rising Income Inequality

Abstract: Income inequality has significantly impacted access to higher education for middle-class families in the United States. Historically, the middle class could afford college without severe financial strain, however, this is no longer the case as of the late 60s and early 70s. With the steady rise of income inequality, middle-class families have been caught in a bind: they earn too much to qualify for most need-based financial aid, yet they lack the funds to afford the skyrocketing tuition cost comfortably. This study explores how these financial barriers have disproportionately affected middle-class students while shedding more light on their diminished access to higher education and the long-term societal consequences.

This research intends to highlight the pivotal role of higher education in enabling upward mobility within the middle class, serving as a key driver of economic stability and growth. The United States progressively moves toward being a heavy knowledge-based economy, the diminishing ability of middle-class families to send their children to college threatens both their socioeconomic status and the country's workforce quality. Leaving this unaddressed could potentially cause this growing disparity to shrink the middle class and leave the country with an ill-equipped workforce to meet the ever-changing demands of the global economy. By focusing on this "backbone" demographic, this study intends to analyze current research while adding to the discussion. Particularly, the focus will be placed on the unique challenges faced by middle-class students in accessing financial aid and higher education. This research aims to spark more nuanced policy discussions and promote equitable reforms in financial aid structures. Ultimately, addressing these disparities could restore educational access for middle-class families while also fostering broader economic stability and growth across the nation. Thus, maintaining the United States' status as one of the nations at the forefront of economic growth on a global scale.

OS3-1 Sal Woessner

The Panopticon of Gender: A New Foucauldian Critique of "Attack Helicopter"

Abstract: In January 2020, Isabel Fall's debut short story, "I Sexually Identify as an Attack Helicopter", was published in Clarkesworld, one of America's longest-running speculative fiction magazines. The story is a strange, uncomfortable, and complex piece of fiction. However, the response it received was far from thoughtful critique. Many readers, judging the work solely by its title, assumed it was an attack on transgender individuals. Fall faced significant harassment as a result, and just ten days after its publication, Clarkesworld pulled the story at her request. The unfortunate twist: Fall is a transgender woman. While constructive dialogue has since emerged—condemning the harassment and advocating for more responsible engagement with

marginalized authors—a noticeable gap persists in the conversation, mirroring the initial issue: a failure to engage with the actual text itself.

This paper seeks to address this gap by conducting a literary analysis of Fall's work through the lens of Michel Foucault's theory of the panopticon, as developed in Discipline & Punish: The Birth of the Prison, and Sandra Lee Bartky's "Foucault, Femininity, and the Modernization of Patriarchal Power." Rather than espousing transphobic rhetoric, the piece critiques the surveillance, control, and internalization of societal expectations around gender. It examines the alienation caused by the societal policing of identity, presenting a profound commentary on the lived realities of gendered existence. By examining "I Sexually Identify as an Attack Helicopter" as a worthwhile piece of fiction, this paper underscores its relevance in contemporary discourses of gender, as well as the necessity of intentional and critical engagement with marginalized voices in literature.

OS3-2 Austin Davis

The Relationship of Nutrition Quality on Depression and Anxiety

Abstract: Many people face issues dealing with mental health and are often put onto medication to help relieve it or symptoms they have. But one thing that many people tend to overlook is what foods they are consuming and whether or not they are getting adequate nutrition. The fall date from the Nation College Health Assessment states that only 18% of college students get 3 or more servings of fruit per week and only 28% of college students get 3 or more servings of vegetables per week. This same data collection states that 42% of college students face some kind of food insecurity. Anxiety and depression are two of the most common forms of mental stress that people experience and this study aims to see how nutrition quality is related to these symptoms. Participants will be college students between the age of 18-25 with no mental health issues. They will take a nutritional assessment survey and they will also be asked to rate the levels of anxiety and depression on a scale of one to ten. I expect there to be a relationship between the level of nutrition quality consumed and level of anxiety and depression. Nutrition quality is very important for the overall function and health of our bodies, yet people are seemingly unaware that what they consume will affect them in various ways. During this study we hope to find evidence indicating that better nutritional intake leads to better markers for mental health.

OS3-3 Beatrice Brinkley

Does Repetition of the Correct Answer During Feedback Facilitate Learning?

Abstract: This study measured if correct-answer feedback during word/symbol learning would decrease the number of trials needed to master a set of 20 symbols/words. Use of corrective, positive, and immediate feedback to English speakers as they learned Japanese symbols was tested in 26 undergraduates. The study consisted of three phases across which the participants learned symbols/words. The probe phase measured prior knowledge. The learning phase included compound stimuli where the aim was to learn all 20 symbols/words. The testing phase measured the number of symbols/words learned after separating them. In the control group,

participants were told "Correct" when they identified the symbol/word correctly in a trial. In the experimental group, participants were told "The correct answer is…" if they correctly identified the symbol/word. Repeating the correct answer as a part of feedback did not change the number of trials required to master the set of symbols/words as indicated by an independent samples-test. On a wider scale or with more participants tested, correct-answer repetition – or other specific qualities of feedback – could be beneficial to language learners.

OS3-4 Celeste Grantham

Creativity and Imagination in ADHD Classroom Experiences: A Hands-On Lesson Demonstration

Abstract: This presentation explores the relationship between creativity, imagination, and the classroom experiences of students with ADHD. By examining how cognitive processes such as divergent thinking, mind-wandering, and creative incubation impact student outcomes—engagement, motivation, and academic performance—this research highlights the potential for innovative teaching strategies to foster success in neurodivergent learners. This research fills a critical gap in ADHD education by shifting the focus from deficits to strengths and exploring how creative teaching strategies can harness those strengths to improve learning outcomes. Through shifting focus to cognitive strengths of students with ADHD and emphasizing inclusive educational practices, this work aims to provide educators with effective tools to enhance student learning, engagement, and success in diverse classroom settings.

OS3-5 Collin Miller

Dissolved Heavy Metal Concentrations in the Muscle Tissue of Bluegill (Lepomis macrochirus) in the Chattahoochee River Drainage, Columbus, Georgia

Abstract: Bluegill sunfish are an excellent bioindicator of aquatic system integrity because they readily exhibit health problems when exposed to pollution. An initial examination of Bluegill in Weracoba and Roaring Branch Creeks have shorter lifespans and higher red blood cell counts than Bluegill in Lindsey Creek in the Columbus, GA area. Using dissolved water metal data provided by Chattahoochee Riverkeeper, we suspect that age truncation of this species in these creeks could be due to chronically high levels of the metals copper and lead in Weracoba Creek. High levels of manganese in Roaring Branch creek could also be contributing to poorer health in Bluegill. We sampled 20 Bluegill from each of four localities, Roaring Branch, Lindsey, and Weracoba Creeks, as well as Lake Oliver. Fish muscle tissue was collected, lyophilized, and digested prior to analysis. We used ICP-MS to detect trace elements at the parts per trillion level and major elements at the parts per million level. We expect data to show significantly higher levels of heavy metals in fish from Weracoba and Roaring Branch Creeks as compared to Lindsey Creek. Additionally, we expect Weracoba Creek to have the highest concentrations of metals, while Lindsey Creek is expected to have the lowest concentrations.

OS3-6 Kaylan Moudy

Georgia vs. Alabama: How the State's Response to the Dobbs Decision Affect Women's Prisons

Abstract: In 1973, Roe v. Wade was established within our Fourteenth Amendment under the Due Process Clause. This Supreme Court decision ensured one's federal right to an abortion before viability, which was defined as a twenty-four-week to twenty-eight-week period. However, the 2022 Dobbs v. Jackson Women's Health Organization decision overturned Roe v. Wade and redirected the responsibility of setting such provisions to the individual states. This shift implies a variety of state-level restrictions as well as serval implications regarding the reproductive rights of women. These implications can be substantial for those incarcerated due to the already existing systemic obstacles present in prison systems. It is recognized by the National Library of Medicine that incarcerated women in the United States access abortion care at a far lower rate than the public, Which implies preexisting factors within prisons already deter women from accessing such care. The Dobbs decision could exacerbate an already prevalent issue within our criminal justice system. This review will consider two states: Alabama and Georgia. The policies in Alabama enact a total abortion ban, even in circumstances such as rape or incest. While Georgia has not enacted a total ban, the state's provisions include the restrictive "Heartbeat Bill, " giving patients a six-week window to access care. Both states are considered to possess stricter provisions that enact logistical barriers in order to further limit access to such procedures. This paper highlights the broader consequences surrounding reproductive justice by examining the policies and legal framework within the two states. While providing insight into an already overlooked issue within our system.

OS3-7 Oliver Odde, Fady Mansour

Economic Impact of the Arts and Culture Industry in the Columbus GA-AL MSA

Abstract: This study investigates the economic impact of the College of the Arts at Columbus State University (CSU) on the Columbus, GA economy using input-output models. The research focuses on four primary objectives: evaluating the economic activities generated by art organizations in the Columbus area, assessing the connection between degrees offered by the College of the Arts and their corresponding occupations, estimating the economic impact of the College of the Arts' wages and expenditures, and analyzing the tourism expenditures associated with art events in the area. By integrating these elements, the study provides a comprehensive analysis of how CSU's College of the Arts contributes to the economic vitality of Columbus, GA.

CYBR 3119: Presentation of 3 different groups on 3 different crimes and investigations: a course on fundamentals of digital forensics, introduces students to the principles, methodologies, and tools used in digital forensic investigations. Students learn how to identify, collect, preserve, analyze, and present digital evidence from computer hard drives, USB drives and emails. Topics include file system forensics, data recovery, password cracking, email analysis, and techniques for uncovering hidden or deleted data.

For the final project of this course, students solve simulated real cases by applying the techniques they learn in theory. In this session, three teams of students from CYBR 3119 Spring 2025 class present three compelling digital crime investigations where they uncovered

hidden truths buried deep within confiscated digital devices. These investigations followed the meticulous process of analyzing thousands of files from storage devices to recover deleted files, break encrypted passwords, and expose critical information that led to solving the crime. Students will walk through the step-by-step process of digital evidence recovery, analysis, and the ultimate unveiling of the suspect behind the screen. Number of presenters: 9 students, 1 mentor.

ML1-1 Kitty exploitation:

Abstract: This case involves a company m57.biz, founded by Pat McGoo. This is a patent search company that verifies the novelty of patents or identifies prior art. Initially staffed with four employees, the firm plans to expand and holds unused tech inventory. During a scenario simulation, employee personas conducted various tasks, including malicious activities like using keyloggers and stealing data. The situation escalates when a laptop sold on Craigslist is found with simulated kitty exploitation images. Police trace it back to m57.biz, prompting a full digital investigation with CEO consent. The group of investigators Niy'Asia Williams and Camille Vickers will investigate the following:

1. Who downloaded the kitty exploitation images?
2. How did the laptop end up on Craigslist? What's the full story?
3. Is there any evidence of any other crime?

ML1-2 Illegal Drug Dealing Case:

Abstract: Based on Australian intelligence, John Fredricksen and Jane Esteban were intercepted by New Zealand Customs upon arriving from Brisbane. A search revealed one kilogram of methamphetamine hidden in Fredricksen's suitcase. During interrogation, Esteban disclosed plans to deliver the suitcase to the Eastbourne library or alternatively to 666 Rewera Avenue, Petone. A raid on the address uncovered drugs, firearms, and a desktop computer. Ari Betan-Snook, Seth Dileonardo and Joshua Garcia will analyze the computer's forensic image and memory dump for evidence of connections, plans, and supporting data to answer the following questions:

1. Find information about the unknown suspect. What's their connection with John and Jane?
2. How are John and Jane related? Can you uncover their plans?
3. Is there any evidence of any additional crimes?

ML1-3 Lone Wolf Case:

Abstract: Jim Cloudy, a resident of Alexandria, VA, grew increasingly angry over media coverage of gun violence and support for gun control. After destroying his laptop in an argument with his brother Paul, he received a used laptop with a wiped hard drive. Unemployed and restless, Jim grew marijuana and secretly amassed $325,000. He began planning a "Lone Wolf" attack, storing manifestos and plans in multiple cloud services. Suspicious of Jim's sudden "vacation," Paul accessed the documents and alerted the police. Jim was apprehended during a

live chat with Paul. Jagrishi Settipalli, Greg Seabrook and Devante Corbin will investigate Jim's laptop image to find out details of Jim's mass shooting plan.

ML1-4 Bella (Makayla) Rempel, Guadaulpe Cazares, Lendasia Hall, India Mobley, Nasen Washington

Benefits of Experiential Learning as Showcased by Students

Abstract: These students participated in an experiential learning field trip to the Georgia State Capitol, which provided criminal justice and political science students with a unique opportunity to engage directly with the legislative and executive branches of government. Students gained firsthand insight into the policymaking process, legislative advocacy, and executive decision-making through structured visits with state representatives, senators, and the governor. This immersive experience fosters a deeper understanding of how laws are created and enforced, bridging the gap between theoretical coursework and real-world governance. By interacting with elected officials and policy advisors, students develop a practical appreciation for the complexities of state government, including the role of lobbying, committee deliberations, and the intersection of criminal justice policies with legislative priorities. Additionally, discussions with lawmakers expose students to career pathways in public service, law, and government affairs, providing valuable networking opportunities that may influence their professional trajectories. The trip also enhanced critical thinking and civic engagement, encouraging students to consider how legislative decisions impact criminal justice policies, law enforcement practices, and community outcomes. Engaging in policy discussions equips students with the communication skills necessary for advocacy and professional interactions within legal and political environments. This mentor-led session will discuss their learning of the importance of civic participation, expanding professional networks, applying classroom knowledge in meaningful ways, and how witnessing governance in action they are now better prepared to navigate careers in law, public administration, criminal justice, and political advocacy; which positions them as informed and engaged professionals dedicated to shaping effective policies and legal frameworks.

ML2-5 9:30-11:15 Mitdalia Alonso, Alexandria Chambers, Kasey Karabasz
Nutrient Composition Effects on Snail Foot Morphology and Fecundity [Abstract]

ML2-6 9:30-11:15 Lisa Palmer, Garrett O'Neill

The Influence of Terrestrial Macroinvertebrates and Abiotic Factors on Nutrient Recycling in Leaf Litter [Abstract]

ML2-1 Rachel Barnett, Eva Fernandez-Perez, Brittany Yann

Soil organic content between tree species along an elevational gradient

Abstract: Organic content is often used as a measure of soil organic carbon (SOC), which is used to evaluate the health and quality of the soil. Elevation and surrounding vegetation affect the organic content of the soil, therefore playing a vital role in ecosystem functioning. This study was conducted at Lynnhaven, a research property owned by Columbus State University in

the Georgia Piedmont region. The Georgia Piedmont region provides unique aquatic and terrestrial ecosystems, many of which were destroyed by clear-cutting for industrial and agricultural development in the late 19th century. Later environmental protections have left much of this land largely undisturbed, allowing for a unique opportunity to observe the extent of unassisted forest regrowth. To quantify the relationship between elevation, tree species, and soil composition, we compared soil pH, type, and organic content from samples collected near two tree species (Quercus alba and Pinus taeda) across an elevational gradient in the floodplains of the Georgia Piedmont. Three elevation levels were established: Low Elevation (floodplain), Middle Elevation, and High Elevation, with mean elevations of 572 m, 595 m, and 605 m, respectively. Soil tests at the base and dripline of the trees were conducted to measure the effect of tree species on soil organic content, and samples collected one meter from the base of each tree were used to determine pH and soil type. All samples were collected from trees of similar age and DBH. We hypothesize that along the elevational gradient, 1) organic content will increase with decreasing elevation and 2) higher sand content will be in the summit and thinner sediments in the riparian zone. Moreover, we hypothesize that among species, 1) Q. alba will have higher organic content at the base than P. taeda, 2) organic matter will decrease as distance from the tree increases, and 3) soil collected under P. taeda will be more acidic than soil under Q. alba.

ML2-2 Kolby Broadnax Vosh Cosby Daveyon Streeter

Phytoplankton along a depth gradient at Lynnhaven Pond

Abstract: The rapid growth of phytoplankton population in spring blooms is generally observed when winter storms subside, and sunlight increases. During this time, nutrients from deeper waters are vertically mixed into the surface layers by passing winter storms and the temperature warms, creating ideal conditions that support a surge in phytoplankton growth, Ecological axes such as light and nutrient availability, temperature sensitivity and morphological variation determine the delicate structure of phytoplankton communities in freshwater ecosystems. We examined the biodiversity and the abundance of the phytoplankton community at various depths (surface, 0.25 m and 1 m) and the impact of water quality on its structure. Aspects of water quality (temperature, dissolved oxygen and water transparency) were collected to determine the functional groups found in these communities. Results showed that diatoms and green algae were abundant at the surface due to more light availability, while cyanobacteria and dinoflagellates were found in deeper waters where conditions are less favorable for photosynthesis. Statistical analysis showed that revealed significant differences in phytoplankton communities across depths, supporting the idea that light intensity throughout the water column influences functional group distribution. These findings help us better understand phytoplankton dynamics and their role in freshwater ecosystems.

ML2-3 Amiya Johnson, Kierstin Davis, Mailayna Reyes

Spatial and Temporal Variation in Temperature of Lynnhaven Pond

Abstract: Understanding aquatic ecosystems and identifying environmental changes within them require regular water quality monitoring. In this study we used HOBO data loggers to analyze

water temperature and light availability. Two Hobo pendants were placed at the Northwest, Southwest, Northeast, and Southwest corners of Lynnhaven pond. Measurements were then recorded every hour over a span of 3 weeks. We predicted that the North locations of the pond will have a lower average temperature, and less variation compared to the South locations, which has a shallower depth and therefore more susceptible to fluctuations. We also expected light availability to have similar readings across the different sights, because of the constant one-meter depths of the hobos. Furthermore, light availability data offer insight into underwater illumination dynamics, which play a crucial role in aquatic productivity and ecosystem health. Our findings contribute to the understanding of spatial variability in freshwater ecosystems by highlighting the influence of depth and location on temperature fluctuations. The observed temperature differences align with existing research on thermal stratification and microclimatic effects in pond environments.

ML2-4 Kevin Kelly, Ashley Smith

Plant Biodiversity Along Ecotones at Lynn Haven Pond

Abstract: Ponds and wetland habitats support a rich diversity of species, playing a crucial role in local ecosystems. Being able to understand their biodiversity helps to enhance our knowledge of local and global ecology. We will be examining this biodiversity along the ecotones surrounding Lynn Haven Pond, owned by Columbus State University. Gathering species richness data, light availability, and other relevant environmental factors will help us understand the biodiversity patterns along the ecotones surrounding Lynn Haven Pond. These measurements will provide insights into how the physical and chemical characteristics of the environment influence the distribution and abundance of plant species in this system. This helps us to determine if biodiversity is dependent on the ecotone, then species richness will be higher in ecotones containing shallow/shoreline zones compared to ones with deeper/higher zones.

ML2-5 Mitdalia Alonso, Alexandria Chambers, Kasey Karabasz

Nutrient Composition Effects on Snail Foot Morphology and Fecundity

Abstract: Resource availability plays a critical role in shaping the growth and development of organisms. In gastropods, calcium is well known to influence shell formation, yet the effects of other essential nutrients, such as potassium, remain underexplored. This study examines how different vegetable-based diets, varying in calcium and potassium content, influence the growth and shell development of freshwater snails (Physa spp.). We hypothesize that snails fed excess calcium-rich diets (e.g., tablets of Tums) will exhibit increased growth rates and thicker, heavier shells compared to those consuming excess potassium-rich or nutrient-dilute diets. To test these hypotheses, we conducted a 3–5 week experiment in which snails were housed in replicate tanks and fed specific vegetable-based diets. We measured weekly changes in snail foot length and fecundity, as well as final shell thickness and weight. Data will be analyzed using ANOVA to assess differences in growth and shell development among treatment groups. The expected results suggest that calcium-rich diets will enhance both growth and shell formation, while potassium-rich diets may have distinct but measurable effects. For snails, the most often studied excess resource is calcium, leaving a gap in knowledge if adding other

resources help affect snail growth and fecundity as well. These findings contribute to a broader understanding of how multiple nutrient sources influence gastropod development, highlighting the importance of considering diverse dietary factors in ecological and evolutionary studies. Our results may indicate that adding additional nutrients to species besides the main needed nutrient is a worthwhile study for future contemplation on gastropods and other species.

ML2-6 Lisa Palmer, Garrett O'Neill

The Influence of Terrestrial Macroinvertebrates and Abiotic Factors on Nutrient Recycling in Leaf Litter

Abstract: Leaf litter is critical to the nutrient and organic content of the underlying soil. Bacteria, fungi and animal life break down leaf litter into organic and inorganic components. Species diversity is a key indicator of the overall health and ecosystem functioning of any given ecosystem. In this study, terrestrial macroinvertebrates were focused on due to their natural abundance and their wide range of ecological roles. A transect line was established, beginning at the edge of the pond area and continuing up a sloping gradient. The higher elevations along the transect line will be drier and leaf litter will not retain moisture as well as areas at the bottom of the slope closest to the pond and therefore will have more diverse invertebrate communities than dryer areas further up the slope.

An initial transect line of 100 meters was laid out, from the pond's edge and moving up slope. Leaf litter samples at three locations at bottom, mid and top of slope were collected and invertebrate diversity and density were determined. Leaf litter was collected at each site from three 10cm2 areas and merged into one large plastic bag. A subsample of that bag was then placed into a Berlese funnel for 72 hours to collect any invertebrates. The moisture content of the leaf litter at each location was determined by comparing wet and dry mass of leaf litter. Measurements of altitude, soil temperature, leaf temperature, air temperature and rainfall over the previous week were collected to assess and compare abiotic conditions at each site. Invertebrates were categorized by order and family. Each site location was compared for invertebrate density and species diversity using the Simpson's Diversity Index.

Preliminary results show that Site A, closest to the pond at the lowest slope gradient, has a higher species diversity and density, compared to Site B and C, which are further up the slope. The leaf litter collected from Site A also has a higher moisture content compared to Site C at the top of the slope, furthest from the pond. Site A had a –43% change in mass due to moisture loss, compared to -24 % change in mass at Site C. Although these figures may not show a significant difference with only two samples measured so far, it may indicate a trend.

The decomposition of leaf litter is critical in forest ecosystems for nutrient recycling and the return of those resources to the soil. Invertebrates contribute to this cycle by breaking down organic matter by physically breaking down and digesting the leaf material thus making nutrients more available to plant root systems. These invertebrates are more numerous where moisture levels are higher, thus nutrient recycling may occur at a higher rate. The higher

availability of organic nutrients by the surrounding plant community results in a healthier ecosystem.

ML2-7 Kiley Nansel
Trade-offs between Intraspecific Competition vs. Predator Avoidance
Abstract: Predators influence the structure of aquatic communities and can reduce the abundance of prey directly or indirectly through altering prey abundance and distribution. Keystone amphibian predators can play a major role in the intraspecific competition of amphibian prey species through population regulation and community structure due to predator avoidance. To determine the significance of predator avoidance versus intraspecific competition of prey, I will examine whether predation risk had a larger effect on amphibian prey intraspecific competition. I will be looking at different primary sources of literature to determine how different amphibian prey species react to predator risk of an amphibian predator, the Eastern Newt (Notophthalmus viridescens). I expect to use a mixed model analysis to calculate and understand the fixed and random effects. I expect to find that the presence of the predator will cause amphibian prey species to prioritize predator avoidance over intraspecific competition between individuals of the same species. These results will give a better understanding of how Eastern Newts, as predators, influence community dynamics and drive community structure for amphibian prey species.

ML3-1 1:00-1:15 N/A
N/A
Mentor(s): N/A

ML3-2 1:15-1:30 N/A
N/A
Mentor(s): N/A

ML3-3 1:30-1:45 N/A
N/A
Mentor(s): N/A

ML3-4 1:45-2:00 N/A
N/A
Mentor(s): N/A

ML3-5 2:00-2:15 N/A
N/A
Mentor(s): N/A

ML3-6 2:15-2:30 N/A
N/A
Mentor(s): N/A

ML3-7 2:30-2:45 Ashley Smith
A comparison of parasite loads in largemouth bass (Micropterus salmoides) from three water bodies of the Chattahoochee River
Abstract: Little is known in the published literature on the parasites of largemouth bass (LMB) in the Southeastern United States, nor on the impact that water quality has on their prevalence and abundance. This study was undertaken to compare the endoparasitic helminths of LBM from Lake Oliver, Lake Harding, and West Point Lake along the Chattahoochee River. The organs and soft tissues of approximately 30 fish were examined from each reservoir, and the helminths were identified with their location in the body and number recorded. Four species of nematodes, two species of flukes, one species of tapeworm, and one species of spiny-headed worm were discovered. The data remains to be analyzed.

ML3-8 2:45-3:00 Laneche Ghee
Aveanna Healthcare Internship
Abstract: I have had the privilege of interning with Aveanna Healthcare, a leading organization in pediatric home health services. My internship has focused on providing in-home care for medically fragile children, offering me invaluable experience in clinical nursing, patient-centered care, and the complexities of managing chronic conditions in a home setting. Aveanna Healthcare is dedicated to transforming the delivery of homecare through a patient-centered approach. The organization specializes in extended in-home nursing services and is committed to providing high-quality, cost-effective solutions across home health, hospice, and community-based care settings. My goal as a rural homeopathic doctor is to provide accessible, holistic, and patient-centered care to underserved communities. I am committed to integrating traditional homeopathic principles with modern medical understanding to promote wellness, prevent disease, and address the unique health challenges faced in rural settings. Through compassionate care and community engagement, I aim to empower individuals to take charge of their health and improve the overall quality of life in the region.

OS4-1 Stephanie Smith
"Behind Barbed Wire: The Forgotten History of German and Italian POWs in the American South"
Abstract: During World War II, thousands of German and Italian prisoners of war (POWs) were held in camps across the United States, including facilities at Fort Benning, Georgia, and Opelika, Alabama. This project explores the history of these POW camps, shedding light on their establishment, daily operations, and the experiences of the prisoners and local communities. Through archival research, personal letters, memoirs, and interviews, this study aims to provide a human-centered narrative that brings history to life.

The project will examine how these camps functioned as part of the broader POW system in the U.S., detailing the conditions, labor contributions, and interactions between prisoners and American military personnel. Beyond historical records, this research will incorporate personal stories of individual POWs, highlighting their struggles, adaptation to camp life, and, in some cases, friendships formed with Americans. These accounts will reveal the complex dynamics within the camps and challenge common perceptions of enemy combatants during wartime. By focusing on personal narratives, this project seeks to illustrate how these camps were more than just military facilities—they were places where cultural exchanges, resilience, and even moments of humanity emerged unexpectedly. The legacy of these camps remains an often-overlooked chapter in WWII history, and this study aims to contribute to a broader understanding of their impact on both the prisoners and the communities that housed them.

OS4-2 Dalton Warren

The effects of natural products on the growth of docetaxel resistant Androgen Independent Prostate Cancer stem cells

Abstract: Androgen Independent Prostate Cancer is a very aggressive and advanced form of prostate cancer, and there is no targeted treatment available for this subtype of prostate cancer. Chemotherapy drugs like docetaxel are prescribed for AIPC patients. Chemotherapy is cytotoxic and has various side effects, as it cannot differentiate between normal fast-dividing cells and fast-dividing cancer cells. Docetaxel kills most cancer cells, but some cells are resistant to docetaxel. These resistant cells survive; they express cancer stem cell markers and are responsible for cancer relapse. In this project, we are studying if the chemicals in natural products like ginger, turmeric, herb (ashwagandha), grapefruit, lemon peel, etc., can kill docetaxel-resistant AIPC stem cells. We are working with prominent chemicals in natural products like Withaferin A in Ashwagandha, Curcumin in turmeric, 10-Gingerol in ginger, etc. Natural products are well tolerated by the human body, and they will be a great substitute for chemotherapy which is toxic for the human body.

GF1-1 Gaurob Saha

Optimizing Large Language Models: QLoRA-Based Fine-Tuning for LLaMA 2 Using 4-Bit Quantization.

Abstract: Fine-tuning large language models (LLMs) efficiently while maintaining performance is a key challenge in AI research. This study explores QLoRA-based fine-tuning for LLaMA 2 (7B) leveraging 4-bit quantization to optimize computational efficiency. Two distinct datasets are used: an academic publication and citation dataset from Google Scholar and an entrepreneurship dataset containing survey responses from 150 entrepreneurs. This research aims to enhance model adaptability and performance while reducing resources overhead. The evaluation focuses on model accuracy, efficiency, and practical application in various domains. This research focuses on the improvement of LLM fine-tuning methodologies and their application in real-world scenarios.

GF1-2 Qi Zou

Mechanical design and analysis of a novel single-loop eight-bar linkage mechanism with infinite bifurcation points

Abstract: The single-loop linkages with kinematic bifurcation have attracted increasing interests due to their multiple operation modes without disassembly the whole structure. The potential application includes large-scale deployable structures and origami art. The project aims to propose a novel parallel mechanism based on the Sarrus linkage. The potential industrial application criteria are decided and the mechanism can be identified later with a proper method to integrate various assembly modules. The mechanical design, kinematic and bifurcation analyses and experimental verifications will be conducted.

GF1-3 Arpan Bosmia

Exploring New Teachers' Preparedness for Student Behavior Management

Abstract: Classroom management is a crucial skill for new teachers, yet many enter the profession feeling unprepared to handle individual student behavior effectively. Recent peer-reviewed research examines the factors contributing to student misbehavior, the most prevalent behavioral challenges in classrooms, and the gaps in teacher preparation programs concerning behavior management. To address these shortcomings, various studies explore potential solutions that teacher preparation programs can adopt to enhance behavior management training. These solutions include micro-teaching, the Plan-Do-Study-Act (PDSA) Cycle, the Pyramid Model, and Mentor Blended Learning with Massive Open Online Courses (MBM). Implementing these evidence-based strategies in teacher preparation programs can bridge the gap between theory and practice, ultimately equipping new teachers with the skills needed to foster a positive and productive classroom environment.

GF1-4 Jennifer Lovelace

Faculty Perceptions of What Works (and what doesn't) in Doctoral Retention

Abstract: Research consistently shows that the relationship between a doctoral student and their major professor or dissertation chair, is the primary predictor of success (or failure) when pursuing a doctoral degree. Doctoral students come into a doctoral program with a limited knowledge of the importance of this relationship; so we've turned to the resident experts to find out what works and what doesn't work in doctoral student retention. This presentation will highlight the results of a qualitative inquiry into the faculty perceptions of what works (and what doesn't) work in doctoral retention. We asked experienced dissertation chairs to tell us about their experiences – both good and bad – in working with doctoral students and to outline for us the most helpful bits of advice in what students should be doing and should avoid doing to be most successful in their programs.

GF1-5 Rahul Raj Yesem Kurt-Peker

Homomorphic Encryption for Statistical Confidentiality

Abstract: "Statistical confidentiality is the protection of data while ensuring it can be used for statistical purposes. It involves reducing the risk of identifying individuals from data collected

for research or statistical analysis and ensures that data collected for statistical purposes is used exclusively for those purposes. Statistical confidentiality provisions enable aggregate statistical analysis while preserving the anonymity of data subjects.
Data collectors use techniques such as encryption, access control, anonymization, and differential privacy to comply with statistical confidentiality requirements. While these methods provide varying levels of protection, they often have limitations, particularly when plain data, though not directly linked to individuals, remains accessible. Homomorphic encryption allows computations on encrypted data without revealing it to anyone other than an authorized collector. When combined with other techniques, homomorphic encryption offers an ideal solution for ensuring statistical confidentiality. TFHE (Fast Fully Homomorphic Encryption over the Torus) is a fully homomorphic encryption scheme that supports efficient homomorphic operations on Booleans and integers. In this study, we investigate the use of TFHE for conducting statistical analysis on encrypted data. Using Concrete, a compiler for TFHE that converts Python programs into FHE equivalents, we implement various statistical formulas on encrypted data. When necessary, we adapt the formulas to enable efficient and practical homomorphic computations. We report our findings on the efficiency and accuracy of these operations, providing insights into the potential of TFHE for secure statistical analysis."

GF1-6 Shanda Patterson

"Intervention to Educate on the Benefits of Semaglutide Use to Fight Obesity, Heart Disease, and Type 2 Diabetes: The Trifecta Effect"

Abstract: "Background: Obesity is a leading cause of declining health worldwide, contributing to increased risks of cardiovascular disease, type 2 diabetes, and other comorbidities. Semaglutide, a GLP-1 receptor agonist, has emerged as a promising intervention for addressing these interconnected health challenges.
Objective: The purpose of the presentation is to provide the participant with the following:
1. Determinative in adult patients aged 18-55 years, does the use of semaglutide (maintenance dose of 0.5 to 1 mg weekly) compared to no semaglutide use prove as a healthy intervention to reduce obesity, heart disease, and type 2 diabetes?
2. Examine and analyze semaglutide's mechanism of action.
3. Discuss semaglutide implementation at national, state, and local levels
Methods: A comprehensive review of current literature and clinical studies was conducted to examine semaglutide's effects on weight management, cardiovascular outcomes, and glycemic control. Six pivotal studies, including clinical trials, meta-analyses, and real-world evidence, were systematically analyzed to assess the efficacy and safety of semaglutide in managing these health conditions.

Results: Studies proved that semaglutide demonstrated multiple beneficial effects: reduced waist circumference; decreased blood pressure; improved blood glucose levels, and enhanced lipid profiles. The medication works by mimicking GLP-1, a hormone that controls appetite and has anti-inflammatory effects independent of weight loss. Clinical trials showed significant weight reductions| (≥15% in 41.9M persons and ≥10% in 51.8M persons) and potential prevention of up to 1.5 million cardiovascular disease events over 10 years of treatment.
Conclusions: Evidence supports semaglutide as an effective intervention for the concurrent treatment of obesity, cardiovascular disease, and type 2 diabetes. Implementation requires a comprehensive approach that includes patient education, lifestyle modifications, and regular monitoring. Healthcare providers play a crucial role in proper patient selection, education, and ongoing management to optimize outcomes.

GF2-1 Ligia Domenech

Us According to Them: Stateside Portrayals of Puerto Ricans and Their Culture, 1898-2010

Abstract: "The acquisition of Puerto Rico as a colony in 1898 prompted the interest of many in the United States—the military, correspondents, investors, missionaries, politicians, scientists, and tourists. Wanting to know more about Puerto Rico, its inhabitants, and its potential utility, many of these curious but untrained observers visited the island and documented their experiences for the benefit of future visitors. Decades later, readers continue to revisit these writings and create new accounts that explore the "effects of American civilization" on Puerto Rican society.

In ""Us According to Them: Stateside Portrayals of Puerto Ricans and Their Culture, 1898-2010"", I expose the distorted mirror turned on Puerto Rico, one constructed through the eyes of foreigners. I focused on different aspects of mainland US descriptions of Puerto Rican culture—from gender, race, and class to music, religion, and food. Accurate or not, books on Puerto Rico have contained perceptions about Puerto Ricans and their world that continue to shape opinions held by US citizens dwelling stateside. This research explored the lasting impacts of these repeated stereotypes on the collective understandings of both the colonizer and the colonized.

The 132 books written by common Americans who visited Puerto Rico, and that became the sources for this research, were never intended to be read by Puerto Ricans, and have never before been used to explain the colonial relationship they recorded. In this sense, this research represents a pioneering way of researching colonialism and its effects in the colonized from the perspective of the colonizers."

GF2-2 Sarah Braswell

"SLO" Down, I've Got You in My "SI"ghts: Crafting Supplemental Instruction Outcomes for Student Success

Abstract: "For the course-long project in CSU's EDHE 6175, students were guided through the systematic development of Student Learning Outcomes (SLOs) for an existing program within their employing institution, followed by the creation of aligned Learning Modules and, ultimately, a mapping of these elements to the institution's strategic plan. Chemistry Supplemental Instruction (SI) at South Georgia State College (SGSC) was selected as the focal program by this author, given its integral role in her position and its pivotal role in advancing student success initiatives at her home institution.

The process involved the formulation of targeted SLOs designed to address persistent challenges in students' comprehension of fundamental chemistry concepts. These SLOs were constructed to emphasize foundational skills, enhance analytical competencies, promote collaborative learning, and foster a growth mindset.

After SLO development, subject-specific Learning Modules were crafted to address the unique challenges encountered during Chemistry SI sessions. Rather than relying solely on traditional performance metrics, these modules focused on achieving concept mastery, refining systematic problem-solving strategies, and cultivating effective study habits. This approach provided immediate, actionable techniques that support both short-term academic improvement and long-term scholarly progression.

The curriculum mapping exercise confirmed a robust alignment between the instructional strategies employed in SI and the broader institutional mission. This integrative framework not only validates the importance of targeted supplemental instruction in enhancing content-specific outcomes, it, also, provides a defensible rationale for the essential role of SI – particularly within STEM courses – in achieving institutional goals."

GF2-3 Luka Wilmink, Marshall Williams, Jitha Priya Kambhampati, and Walker Smith

Adaptive Game-Based Learning for Children with ADHD: A Fuzzy User Model Approach

Abstract: "Attention-deficit/hyperactivity disorder (ADHD) affects approximately 7% of the global population, presenting significant challenges for children in traditional educational settings, which are primarily designed for neurotypical students. This often creates a learning gap between students with ADHD and their peers, highlighting the need for effective support strategies.

This project implements a game-based learning environment for children with ADHD and explores the use of a fuzzy user model to provide an adaptive learning experience tailored to each child's progress and skill level. At its core, the game utilizes a fuzzy user model designed to adjust educational content in real-time based on student performance, offering personalized feedback and pacing to enhance engagement and

learning. By customizing content, the system aims to reduce the learning gap and improve academic outcomes for students with ADHD.
The system's effectiveness will be evaluated through pilot testing and feedback from both students and educators. The expected outcomes include enhanced academic performance, greater engagement for students with ADHD, and a more inclusive educational environment. This study seeks to contribute to the field of adaptive learning technologies and may have broader implications for inclusive education systems, offering insights into how personalized learning tools can support diverse learners."

GF2-4 Mohammad Jafari

Machine Learning-Driven Control of Autonomous Vehicles for Solar Panel Cleaning Systems in Agricultural Solar Farms

Abstract: This research introduces a machine learning (ML) method for the advanced control of Autonomous Vehicles (AVs) used in systems designed to clean solar panels, with the goal of addressing challenges that arise from uncertainties, disturbances, and dynamic settings. Solar panels, primarily located on dedicated land for solar energy production (for instance, agricultural solar farms), are prone to the buildup of dust and debris, which reduces their energy absorption ability. Rather than relying on labor-intensive manual cleaning, robotic cleaning systems provide an effective alternative. AVs designed to transport and accurately position these cleaning robots are crucial for efficient navigation through solar panel arrangements. Nonetheless, environmental challenges (such as uneven terrain), differences in solar panel setups (like varying heights and angles), and uncertainties (including AV and environmental modeling) can diminish the effectiveness of conventional controllers. In this work, a biologically inspired approach based on Brain Emotional Learning (BEL) is formulated to address these challenges. The proposed controller is numerically implemented using MATLAB-SIMULINK. The study concludes with a comparative evaluation of the AVs' performance utilizing both PID and the newly developed controllers across various scenarios, emphasizing the effectiveness and benefits of the intelligent control strategy for AVs employed in solar panel cleaning systems in agricultural solar farms. The simulation results reveal the superior efficacy of the ML-based controller, demonstrating marked enhancements when compared to the PID controller.

GF2-5 Akshith Nukala, Shashank Kammanahalli Chandra Sekhara, Mcandrew Okwei

AI-Driven Fault Detection and Prediction in Building Energy Management: A Scalable Cloud-Based Approach

Abstract: Given the rise in energy consumption across the globe, it is necessary to efficiently manage buildings' energy consumption. Faults in energy consumption when left unchecked can lead to excess cost or operational failure. By leveraging artificial intelligence and machine learning techniques, we can predict and classify faults in energy consumption, providing insights on actions to mitigate it. In this study, we propose a data engineering and machine learning

architecture deployed on a cloud platform to predict energy consumption across multiple building types. The dataset includes hourly energy consumption, weather conditions, and occupancy data from buildings categorized by function. From outlier detection to feature engineering and selection to prediction, the study provides a detailed comparative analysis on methodologies for implementing a scalable and efficient framework for buildings' energy management systems. Experimental results show that the Extreme Gradient Boosting Machine (XGBoost) yields the highest prediction accuracy across building types, while Bollinger Bands emerge as a promising method for fault detection and classification.

GF2-6 Jocelyn Richard

Utilizing Narrative Video Messages to Recruit Generation Z in Higher Education

Abstract: "Many four-year institutions in the Georgia University System are concerned about low enrollment rates. This paper explores how narrative video messages can be an impactful foundational framework for planning strategic social media marketing campaigns to engage potential students in a university's recruitment process. To increase enrollment, colleges must engage in innovative recruitment marketing strategies to capture the attention of potential students shopping for a college fit. The current traditional first-year college cohorts are part of Generation Z, which was born between 1997 and 2012. Generation Z is technologically savvy and is the first generation to have communication technology and the Internet at their fingertips since birth. Because Generation Z is a digital native and has a strong connection to the Internet and social media, universities should transition from traditional media channels to digital media and consistently update their social media on video-sharing platforms to make them more relevant to Generation Z. Higher education institutions are mandated to create media that resonates with the unique culture of digital natives. More than 50% of Generation Z use video-sharing platforms daily for educational purposes, information, and to connect with brands. However, many universities do not consistently use video marketing strategies to enhance brand awareness and establish credibility among their target audiences. To respond to a potential student's relationship with social media and technology, colleges can use their organizations' social media platforms to present authentic narrative-style video messages that highlight offerings that resonate with the core values of today's first-year college students."

GF2-7 Kendall Forde

Using the College Choice Model to Examine Why HBCU Graduates choose to attend PWI for Advanced Studies

Abstract: This study aims to examine why African American students choose to attend Historically Black Colleges and Universities (HBCUs) for undergraduate and Predominately White Institutions (PWI) for graduate studies. Many college students have extenuating circumstances that influence their decision to seek higher education, specifically, HBCUs. The path to obtaining a college education can be elusive to these students. The study will investigate student influences and the objectives of college decisions. Also, understanding institutions influences recruitment, retention, and college choice. The study will explore the comprehensive and understanding of African American students of various backgrounds, also, understand the

experience of African American students excelling in their academic, social, and personal lives during their undergraduate studies. To examine HBCUs' unique approach and commitment to providing quality education to all students regardless of social status. Yet, after graduation, many African American students seek advanced certification or degrees, however, not at their original institution or another HBCU.

ART1-1 Rohan Shah

What are we losing when we use AI? The consequences of a culture of indulgence.

Abstract: As we progress further in the 2020s it becomes ever more apparent that the technological advent of generative artificial intelligence is here to stay and increase in prominence. Student populations are quick to take advantage of this tool to accelerate their academic or individual pursuits, however, this acceleration comes at a cost. The goal of my film will be to interview students and faculty to uncover what they lose when using AI, and what they use their time gained for. Ultimately, this will serve as a multi-perspective documentary that uses the voices of differing levels of academia to comprehend a subtle growing trend in society.

ART1-2 Cristhel Corpeno

Terra Guatemala Kite Making Kit

Abstract: The Terra Guatemala Kite Kit was designed to provide an interactive and educational experience inspired by the Sumpango Kite Festival, a significant Guatemalan tradition celebrated during Día de los Muertos. This festival is renowned for its vibrant, handcrafted kites, which serve as a powerful means of honoring ancestors and expressing cultural identity. My goal in developing this kit was to make this tradition more accessible while fostering a deeper appreciation for Guatemalan heritage. I wanted to ensure that my design was inclusive to tourists and visitors, allowing them to feel welcomed and encouraged to actively participate in these traditions rather than simply observing them. Created for Terra Guatemala, a company focused on cultural and environmental tourism, the kit provided all the necessary materials and instructions for assembling a traditional kite. By offering a hands-on experience, it encouraged users to engage with Guatemalan craftsmanship, history, and artistic expression in a meaningful way. The package design was thoughtfully crafted to serve a dual purpose, functioning not only as the kit's container but also as a practical, reusable storage box for the kite once assembled. The packaging incorporated traditional Mayan patterns, paying homage to the indigenous roots of this craft and emphasizing the cultural significance of the Sumpango Kite Festival. Additionally, the brochure included in the kit provided an overview of the Sumpango Kite Festival, explaining its cultural significance while also serving as a detailed instruction manual to guide users through the kite-making process. Through this project, I sought to bridge cultural traditions with interactive design, making the art of kite-making more approachable while ensuring that its deep-rooted significance in Guatemalan heritage is both preserved and celebrated.

ART1-3 Johnathan Falls, Logan Le

Chatbot conversation

Abstract: The purpose of our project is to have two chatbots talk to each other, this is to demonstrate the knowledge we gained from initializing the chatbot we did earlier this semester. The goal is to have the chatbots speak to each other and continue conversing until they stop pulling answers from the chatbot's api responses (we will be limiting both chatbots to only 10 responses). The input of the project will be 10 questions we will have the chatbots and the 2 original chatbots we will based ours off of(probably chatbot gpt) and pull the answers the chatbots will respond with from their list of responses. The output will be a conversation between the two chatbots with one asking a question responding before asking its own question. We will be using word2vec and as stated, most likely using the chatbot gpt model for the chatbots. We should be able to complete this project within a week, two at most if problems arise.