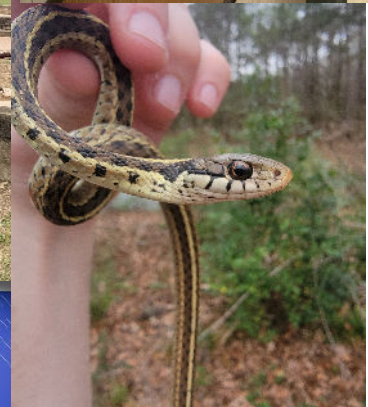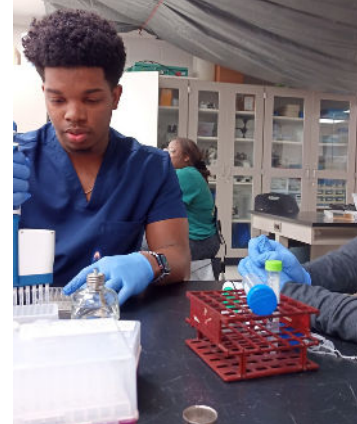# AUM
EXPERIENTIAL EDUCATION AND ENGAGEMENT CENTER

Celebration of Research, Creative Activity, and Community Engagement

April 26, 2024

Message from the Provost

Greetings to the AUM Community,

It is truly a pleasure to welcome you to the 4th Annual Celebration of Research and Creative Activity! It is of the essence to celebrate our undergraduate and graduate students' achievements and acknowledge their milestones with heartfelt appreciation. This celebration gives our cherished students an opportunity to share their research university-wide with research posters and creative activity exhibits!

The Office of the Provost has vigorous goals for AUM in the areas of research, creative activity, and community engagement benefitting faculty, staff, students, and our local community. AUM's strategic plan includes a purpose to enhance a research culture and investigative community supporting quality teaching and educational programs. In support of this aim, AUM has secured a National Institutes of Health (NIH) grant award in the amount of $625,535 to build our research enterprise's capacity and infrastructure over three years, and to host various research events featuring speakers from NIH and other experts from premier research institutions. As a result, more faculty and students are engaged in funded research and collaborations. Significant efforts have been made to empower our faculty and staff to be more aggressive and successful in receiving awards from top external funding agencies. As a result, faculty and staff submitted a total of 40 grants/contracts proposals in the amount of $22,516,095 in fiscal year 2023 with the support of the Office of Sponsored Programs and Research (OSPR). Dedicated to expanding the research enterprise at the university by supporting and enabling faculty and staff, OSPR has undergone significant expansion.

Additionally, AUM has increased its support of faculty and students monetarily to support research-related efforts through its Grants-in-Aid Program, Graduate Student Research Advisory Committee,
and the Undergraduate Research Council Committee. Experiential Education and Engagement Center (EEEC) has reported the funding of 81 faculty research projects in the amount of $234,991 (mini-grants) and has provided 133 students with scholarships for directed research/internship courses in the amount of $64,533 since Spring 2021. The results of our research, creative activity, and community engagement endeavors are positively impacting society and our economy, and is being shared nationally through various platforms!

Congratulations to all participants! Thank you greatly for your valuable contributions to our research
goals!

Go Warhawks!

Mrinal M. Varma, Ph.D.

A Message from the Experiential Education and Engagement Center

Thank you for participating in and attending the 2024 Celebration of Research, Creative Activity, and Community Engagement. This event was made possible thanks to the vision, dedication, and support of Provost and Senior Vice Chancellor Dr. Mrinal Varma.

Faculty and students have worked diligently to demonstrate what they have learned and discovered through research and creative activity under the direction of their faculty mentors.

This year, the Celebration of Research and Creative Activity is expanding to include graduate presenters. This change reflects our center's commitment to cultivating research opportunities and showcasing the work of all AUM students. We hope that this event will inspire students to participate in research and creative activity in the future.

We ask that student presenters complete the survey below so we can learn more about their research and the impact research has had on their academic career.

AUM

EXPERIENTIAL EDUCATION
AND ENGAGEMENT CENTER

Celebration of Research and Creative Activity
and Community Engagement
Friday, April 26, 2024
9:00 am - 12:00 pm

Schedule

9:00 am	Poster setup (Taylor 230 and Goodwyn Lobby)
9:30 am	Breakfast
10:00 am	Welcome: Dr. Varma, Provost and Senior Vice Chancellor
	Introductions: Scott Sterling
	Student Speaker: McKenna Odom
	Community Engagement Recognition Award Ceremony
11:00 am – 12 pm	Poster presentations (Taylor 230 and Goodwyn Lobby)

Community Engagement Recognition

Community-Engaged Learners

Ariel Rosse

Major: Biology Pre-Health

Hometown: Birmingham, Alabama

Engaging with the community has taught me how to be selfless. You never know what others are going through, so I try to always remember to show compassion and understanding to the people around me. I have been able to meet so many amazing people, and I will always value and cherish the lives I've touched and the people I've met.

Chanju Chung

Major: Biology & Chemistry

Hometown: Montgomery, Alabama

Being exposed to the world of marginalized citizens, although indirectly, made me realize their uniqueness and stories. It gave me the opportunity to recognize the accidental nature of my position and helped me think about and articulate goals to contribute back to society.

Jahari Foster

Major: Fine Arts

Hometown: Montgomery, Alabama

Community engagement has impacted me by giving me an opportunity to hear other people's stories as well as help other people.

Kayla Norris

Major: Biology and Environmental Science

Hometown: Titus, Alabama

Community engagement has helped me get out of the hobbit lifestyle we all became accustomed to during and after COVID-19. I appreciate everyone on the team, and I have made so many new acquaintances to add to my repertoire while also helping out so many others.

Neporshaie Jones

Major: Instructional Leadership

Hometown: Lanett, Alabama

Engaging within the community has impacted my life in such a beautiful way. Helping out in the community has increased my awareness of the needs of the community. I have become more intentional and have built lasting relationships that foster truth, honesty, consistency, and resilience. Engaging within the community personally has equipped me with the knowledge of what's going on around me and finding targeted solutions to help combat the issues at hand, and sharing the issue via social media where everyone within the community are also aware. In continuing this journey to help serve my community in a huge way. I hope that the services I've done and will continue to do, will impact others to want to make a change.

Nigel Kelley

Major: Communications/Theater

Hometown: Birmingham, Alabama

Working with the community has expanded my social circle, while making it easier for me to build connections with my peers and faculty. Also, it helped me better understand the opportunities that are provided around the area. Dealing with the community also gave me a chance to get a better understanding of managing my time with classes and events; I believe everyone should have a chance to do something like this to better themselves and others, just like it did for me.

Prinali Patel

Major: Finance and Economics

Hometown: Montgomery, Alabama

Engaging with my community over the past 12 years has been incredibly rewarding. Through leading and advocating for fellow students, I've developed invaluable skills, forged meaningful connections, and created lasting memories. Interacting with a diverse range of individuals, from faculty members to peers, has played a pivotal role in shaping me into the confident and empathetic leader I am today.

Shakendria Adams

Major: Kinesiology

Hometown: Covington, Tennessee

Academically, being involved in the community has broadened my understanding of the various ways to learn while experiencing real-world situations to add to my academic growth. Professionally, working in the community has given me more opportunities to network with great people; allowing me to have access to the right resources and be aware of more open doors. Personally, I've been able to meet great people who have helped me with the next steps in my career. I have had the opportunity to help with "Dream Court" and "MANE" and presented at the "National Academy of Health and Physical Literacy" conference, informing people about Brain Pump with Mrs. Neely and teaching urban line dances with two of my classmates. While there, I was able to spread positivity, develop new relationships, network for future job opportunities and witness cultural awareness.

TyKeyia Buchannon

Major: Kinesiology

Hometown: Auburn, Alabama

Engaging with the community has helped me learn more about myself. Engaging with different people who helped me learn new things about myself which will help me in the long run.

Community Engaged Faculty

Phill Johnson

Hometown: Joplin, Missouri

Community engagement has been transformative, shaping my values, skills, and relationships, and instilling a sense of responsibility to contribute positively to the world around me.

Community Engaged Staff

Catherine Statam

Hometown: Montgomery, Alabama

Having moved to Montgomery five years ago from another state, community engagement has provided an education of services available to the community as well as a sense of belonging.

Tara Woods

Hometown: Montgomery, Alabama

I made a goal to challenge myself to actively listen and engage with others in our community. I made a goal to challenge myself to actively listen and engage with others in our community. Participation in various events and seminars has expanded my knowledge and presented a compassionate understanding of the challenges and societal issues our local and regional communities face. Listening to voices of change and inspirational stories has motivated me to reflect on what I can do to serve others. From volunteering, acts of service, taking time out of our day to listen, or just simply sitting with someone in silence, there are so many ways to contribute and make an impact to better our community.

"The world is so much larger than I thought. I thought we went along paths—but it seems there are no paths. The going itself is the path." — C.S. Lewis

Sustainable Agricultural Education: Utilizing the EE21 Survey for Program Evaluations

Presenter(s):
Joi'a Austin and
Nikki Phaly (Elementary Education)
Abbigail Murphy (Early Childhood Education)

Faculty Mentor(s):
Nicholas Bourke
Traci Kell

The McDowell Farm School (MFS) is a sustainable agricultural center located in the Southeast USA which hosts groups of students for first-hand experiences on a working farm in an overnight field trip format. Researchers from AUM conducted a program evaluation of MFS to document the impacts of field trips to the center on visiting students and to document the extent to which MFS is meeting the needs of visiting teachers and their students. As part of this program evaluation, the researchers validated the EE21 survey for use with sustainable agricultural education centers. The survey was delivered to students visiting the MFS. Survey results indicate knowledge growth in students and positive changes in students' attitudes toward sustainable agricultural education.

The Natural Art of Play

Presenter(s):
Joi'a Austin (Elementary Education)

Faculty Mentor(s):
Jan Hogan

The Natural Art of Play was a hands-on workshop intended to re-awaken the creative nature of all educators. Through everyday items and ordinary objects found in nature, creativity became ignited and individual works of art became the catalyst for imaginative play. Workshop attendees completed this session with fresh enthusiasm for classroom creativity and learned the importance of tapping into the resource that grows stronger with every use...creativity.

Optimizing Asthma Management in College Students

Presenter(s):
Lindsey Barton (Nursing)

Faculty Mentor(s):
Courtney Bagents Cochran

Asthma is a chronic disease characterized by chronic airway inflammation, bronchial hyperresponsiveness, and airflow obstruction that results in symptoms of shortness of breath, cough, and wheezing. Goals of asthma management are reduction of symptoms, maintenance of quality of life, and prevention of future risks. Current guidelines recommend routine screening of controlled asthma and more frequent screening for uncontrolled asthma. The transition from adolescence to adulthood is a vulnerable time, especially for those with chronic illness such as asthma. Guidelines recommend a formal transition process from pediatrics to primary care. College can affect this transition and asthmatics can be lost to follow up. Moving into a dorm, school and social stressors, and environmental factors can increase risk for asthma exacerbations. Therefore, an organizational assessment was performed at Auburn University at Montgomery's student health center. A gap analysis was performed, and a process improvement need was identified. A quality improvement project was implemented

over a 3-month timeframe. Individuals who presented to the student health center were screened during the triage process to identify those with asthma or asthma-like symptoms. For those who met inclusion criteria, the Asthma Control Test was used to assess asthma control and severity. Routine asthma screening resulted in a 47% increase in identifying individuals with asthma compared to pre-intervention data. Use of the Asthma Control Test identified 26 individuals (72%) with controlled asthma, 8 individuals (22%) with poorly controlled asthma, and two individuals (6%) with uncontrolled asthma. Adjustments in medication regimens occurred for all individuals identified as having poorly controlled or uncontrolled asthma and follow up appointments were given.

The Effect of Sick Leave Access on Absenteeism Behavior in the Labor Force

Presenter(s):   *Faculty Mentor(s):*
Macy Beeler (Economics)   *Agnitra Roy Choudhury*

By using the data at the state-level population on the states that offer paid sick leave collected from IPUMS, I have been able to study the correlations and regressions on the effects of absenteeism behavior by having access to sick leave in the states that offer sick leave to their employees. By looking at the different races, ages, and industries, I have been able to read and understand that some industries are more affected by this policy than others and that the lower skill level occupations have a much more significant effect. Overall, having access to sick leave does not have any statistically significant effect on the absenteeism behavior of the people who are currently in the labor force.

Respecting the Past, Empowering the Present: NAGPRA, College Students, and Renewed Commitment to Indigenous Heritage

Presenter(s):   *Faculty Mentor(s):*
Sarah Bishop (Sociology)   *Megan LeBlanc*
Hunter Bobbitt (History)

The archaeology lab at Auburn University at Montgomery (AUM) has seen several changes over the last year regarding updates to their policies, protocols, and practices associated with their Native American Graves Protection and Repatriation Act (NAGPRA) collections. Students were trained in a hands-on lab setting in both the legal details and the practical aspects of completing the NAGPRA process. The practices conducted by lab personnel focused on training undergraduate student assistants in the proper procedures for documenting NAGPRA collections, cultural sensitivity, and the decolonization of collections management practices. Involving students in NAGPRA initiatives is an important way to teach the next generation of archaeologists to be respectful and collaborative researchers. Our goal as a lab is to not only develop our own skills as NAGPRA professionals, but also to bring awareness to NAGPRA in the broader AUM community.

Why Aren't Orangutans Extinct?

Presenter(s):
Sarah Bishop (Sociology and
Anthropology)

Faculty Mentor(s):
Brett Lehman

"The great ape subfamily known as Ponginae, or Asian Hominids, has existed since the Miocene, around 23.03 million years ago. It currently contains eight possible known species, all of which have been extinct for millions of years, except for one. Orangutans, or Pongo, have been around for about twelve million years. The question I wanted to answer was "why have orangutans survived from the Pleistocene to modern day.

Prescribe Parent-Child Playful Time for Child Misbehavior

Presenter(s):
Nicole Bloch and
Uzoechi Precious Nwadiaro
(Clinical Mental Health Counseling)

Faculty Mentor(s):
Yuh-Jen Guo

Parent-Child interaction strongly associates with the development of parent-child attachment and child development. Attachment serves as a foundation for important development of children and their behavior. When the society has advanced to rely on digital devices, such as television, mobile phones, computers, etc., in daily life, this advancement changes the way how children play and spend time with parents. The reduced parent-child playful time raise concerns in child development and parenting. This study explored how parent-child playful time could influence children's behavior,
especially misbehavior. The outcomes indicated positive development in child behavior and attachment through parent-child playful time.

Preliminary Effects of Implementing the Good Behavior Game on Special Education Student's Behavior and Academic Engagement

Presenter(s):
Halee Burdick
(Collaborative Teacher K-6)

Faculty Mentor(s):
Sara Bicard and Kate Simmons

The Good Behavior Game (GBG) is a positive behavior support frequently used in classrooms involving group-oriented contingencies for academic and social behaviors. Groves, et. Al (2022) called for more research on GBG in special education classrooms. This study was conducted in a small group setting in a special education classroom with 12 second and fourth

grade students with ADHD and behavior disorders. A single subject reversal design was used to compare the effects of GBG and no GBG on the academic engagement and behavior of the participants. Preliminary results indicate that GBG improved the academic engagement and behavior of 11 participants.

Analysis of a Policy for Coumadin Monitoring in the Long-Term Care Setting

Presenter(s):
Oluwafunke Chukumah (Nursing)

Faculty Mentor(s):
Courtney Bagents Cochran

Residents in long-term care (LTC) facilities are frequently exposed to multiple medications which may include anticoagulants such as Coumadin. Residents in LTC often suffer adverse outcomes due to ineffective procedures and protocols as well as inconsistent monitoring and adherence. Problem. To address the identified gaps, this project examined effective policy analysis procedures for the management of Coumadin when used with residents admitted to LTC settings. Methods. This project utilized a descriptive quantitative design, involving a survey method for collecting data using a Likert-scale questionnaire. Of the 52 nurses employed at the LTC facility, 27 nurses were available during the 2 weeks of the survey and participated by responding to the closed-ended questions. Results. 37% of the participants were aware of the policy for Coumadin administration, 22.2% were not aware of the Coumadin logbook for International Normalized Ratio (INR), 63% of participants understood the importance of monitoring INR, 11% of participants could not comply with the Coumadin policy, nearly half of the participants contacted physicians (51.9%), and 48.1% of the respondents could frequently verify the lab results. Conclusion. The findings indicate a need to initiate a quality-improvement process targeting human resources, the organizational environment, and Coumadin-policy components to increase the compliance level among the nursing staff.

Aerobic Fitness Calibration of Kinesiology Majors

Presenter(s):
Hayes Colvin and
Amana Diab (Exercise Science)

Faculty Mentor(s):
Angela Russell

Undergraduate Kinesiology majors are required to pass a physical fitness test prior to graduation. However, increasing numbers of students are not passing the aerobic fitness portion of the test. Anecdotal evidence suggests that many students do not hold accurate beliefs about their actual level of aerobic fitness, which may affect their behaviors regarding preparation and training for the fitness test. PURPOSE: The purpose of this study was to examine Kinesiology majors' calibration with regard to their aerobic fitness level. METHODS: Thirty-two healthy Kinesiology students (8 male, 24 female) between the ages of 19 and 28 (mean age 21.4 ± 2.0 years) participated in the study. Participants first completed the PAR-Q to determine medical eligibility to participate, and were then asked to describe their aerobic fitness level as one of the following: well below average, below average, average, above average or well average. Participants were then asked to complete the Queens College

Step Test to determine actual aerobic fitness level. Chi-square was then used to examine the relationship between participant-estimated aerobic fitness category and observed fitness category. RESULTS: 40.6% of students self-selected average (n = 13), 31.3% self-selected above average (n = 10), and 9.4% self-selected well above average (n = 3). Only 1 subject self-selected the well below average category, while 4 subjects (12.5% of the sample) self-selected below average. Based on the pulse following the 3-minute step test, 18.8% of subjects (n = 6) were classified as average, 9.4% of subjects (n = 3) were classified as above average, and 56.3% of subjects (n = 18) were classified as well above average. Five subjects (15.6% of the sample) were unable to complete the step test. CONCLUSIONS: Only a quarter of the subjects in the present study correctly estimated their aerobic fitness level. While the chi-square test was not significant, students with the poorest fitness who were unable to complete the step test overestimated their aerobic fitness level, while those with higher levels of fitness largely underestimated their aerobic fitness. Overestimation of aerobic fitness could potentially negatively influence student decisions regarding training in preparation for the fitness test.

Do Businesses Safeguard Assets From Terrorist Attacks?

Presenter(s):   *Faculty Mentor(s):*
Riley Copeland (Business)   *Christine Harrington*

This research project explores the extent to which businesses safeguard their assets from terrorist attacks, investigates the significance of asset protection, the prevalence of terrorism insurance, and the evolving landscape of the terrorism insurance market post-9/11. Examining federal requirements, insurance regulations, and terrorism insurance statistics in Alabama, the research shows the factors influencing businesses' decisions to invest in terrorism insurance. Furthermore, it analyzes terrorism insurance risk factors, including business location, cost considerations, and business type, to understand the determinants of insurance adoption.

Who Wins a Dueling Incumbent Primary?

Presenter(s):   *Faculty Mentor(s):*
Robert Crawford (Political Science)   *David Hughes*

In American politics, one often observes that incumbent politicians have a marked advantage over challenger candidates when seeking reelection. This is due to their established name recognition, record of constituency services, donor base, and so forth. Infrequently, however, incumbent candidates face a different kind of challenger—a fellow incumbent. This can occur due to redistricting, which results in multiple incumbents representing the same district. Such a novelty raises an interesting research question: Which incumbent do voters prefer in a contest featuring more than one such individual? Previous works have suggested that the candidate with a larger proportion of retained constituents from previous redistricting cycles enjoys an advantage in these elections (e.g., Ashton, Crespin, and McKee 2022). Nevertheless, every

such study of dueling incumbents relies upon observational, aggregate-level data based upon election returns and US Census data at some geographic level like precinct. In this research, we utilize survey methods to collect voter-level data in order to better understand the unique factors leading individuals to support one incumbent over another. To implement our study, we examine voter preferences for incumbent candidates in Alabama's First Congressional District during the 2024 Republican primary. Due to a Voting Rights Act lawsuit, two Republican incumbents—Barry Moore and Jerry Carl—find themselves drawn into the same congressional district due to the creation of a new majority-minority opportunity district comprising parts of their old districts.

Why Have Some States Abolished the Death Penalty While Others Continue to Use It?

Presenter(s):
Marley Davis and
Savannah Haggerty (Political Science)

Faculty Mentor(s):
Andrew Cortell

This study specifically focuses on comparing Texas (the state that leads the nation in executions) and New York (abolished in 2004)

Molecular Characterization of L-Asparaginase Producing Microbes

Presenter(s):
Asya Davis Katrina Vance, JoAnna
Sheffield, Olivia Taylor, Joy Odums,
Andrea Barnett (Biology) Christopher Kirk
(Chemistry)

Faculty Mentor(s):
Benedict Okeke

L-asparaginase (L-Asparagine amidohydrolase, E.C. 3.5.1.1) is a biocatalyst that converts L-asparagine to aspartic acid and ammonia. L-asparaginase is a valuable enzyme used for the treatment of lymphoblastic leukemia (a type of cancer), prevention of acrylamide formation in heat processed foods and development of biosensor for asparagine. In our previous work, we demonstrated production of L-asparaginase in liquid culture by bacteria and fungi isolated from soil environments. Our present work focuses on molecular characterization of selected L-asparaginase producing bacteria and fungi using 16s ribosomal RNA gene and ITS DNA sequences, respectively. Purified PCR amplicons of 16s rRNA gene and ITS DNA were sequenced. GenBank Blast was used for homology and phylogenetic analysis. Bacterial isolate B1-6 was found to be most closely related to Paraburkholderia caribensis strain MNL-133 (100% homology). B1-7 is most closely related to Pseudomonas mosselii strain ABAP1 (99.88% homology). B1-10 was found to be related to Priestia megaterium strain W1156 (99.89% homology), whereas the closest match for BF1-10 was Sporosarcina luteola strain EB270 (99.55% homology). For our fungal isolates, F1-1 displayed 99.36% homology to

Fusarium falciforme MH859035.1, F1-7 is most closely related to Mucor circinelloides isolate FD (98.98 % homology), and F2-3 showed 99.82 % homology to Mucor janssenii culture CBS:227.29. Future work will focus on cloning, expression, characterization of selected L-asparaginase genes and their potential inhibition of cell proliferation.

Economic Impact of the SuperBowl: A Case Study of Statewide Effects

Presenter(s):
Charlie Elliot (Kinesiology and Economics)

Faculty Mentor(s):
Agnitra Roy Choudhury

The NFL and its committees claim hosting a Superbowl game can bring in 300-500 million dollars of spending within a host city. The Monetary gains of hosting the Superbowl are explicitly published and promoted to state and city governments to influence the importance and prestige of hosting the mega sporting event. However, research shows hosting the Superbowl has mixed effects on economic impact of the host city. Therefore, I have decided to inquire whether this effect would have any significant economic impact when analyzing at the state level. This paper tests the economic affect hosting the Superbowl has on a state when looking at statistics related to income, tax, population, and poverty. Using data from the United States Census Bureau ranging from 2008-2021 providing records for 50 U.S states, on state government tax collections. Multiple regression analysis was used alongside a two-way fixed effects regression analysis to determine whether hosting the Superbowl has any significant effect on economic gains at the statewide level. The results from my research indicate there is no statistical significance to prove that hosting a Superbowl has any tangible gain for a state when hosting the Superbowl. These findings implicate that the NFL needs to do more to reimburse state and city governments financially in order to make hosting a Superbowl and economically beneficial, alternative initiatives and adjustments to the current policy are discussed.

Screening for Depression in the Cardiovascular Patient

Presenter(s):
Maranda Fain (Nursing)

Faculty Mentor(s):
Courtney Bagents Cochran

Depression is an underrecognized burden in patients with congestive heart failure. Evidence supports a link between depression and lower quality of life, increased mortality, and worsening cardiovascular complications such as cardiovascular disease. The American Heart Association (AHA) recommends screening patients with cardiovascular disease for depression with the Patient Health Questionnaire-2 (PHQ-2) depression screening tool, and The United States Preventative Services Task Force (USPSTF) recommends screening all adults over the age of 18 for depression, especially if diagnosed with a chronic illness such as congestive heart failure (Jha et al., 2019). Methods: The purpose of this quality improvement project is to examine heart failure patients, at risk for depression, by implementation of the PHQ-2 screening tool within the Electronic Health Record (EHR) at Montgomery Cardiovascular Associates. The goal is to incorporate clinical guideline

recommendations to screen patients for depression and refer them for evaluation and treatment. Results: A total of 17 patients with heart failure and an ejection fraction of less than 40% were seen during the 3-month timeline. A total of five were screened, and a total of 12 were not screened due to patient refusal. Zero patients were positive for depression. Recommendations: Include all patients regardless of age or diagnosis in the screening. Incorporate the PHQ-2 into the EHR to improve ease of screening. All staff administering the depression screening tool or educating patients on the need to be screened for depression should have evidence-based education. Identify a PHQ-2 champion at the clinic site. Provide individuals with heart failure ongoing information on the risk for depression. Ensure a seamless referral process for a positive PHQ-2.

Structure-Function Relationship of Infectious Hematopoietic Necrosis Virus Matrix (M) Protein: Elucidation Of The Roles Of Conserved Residues In Host Antiviral Responses

Presenter(s):
Lama Fariss (Biology and Health Sciences)
Kaleb Beasley (Chemistry)

Faculty Mentor(s):
Douglas Leaman and Haewon An

Infectious Hematopoietic Necrosis Virus (IHNV) is a member of the Rhabdoviridae family that causes severe viral infection and disease in salmonids. During viral infection, the innate immune system is activated, including upregulation of type I interferons that mediate antiviral responses. We've shown that Rhabdoviral matrix protein (M) plays an important role in blocking cellular gene expression, and thus innate immune responses, by inhibiting host RNA polymerase II. IHNV M protein N-terminal deletions of greater than five amino acids (?5N, ?10N, ?20N) resulted in loss of protein stability/detection, and loss of anti-transcriptional activity. Interestingly, concomitant deletions at the C-terminus (i.e. ?5NC, ?10NC, ?20NC) restored M protein detection and/or anti-transcriptional activity. We hypothesized that M half-life is regulated via an interplay the N- and C-termini such that protein ubiquitination within the C-terminus is prevented by interference by N-terminal residues that, when deleted, results in rapid protein degradation. Potential Lysine ubiquitination sites in the C-terminus were mutated to assess M protein structural stability. Point mutations of three lysines in the C-terminus (K190/193/195A) blocked M instability associated with N-terminus deletions (?5N and ?10N) in a manner that was similar to that observed with the ?5NC, ?10NC, ?20NC variants. These results strongly suggested that these residues are target sites for M protein ubiquitination, and thus impact M stability. Ongoing studies will assess direct ubiquitination of M on the implicated lysines. Future goals are to develop attenuated viral vaccine candidates involving targeted mutations within M to allow infected hosts to mount a better antiviral response.

Exploration of Image Processing and Computer Vison for Recognition of Colonies of Coliform Bacteria in Water Quality Analysis

Presenter(s):
Abria Gates (Biology)
Torry Wilson (Computer Science)

Faculty Mentor(s):
Olcay Kursun and Benedict Okeke

Water pollution by pathogenic agents, notably bacteria and viruses, is a critical public health issue. The presence of Escherichia coli and other coliform bacteria in water indicates potential contamination by pathogens, as these bacteria originate from the gastrointestinal tracts of humans and animals. Coliforms are essential indicators of water quality, with contamination sources including sewage and fecal matter. Traditional methods for identifying coliform colonies on agar plates are time-consuming and costly, involving biochemical and molecular techniques.

This research introduces an innovative approach using two open-source image processing tools, ImageJ for image analysis and OpenCV for computer vision tasks, integrating machine learning (ML) and artificial intelligence (AI) techniques to streamline the analysis of E. coli and Citrobacter freundii colonies. While ImageJ assists in basic image processing and analysis, our focus on OpenCV includes exploring advanced preprocessing techniques. In this research, we used image binarization to convert images into binary images, blurring and connected component analysis to reduce noise, and the Hough Transform for circle detection. These preprocessing techniques are followed by ML classifiers such as Naive Bayes and Logistic Regression for predicting the presence of specific pathogens based on colony radii and shape descriptors.

In our study, we analyzed two images, each containing multiple colonies of Escherichia coli and Citrobacter freundii. Using the two alternative methods, ImageJ and OpenCV, we detected colonies for the two distinct classes. The proposed method is a potential rapid and cost-effective alternative for pathogen detection in water resources. However, the impact of zoom level on features like radius and area is a limitation that needs to be resolved by normalization of features.

Preliminary Teacher Responses about Mental Health Challenges and Interventions in the Classroom

Presenter(s):
Morgan Griggs
(Collaborative Teacher 6-12)

Faculty Mentor(s):
Sara Bicard and Kate Simmons

Secondary teachers in Central Alabama responded to survey questions about the student mental health issues in classrooms and what instructional strategies or interventions are being used to support students struggling with mental health challenges. Preliminary results will be analyzed by themes including prevalence and student symptoms of mental health issues in the classroom, interventions being utilized, and teacher roles and preparedness to teach students with mental health issues.

The Nail Industry

Presenter(s):
Jada Grimmett (Sociology and
Anthropology)

Faculty Mentor(s):
Brett Lehman

Self-care is something that we all enjoy doing from time to time, it gives us the opportunity to relax and reset. There's a saying by Deion Sanders that many people go by, "If you look good, you feel good". A form of self-care that is performed by some women and men is getting their nails done. It is important that we discuss the all-around aspects of nails because doing nails require a lot of health-related care. Doing nails also shows me different aesthetics within each client. It also shows the different feminine aspects of nails as well. For this project, the method of research that I decided to use to collect my data was interviews. During this process, I developed a list of questions that I decided to ask one of the nail techs inside of the nail salon.

Member Disloyalty

Presenter(s):
Savanah Haggerty (Political Science)

Faculty Mentor(s):
Andrew Cortell

A qualitative study of members within the U.S. House of Representatives focusing on the 117th and 115th Congresses. The study is to prove that due to various competing explanations members can become disloyal to their party. Why do members of the U.S. House of Representatives go against their party?

Loss after Victory: Donald Trump in the State of Georgia

Presenter(s):
Mary Katheryne Harris (Psychology)

Faculty Mentor(s):
Andrew Cortell

Donald Trump, while he had won in Georgia during the 2016 presidential election, lost the state in the 2020 presidential election. Georgia had not voted blue since the election of Former President Bill Clinton in 1992. In this project, three explanations are presented to serve as feasible answers to the question. Data is collected in order to determine whether or not these explanations are plausible in answering the question.

The Effect of Football Games on Crime: A city level analysis

Presenter(s):   *Faculty Mentor(s):*
Corey Hines (Economics)   *Agnitra Roy Choudhury*

This paper examines the effect of the results of a National Football League game on the crime of the cities around where the team is based. It will cover the Tennessee Titans of Nashville, TN and will also examine Knoxville, TN, Memphis, TN, Charleston, SC, North Charleston, SC, and Columbia, SC. I have taken different criminal data and alcohol tax data from these cities on the dates of Titans games and days that they are off. These statistics have been compared with each other based on sales tax and outcome of the games to determine a result to if winning games is a cause of more crime in a given city.

Simplifying Protein Structure Prediction Using an Interactive, Educational Visualization Tool

Presenter(s):   *Faculty Mentor(s):*
Nathaniel Hughes   *Sutanu Bhattacharya*
and Eric Graham (Computer Science)

Advancements in contact map-based protein three-dimensional (3D) structure prediction are currently being driven by the evolution of deep learning algorithms. However, a current gap exists in the form of the lack of user-friendly software tools tailored for newcomers to this field. This study introduces GoFold, a novel, standalone graphical user interface (GUI) designed for beginners to perform contact map overlap (CMO) problems for better template selection. While many existing tools cater more to research needs or assume foundational knowledge, GoFold stands out by offering an intuitive, user-friendly platform with comprehensive tutorials. With its ability to visually represent the CMO problem, it allows users to input proteins in various formats and explore the CMO problem. The educational value of GoFold is demonstrated through benchmarking against the state-of-the-art contact map overlap method, map_align, using two datasets: PSICOV and CAMEO. GoFold exhibits superior performance in terms of TM-score and Z-score metrics across diverse qualities of contact maps and target difficulties. Notably, GoFold runs efficiently on personal computers without any third-party dependencies, thereby making it accessible to the general public for promoting citizen science. The tool is freely available for download for macOS, Linux, and Windows.

The Racial Integration of the Alabama Judiciary

Presenter(s):
Nathan Jordan and
Robert Crawford (Political Science)

Faculty Mentor(s):
David Hughes

Scholars of the American South have long noted the struggle to overcome generations of slavery and Jim Crow in public life. One signal of a region's advancement in racial equality is its share of minorities serving in public office. While the literature has exhaustively documented the causes and consequences of racial integration in institutions such as legislative chambers, little is known about the pace of integration of southern courts. This study begins to address this deficiency by examining the racial integration of one Deep South judiciary—Alabama. We examine the appellate courts and every circuit court (trial courts of general jurisdiction in Alabama) judge who served between 1819 and 2020. We identify the period at which racial integration began (1979-present), track the pace of its progress, and examine the factors that hastened (or slowed) this process.

Red State, Responsive State, or Rich State? Medicaid Expansion Adoption by the States

Presenter(s):
Nathan Jordan (Political Science)

Faculty Mentor(s):
Andrew Cortell

This poster includes the major findings and background to my senior seminar project. My project explores which factors influenced states adopting Medicaid expansion policy since the Affordable Care Act of 2010 and subsequent Supreme Court decision made it an optional policy states may decline to adopt.

Study To Evaluate The Effect Of Structured Teaching Program On Knowledge Regarding Newborn Care Among The Antenatal Mothers In Selected Community Area, At Ahmedabad City, Gujarat.

Presenter(s):
Priya Kharadi (Healthcare
Administration)

Objective of the study 1. To assess the pre-test level of knowledge regarding newborn care among antenatal mothers in selected community area at Ahmedabad city. 2. To administer the structured teaching program regarding newborn care among antenatal mothers in selected community area at Ahmedabad city Gujarat. 3. To assess the post-test level of knowledge regarding newborn care among antenatal mothers in selected community area at Ahmedabad city Gujarat. 4. To evaluate the effect of structured teaching program on knowledge regarding newborn care among antenatal mothers in selected community area at Ahmedabad city Gujarat. 5. To find out the association between pre-test level of knowledge regarding newborn care with the selected demographic variables among the antenatal mothers in selected community area at Ahmedabad city Gujarat. Methods: pre-experimental approach was used

with one group pre-test post-test design. The investigator used non-probability convenient sampling technique for selecting 60 samples. A structured knowledge questionnaire to assess the knowledge of the samples. The reliability of the structured knowledge questionnaire was determined by 'test-retest method' and using 'Karl Pearson's correlation co-efficient formula'. Descriptive and inferential statistics was used to analyze the data. Results: majority of the samples 28 (46.7%) belong to the age group of 19 to 25 years, majority 34 (56.7%) of samples were educate higher secondary school level, majority of the samples 39 (65%) were do privet job, majority of the samples 35 (58.3%) were belongs to joint family and majority of the samples 37(61.7%) were earn 11,000/- to 15,000/- per month, most of the samples 32(53.3%) have no child means prime mother. The mean pre-test knowledge score of samples regarding newborn care was 12.30, whereas mean post-test knowledge score was 19.80 with a mean difference of 7.5 and sd pre-test was 2.39 and post-test was 4.24. The calculated 't' value 16.34 was greater than tabulated 't'= 1.98 which was statistically proved at 0.05 level of significance. It revealed that the planned teaching program was effective in increasing knowledge among the samples. The association between the pre- test score and demographic variables was tested using the fisher chi-square test. There was significant association found between pre-test knowledge score and demographic variables such age, type of family, and number of children, thus it was concluded that there was significant association between pre-test knowledge score and the selected demographic variables. Conclusion: this indicates that the planned teaching program was effective on knowledge regarding newborn care among antenatal mother in selected urban area at Ahmedabad city Gujarat.

Optimizing Outpatient Management of Atrial Fibrillation by Screening for Obstructive Sleep Apnea and Subsequent Appropriate Referrals for Testing

Presenter(s):   *Faculty Mentor(s):*
Lauren Knierim (Nursing)   *Courtney Bagents Cochran*

Despite advances in modern medicine and healthcare initiatives, hospital length of stay and overall cost associated with atrial fibrillation remains stagnant. Literature suggests that risk factors associated with rate variability and symptomology of atrial fibrillation are undiagnosed, under diagnosed, or not treated. Research demonstrates that obstructive sleep apnea has a direct effect on atrial fibrillation treatment effectiveness. By developing a quality improvement project that integrates a well-known and valid screening tool for obstructive sleep apnea into the routine visit of the patient with atrial fibrillation, it is expected that outpatient treatment outcomes would be improved.

Ocean Genes: Discovering The Function Of Unknown Membrane Transporters In Ruegeria Pomeroyi Via Cure

Presenter(s):
Julie Langdon (Environmental Science)
Alexze DeJarnett, Sarah Folmar,
Jerome Godwin, Kailey Higgins
J. Ryan McMichael,
Cristopher Webb (Biology) and
Antonio Neal (Interdisciplinary Studies)

Faculty Mentor(s):
Maria Florencia Breitman and James
Kyle Taylor

Carbon is the foundation of all organic molecules and plays a crucial role in climate change. Carbon can be incorporated into biomass, can be sedimented at the bottom of the ocean, or can be in the atmosphere as CO2, making the Earth warmer along with other greenhouse gasses. Studying the oceans is crucial because that's where half of the Earth's photosynthesis happens; and in particular studying bacteria in the ocean is of extreme importance because they drive key steps in the carbon cycle. The bacteria Ruegeria pomeroyi is emerging as a model organism to understand carbon flux in the ocean. Ruegeria pomeroyi has a published genome and is easy to grow in the lab; colleges from UGA have been researching this organism from +20 years, and have developed ~4000 lines of mutants along with lab protocols for the discovery of genes that regulate metabolite uptake. In this work we describe the results of a Course-based Undergraduate Research Course that was conducting in Spring 2024 at Auburn University at Montgomery. In this study, we grew ~ 20 mutant R. pomeroyi bacteria that have unique disruptions in transporter genes for which the substrate taken up by the transporter is unknown, on a variety of substrates. We performed statistical tests to understand if growth was significantly different and we discussed results in light of available literature.

Emerging Designer Mural Project

Presenter(s):
Kelsey LeMaster (Graphic Design)

Faculty Mentor(s):
Breuna Baine

The focus of this project was the development of a student designer driven illustration series created to promote student-life experiences offered here at AUM. LeMaster used visual narrative to research and illustrate 14 large vinyl panels now on display in the Office of Central Advising.

Iran as a Stable Authoritarian State

Presenter(s):
Mirya Lessman (Political Science)

Faculty Mentor(s):
Andrew Cortell

Examination of causal factors for why Iran has remained a stable authoritarian regime since the 1979 Iranian Revolution.

Aniah's Heart Theatre

Presenter(s):
Tara Little (Theatre)

Faculty Mentor(s):
Valeria Winkelman

This is a presentation I made for the ASPIRE Arts Leadership Program at the Kennedy Center American College Theatre Festival Region IV. It is my theatre administration idea about a theatre I would love to create and become artistic director for. Here is the mission statement I created for it: "Aniah's Heart Theatre is dedicated to making a difference in our community by telling the stories of the missing, endangered, exploited, and silenced. Our goal is to bring awareness to our audience and to advocate for victims through live theatre as well as to aid in preservation of life through prevention awareness and provide resources for victims and their loved ones."

Stage Management Fellowship

Presenter(s):
Tara Little (Theatre)

Faculty Mentor(s):
Valeria Winkelman

I was the stage manager for "Red Bike" by Caridad Svich, directed by Val Winkelman. This production was entered into the Kennedy Center American College Theatre Region IV Festival and I was nominated for the Stage Management Fellowship through it. There, I attending workshops about stage management and have been able to learn and grow my skill in the subject, prepping myself for a future career as a stage manager.

Juggling Masterclass: Learn To Juggle A Three Ball Cascade Pattern

Presenter(s):
Tara Little (Theatre)
Chason Marvin (Communications)

Faculty Mentor(s):
Neil David Seibel

Mr. Marvin and Ms. Little co-presented this workshop alongside Professor Sam Wallace at the South Eastern Theatre Convention in Mobile, AL. There, they taught 68 students how to juggle a three ball cascade pattern, which is a sought after skill for performers.

Protective role of mammalian Sestrin2 against arsenic-induced cytotoxicity

Presenter(s):   *Faculty Mentor(s):*
Mason McCollister (Chemistry)   *David Ro*

Sestrins, proteins that accumulates in cells exposed to environmental or genotoxic stress, play an important role in cell health, protecting tissues from damage or death by removing reactive oxygen species and inhibiting mTORC1 to induce autophagy. Arsenic is an environmental pollutant and is classified as class 1A carcinogen. One member of the Sestrin family, Sestrin2, also plays a role in inducing autophagy, clearance of damaged proteins and organelles, which is crucial for cellular homeostasis and integrity. However, while the molecular mechanism by which Sestrin2 induces autophagy in cells and tissues has been studied, how it induces autophagy against arsenic-induced toxicity is significantly less understood. Given the importance of cellular homeostasis in controlling redox status and energy metabolism, it is important that this knowledge gap be filled. The goal of this project is to determine the novel defense mechanisms by which Sestrins protect mammalian cells through autophagy induction caused by arsenic-induced oxidative stress. Our central hypothesis is that the ULK1/Sestrin2 complex is activated by arsenic-induced oxidative stress, and that it induces autophagy, thus preventing further oxidative damage, improving cell metabolism. The following research questions will be pursued to test this hypothesis: 1) Are Sestrin2 and ULK1 robustly induced by ROS causing- arsenic? 2) How Sestrin2 regulates the gene and protein expressions of autophagy pathway? 3) Does the induction of Sestrin2 useful for autophagy process, recycling of damaged protein? The work proposed here will shed new light on the physiological roles of Sestrin2 in maintaining cellular homeostasis and in protecting cells against arsenic-induced oxidative stress and its associated metabolic disease.

Preliminary Study of Effective Strategies for Increasing Story Comprehension in Minimally Verbal Students with Autism and Other Significant Disabilities

Presenter(s):   *Faculty Mentor(s):*
Christina McDonnell   *Sara Bicard and Kate Simmons*
(Collaborative Teacher K-6)

An adapted alternating treatments design was used to investigate the effects of repeated, shared reading on the listening comprehension and engagement of elementary students with significant disabilities. Six participants were minimally verbal and had intelligence quotients below two standard deviations. Preliminary results indicate that treatment conditions improved listening comprehension and engagement for all participants when compared to baseline conditions.

A Kinematic Analysis of Octopus Arm Swimming

Presenter(s):   *Faculty Mentor(s):*
Ryan McMichael (Biology)   *Maria Florencia Breitman*

Octopuses have a remarkable ability to manipulate their arms in essentially infinite degrees of freedom, yet culminate in a finite number of efficient, stereotyped movements honed by evolution. The locomotion and object manipulation abilities of the octopus' hydrostatic limbs are backed with incredible dexterity and range of motion, inspiring promising applications in areas such as robotics and prosthetics. Despite their widespread presence in research, little is known about the octopus' arm swimming motion, in which an octopus uses its 8 arms to execute a recovery (opening) stroke, and a power (closing) stroke to gain propulsion without using their siphon. Our study aims to provide a detailed analysis of the kinematics of octopus arm swimming from available Remotely Operated Vehicle video footage. We analyze a total of 14 videos of Muusoctopus robustus taken of an octopus community at the base of Davidson Seamount in Monterey Bay (CA). For this study, we quantify the duration of the recovery and power strokes of over 150 swimming cycles captured in video. A statistical comparison of individual arms and strokes were used to identify specific stereotypes in their motion. Results are discussed in light of available literature about biological efficiency of octopus arm swimming.

Grounding techniques for calming and self-regulating of distressed students

Presenter(s):   *Faculty Mentor(s):*
Uzoechi Precious Nwadiaro and Nicole   *Yuh-Jen Guo*
Bloch (Clinical Mental Health Counseling)

Grounding helps individuals regain awareness to the here and now and self-regulation. This is a set of critical techniques to help students cope with distress and emotional disturbance due to traumatic reactions, anxiety, etc. Through sensorimotor activities, grounding assists students regaining the awareness of body sensation, feeling and emotions. This presentation will introduce several essential grounding techniques to help college campuses find useful tools for distressed students.

Common Thread

Presenter(s):   *Faculty Mentor(s):*
McKenna Odom (English)   *Heather Witcher and Breuna Baine*
Kelsey LeMaster (Fine Arts)

Common Thread (formerly Filibuster) is the literary and arts magazine of Auburn University at Montgomery. Our mission is to showcase the diverse body of work created by the students and staff of our university. As a collaboration between the Department of English and

Philosophy and the Department of Fine Arts, we illuminate the possibilities of narrative and artistic spaces to respect the common, everyday life and legacies of our unique placement in the South. Our magazine foregrounds local creativity, highlighting our history, culture, and progression to a future grounded in resistance and change.

Net Interest Margins and the Factors that Affect It

Presenter(s):   *Faculty Mentor(s):*
Prinali Patel (Finance and Economics)   *Agnitra Roy Choudhury*

The banking sector plays a crucial role in every country's economy, serving as a cornerstone of financial stability and economic growth. Among the key metrics used to assess the health and performance of a country's banking system is the average net interest margin (NIM) of its banks. Net interest margin reflects the profitability of banks by measuring the difference between the interest earned on loans and investments and the interest paid on deposits and other liabilities. In recent years, there has been increasing interest in understanding the determinants of bank NIM and how various factors impact this critical measure. The unprecedented economic instability brought about by the COVID-19 pandemic has heightened my curiosity about the factors influencing bank NIM, particularly given the rapid changes in central bank interest rates aimed at stabilizing economies worldwide. This study aims to delve into the factors influencing each country's banks' average net interest margin, taking into account the unique economic circumstances and policy responses to the COVID-19 pandemic. By analyzing a comprehensive dataset encompassing bank-level financial data, macroeconomic indicators, and other relevant factors, I seek to explore the complex influences on bank profitability. Through advanced econometric techniques and regression analysis, this research endeavors to unravel the intricate relationship between economic instability, central bank policies, market competition, and other factors, and their impact on bank NIM. Understanding these determinants is essential for policymakers, regulators, and market participants to formulate effective strategies aimed at enhancing the stability and efficiency of the banking sector in the face of ongoing economic challenges.

Licensing Regulations for Health Care in European Nations

Presenter(s):   *Faculty Mentor(s):*
Prinali Patel   *Agnitra Roy Choudhury*
(Finance and Economics)
Corey Hines, Michael Rossi (Economics)

Students were tasked to gather information on licensing requirements for health care workers, including human capital requirements. Students have gathered data for France, United Kingdom, and Germany.

Elemental Energies

Presenter(s):
Michael Pritchard
(Theatre and Communications)

Faculty Mentor(s):
Neil David Seibel

Presented at SETC, Elemental energies looks at 4 forms (Earth, Fire, Water, Air) and how to analyze and apply those elements to characters in dramatic form.

Association between Crude Oil Price Changes and American Consumer Staples: A Comparative Analysis

Presenter(s):
Joshua Reeves (Economics)

Faculty Mentor(s):
Agnitra Roy Choudhury

This study investigates the dynamic relationship between crude oil price fluctuations and changes in the prices of American consumer staples. Utilizing time-series data spanning a July of 1995 to December of 2023, we employ rigorous statistical techniques, including vector autoregression (VAR) and Granger causality tests, to analyze the association between these variables. Our findings reveal a significant and complex interplay between crude oil prices and the prices of consumer staples. Specifically, we observe that fluctuations in crude oil prices exert a measurable influence on the pricing dynamics of consumer staples in the American market. These results underscore the intricate interdependencies between energy markets and consumer behavior, highlighting the importance of considering oil price fluctuations in the formulation of economic policies and business strategies within the consumer goods sector. Overall, our study contributes to a deeper understanding of the linkages between crude oil prices and consumer staple prices, offering valuable insights for policymakers, businesses, and investors seeking to navigate the complexities of commodity markets and consumer demand fluctuations.

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Prescription Drug Monitoring Program and Drug Crimes

Presenter(s):   *Faculty Mentor(s):*
Jakia Reynolds (Economics)   *Agnitra Roy Choudhury*

Prescription drug monitoring programs (PDMPs) are state databases that analyze prescription data of opioids by healthcare providers and pharmacists. These programs have been enforced in each state as a preventive combatant against opioid abuse. This study examines the influence that operational PDMPs have on illegal drug markets within the southern region of the United States. Employing drug-related arrest data, along with other socioeconomic and policy factors, I explore the residual impact PDMPs impose on the illegal drug market. The results showcase the unintended influence of PDMPs outside of the healthcare domain.

Too Late to Start? A Study on Decreasing Fertility Rates in America

Presenter(s):   *Faculty Mentor(s):*
Coleman Schmidt (Economics)   *Agnitra Roy Choudhury*

With increasing housing prices, more emphasis on education, and other contributing factors, this study is trying to measure the impact of the new, modern America that families face. I am testing the fertility rate throughout the country by creating a variable for people who had a child within the last year. This gives me a rough estimate of the fertility rate in each state and the country. Allowing me to compare data that I have aggregated to the fertility rate and test the significance of each independent variable. This analysis is looking to prove the significance in the correlation of the affordability of having children, the increasing need for higher education, and couples pushing having a family off as a result of this.

Discovering Reptile and Amphibian Diversity in AUM's Urban Forest Fragment: Results From Year One Of The AUM Long-Term Ecological Research Experiment (LTERE)

Presenter(s):
Lalah Shannon and
Ryan McMichael (Biology)
Richard Chen (LAMP High School)

Faculty Mentor(s):
Maria Florencia Breitman

Alabama has a rich and diverse herpetofauna with ~166 species and the highest diversity in the Southeastern Coastal Plain (SCP) biodiversity 'hotspot'. Many of these species are now threatened or endangered because of the impacts of urbanization and other human activities. Auburn University in Montgomery (AUM) is located in the city of Montgomery and has a ~250-acre secondary urban forest. Urban forests have emerged as habitats that can balance the negative effect of urbanization on diversity, and reptiles and amphibians are considered model organisms for studying ecological and evolutionary patterns, including ecosystem health and function in natural and urban areas. Here, we set out to understand the community composition of the AUM forest herpetofauna, as well as its genetic diversity under different management treatments (invasive species removal, prescribed burns, prairie habitat, and control). In this presentation, we will present the results of our first year of sampling the Long-Term Ecological Research Experiment (LTERE) studying herp diversity in the AUM forest using pit-fall trap surveys. So far, we have installed 8 functional traps in the forest and have undergo 13 periods (5 days each) of sampling. Specimens are identified, measured, and released. Our study will allow us to make recommendations regarding conservation, preservation, and management of habitats. In addition, our study allows for students and classes to work on campus on relevant ecological questions, increasing AUM student representation in science. In this work, we will present an update on the state-of-the-art of the LTERE, challenges encountered, and preliminary results.

Thirteen Bridges Literary Review

Presenter(s):
Alexis Sharpe (Fine Arts)

Faculty Mentor(s):
Kent Quaney

Thirteen Bridges is a professional literary journal sponsored by the department of English and Philosophy. We are currently online only and are moving toward publishing in print.

Using Natural History Collections to Compare Factors Influencing Range Expansion of Three Invasive Plants in The United States

Presenter(s):
Brittney Smith
(Environmental Sciences)
Braxton Talbot and Kailey Higgins
(Biology)

Faculty Mentor(s):
Claudia Stein

An important aspect of conservation ecology is maintaining biodiversity. Invasive plant species can be detrimental to plant diversity for a number of reasons. They quickly reproduce, thrive in a variety of conditions and outcompete plant species native to the ecosystems. Understanding the different factors that contribute to rapid range expansion of invasive species can substantially improve our ability to prevent and control their spread. We used digital natural history collections data, (i.e. herbarium data from iDigBio and citizen science observations from GBIF) to compare the rate of range expansion of three invasive species Ligustrum sinense (Chinese privet), Lonicera japonica (Japanese honeysuckle) and Imperata cylindrica (Cogon grass) in North America. Chinese privet and Japanese honeysuckle were used as ornamental plants in the US, and both escaped cultivation because their seeds are spread by birds that feed on them. Cogon grass was introduced as forage and the seeds are distributed by wind. We hypothesized that the wind pollinated and wind dispersed Cogon grass spreads at a more rapid rate compared to Chinese privet and Japanese honeysuckle which both rely on insect pollinators. We used QGIS to map species occurrences in North America and calculated the range expansion for all three species using 20-year intervals. Using covariance analysis, we tested the rate of range expansion. Our results showed that Chinese privet had the fastest range expansion, while range expansion rates did not differ significantly between Cogon grass and Japanese honeysuckle. Indicating that in our study wind pollination and dispersal are not necessarily resulting in faster spread. We also found that the range expansion rate for Chinese privet increased significantly around 80 years post introduction. Cogon grass has only been in the US for around 60 years, it might be important to act fast on restricting the spread of Cogon grass to avoid its rapid spread. Monitoring the range expansion of invasive species via natural history collections is an important early warning tool to identify invasive species that require implementation of large-scale distribution restrictions.

Effects of Ethnic Racial Identity on Resilience & Academic Engagement in Black College Students

Presenter(s):
Eryn Smith (Psychology)

Faculty Mentor(s):
Clarissa Arms-Chavez

Students with exposure to Black educators may be more likely to succeed given the increased sense of belonging and representation. Research has found that perceptions of a more positive racial climate, increased support from educators, increased interracial interactions, and a

stronger sense of school belonging resulted in increased levels of academic curiosity and academic persistence for young Black girls (Butler-Barnes et al., 2018). While it is difficult to be noted as a high-achieving Black student, research has found that it is achievable if they receive support and positivity from their school and administration (Butler-Barnes, et al., 2018). As research examining the effects of ERI and resilience on academic engagement has mainly focused on Black children within the K-12 system, the current study extends the findings to the higher education setting by examining the effects on college students. College educators are often not required to learn multiculturalism or diversity to teach in higher education despite it being important to understand the backgrounds of students to help better further the learning process. The current study's goal is to further the educational perspective of representation, belonging, resiliency, ethnic-racial identity, and academic engagement among black college students. Results will be reported and discussed.

Identification of Novel Genetic Markers for The Southeastern Azalea, Rhododendron Prunifolium (Ericaceae)

Presenter(s):
Isabella Soto (Environmental Science)

Faculty Mentor(s):
Vanessa Koelling

The southeastern azaleas (genus Rhododendron, section Pentanthera) are a complex group of species that show evidence of rapid diversification and widespread hybridization. Species within the clade often have substantial morphological overlap but also show evidence of morphological differentiation and geographic separation along temperature gradients. To understand speciation in the southeastern azaleas, more genetic resources must be developed for phylogenetic and population genetic analyses. The objective of this study was to identify single nucleotide polymorphisms (SNPs) in R. prunifolium from sequence data. We isolated DNA from thirteen R. prunifolium individuals using a modified CTAB protocol followed by bead clean-up. We then prepared sequencing libraries for paired-end read sequencing using the Illumina method. Here we report the results of the sequence analysis and genetic marker identification.

Transcending Boundaries: Sentiment Analysis in African Languages through Transformer Models

Presenter(s):
Robert Spicer and Nathaniel Hughes
(Computer Science)

Faculty Mentor(s):
Sutanu Bhattacharya

Sentiment Analysis is a crucial aspect of natural language processing (NLP) that has garnered significant research interest. However, the emphasis has predominantly been on languages with ample resources and data, leaving the study of languages with limited data, especially low-resource languages, in need of more focus. To tackle this gap, we introduce a transformer-based approach specifically designed for sentiment analysis in under-researched African languages, namely Nigerian Pidgin and Yoruba. Our method's efficacy was tested through our participation in the AfriSenti SemEval shared task 2023 competition, where our team,

Bhattacharya_Lab, achieved remarkable results. We secured the top position out of 33 teams for the Monolingual Sentiment Classification in Nigerian Pidgin (Track 4) and were among the top 5 for Yoruba (Track 2). These outcomes underscore the capability of our transformer-based models to enhance sentiment analysis in languages with scarce resources. This research underscores the critical role of investigating NLP's potential in low-resource settings and the significant impact that transformer-based multilingual models can have on sentiment analysis for African languages like Nigerian Pidgin and Yoruba, highlighting the necessity for further exploration in this area.

Stage Directors and Choreographers initiative

Presenter(s):
Tiara Staples
(Communications and Theatre)

Faculty Mentor(s):
Valeria Winkelman

This past February, I participated in the Kennedy Center American Theatre Festival's (KCACTF) Stage Directors and Choreographers initiative for Region IV. My presentation will provide an overview of my experience at the festival and the director's concept that won me the scholarship.

A Case Study on Teaching Predictive Data Mining Using Linear Regression

Presenter(s):
Anusha Sunkari (Information Systems)
Priya Kharadi (Healthcare Administration)

Faculty Mentor(s):
Jeffrey Bohler

A case study comparing the process and performance of various predictive data mining methods is presented using educational institution ranking data. Statistical concepts such as hypothesis testing, regression performance measures, k-nearest neighbor regression, regression trees, and Neural Networks are presented. The case can be used in statistics or analytics courses for learning purposes. A case activity guide is provided to help instructors with explanations.

The Value of Non-Expert Herbarium Collections for Providing Biodiversity Information

Presenter(s):
Amiya Whitson (Environmental Sciences)

Faculty Mentor(s):
Vanessa Koelling and Claudia Stein

Herbaria represent important repositories of historical biodiversity information and with increasing digitization of these collections data are easily available to the global scientific

community. Many herbaria are collected at smaller institutions where most specimens are collected by amateur botanists, plant enthusiasts, or students who have to complete an assignment. We predict that specimens mainly collected by non-experts will be a valuable resource to assess the distribution of nonnative and invasive plants, and thus could be used as an early warning system for invasive species in a region. We digitized AUM's 42-year-old herbarium collection of about 1,500 specimens. The value of AUM's collection lays in the fact that 40% of the specimen were repeatedly collected from the same locality in different years, allowing us to assess changes in plant morphological traits, such as leaf size and plant height over time. About 25% of the collection consist of specimen nonnative to the southeastern US. By comparing current specimens with historical collections, we can assess changes in plant populations, track the spread of invasive species, and evaluate the impact of environmental changes on plant diversity. This information is crucial for making informed decisions for implementing effective conservation measures. We are currently in the process of georeferencing every specimen in the herbarium and making data available via public databases. We will provide historical and geographical information about different plant species for future ecological research and contribute to our understanding of the natural world and support efforts to conserve and protect plant diversity.

Improving Kept Appointment Rates in a Mental Health Center

Presenter(s):
Augusta Williams (Nursing)

Faculty Mentor(s):
Courtney Bagents Cochran

Problem Statement: High rates of missed appointments (5-30%) in outpatient mental health care negatively impact patient outcomes, healthcare efficiency, and staff productivity. Despite evidence supporting SMS and phone reminders in improving attendance, the project site lacks such measures.
Method and Design: This quantitative, quasi-experimental project retrospectively analyzes 50 patient charts before and after a six-week intervention period. The intervention involves implementing SMS and phone call appointment reminders. The data, categorized as "shows" or "no-shows," was compared using Chi-square analysis to assess the impact on kept appointments.
Results: This quality improvement (QI) project determined SMS and phone reminders are effective in reducing missed appointments in an outpatient mental health setting.

Implications for Practice: The QI project outcome suggests implementation of SMS and phone reminders in similar settings, could potentially lead to improved patient outcomes and increased clinic efficiency. Implications for Future Research: Successfully implementing SMS and telephone call appointment reminders can have significant future implications. It could establish a precedent for proactive patient engagement strategies in mental health care settings, potentially improving overall patient outcomes and clinic efficiency. Additionally, the project's success could encourage similar interventions in other healthcare facilities facing similar challenges with appointment attendance.

Start-Up Companies in the Philippines

Presenter(s):   *Faculty Mentor(s):*
Zaheer Abbas Shaik   *Donald Amoroso*

The thesis comprehensively examines factors that influence technology commercialization in startups, utilizing linear regression, t-tests, and ANOVA analyses conducted with SPSS. It centers on assessing the impact of incubator support, entrepreneurial orientation, organizational resources, and innovative capabilities alongside technology turbulence on startup commercial outcomes. The analysis extends to demographic variables such as directors' age and education level, gender, and the type of funding to gauge their correlation with startup success. Results indicate that while organizational resources and innovation significantly propel commercial viability, the effect of incubator support is less pronounced. Additionally, demographic elements, notably gender and age, emerge as influential factors, with their impact varying by the size of the startup and the directors' academic achievements. This study contributes actionable insights to guide the development of support frameworks and strategies to promote the success of technology-driven startups.