UAPB Research Symposium

April 20, 2026
STEM Building

University *of* Arkansas at Pine Bluff

UNIVERSITY of ARKANSAS AT PINE BLUFF
1873

Office of the Chancellor

April 20, 2026

Dear University of Arkansas at Pine Bluff Community:

It is my distinct pleasure to welcome you to the University of Arkansas at Pine Bluff's Spring 2026 Research Symposium. Today, we gather to celebrate the intellectual curiosity, scholarly rigor, and creative excellence that define our academic community.

This symposium represents more than a collection of presentations; it reflects our collective commitment to advancing knowledge, solving real-world challenges, and positioning UAPB as a driver of innovation across the Arkansas Delta and beyond. As a proud 1890 land-grant institution, our responsibility is clear: to produce research that not only expands discovery but also improves lives, strengthens communities, and fuels economic opportunity.

At UAPB, research is not—and cannot be—peripheral to our mission. It is central to it. It is how we cultivate talent, elevate academic quality, and prepare our students to lead in an increasingly complex and data-driven world. Through undergraduate research, faculty scholarship, and transdisciplinary collaboration, we are building a culture where inquiry, creativity, and impact are expected and celebrated.

Our vision is bold. We are committed to becoming a nationally recognized preeminent land-grant institution, advancing talent, innovation, and economic renewal in the Delta region. Achieving this vision requires a sustained and campus-wide commitment to research excellence, which challenges us to think differently, work collaboratively, and pursue solutions that matter.

To our students: your ideas, your questions, and your discoveries are shaping the future.
To our faculty and staff: your mentorship, scholarship, and leadership are the foundation of our progress.

I encourage each of you to fully engage in today's symposium by exchanging ideas, exploring new perspectives, and taking pride in the remarkable work occurring across our university.

Thank you for your commitment to excellence and for your contributions to the continued rise of UAPB.

Sincerely,

Anthony Graham, Ph.D.
Chancellor

1200 North University Drive, Mail Slot 4982 · Pine Bluff, AR 71601
Office: (870) 575-8470 · Fax: (870) 575-4645 · Email: chancellor@uapb.edu
www.uapb.edu/chancellor

UNIVERSITY of ARKANSAS AT PINE BLUFF
1873

Office of Research, Innovation and Economic Development

April 20, 2026

On behalf of the University of Arkansas at Pine Bluff, it is my honor to welcome you to our Spring Research Symposium. We are pleased to convene students, faculty, staff, alumni, partners, and distinguished guests in our STEM Building on April 20, 2026, for a day dedicated to showcasing the depth, rigor, and impact of our research enterprise. This symposium reflects the continued advancement of UAPB as a research-driven institution and underscores our commitment to addressing complex challenges facing Arkansas, the Delta region, and the nation. As an 1890 Land-Grant university, our mission is grounded in the integration of research, teaching, and extension, ensuring that discovery is translated into meaningful outcomes for the communities we serve.

UAPB stands as a premier 1890 land-grant research engine uniquely positioned to lead transformative research, innovation, and economic advancement across the Arkansas Delta and the broader multi-state rural landscape. University of Arkansas at Pine Bluff currently maintains a federal research and sponsored programs portfolio of $23 million. With annual research expenditures of over $7.9 million (HERD self-reported, 2024), the university continues to build capacity and scale impact across several areas of strength, including agricultural and environmental sciences, aquaculture and fisheries, data science and artificial intelligence, STEM, and community and economic development.

As part of this trajectory, UAPB is intentionally advancing toward achieving Carnegie R2 (High Research Activity) classification, reflecting our strategic focus on expanding sponsored research, strengthening graduate education, and enhancing research infrastructure. This goal is not simply a designation, but a commitment to elevating our institutional impact, increasing competitiveness for federal funding, and broadening opportunities for our students and faculty.

The research highlighted today represents the strength of our faculty, the promise of our students, and the power of collaborative partnerships. It is through these collective efforts that we continue to expand UAPB's research capacity, strengthen our infrastructure, and position the university for sustained growth and increased national recognition. We are especially grateful to our partners across government, industry, and academia whose continued support enables us to scale impact and extend opportunity. Your engagement is essential as we work to build a more inclusive, innovative, and economically vibrant future.

Thank you for joining us and for your continued investment in the research mission of the University of Arkansas at Pine Bluff.

Sincerely,

Trina Fletcher

Trina Fletcher, Ph.D.
Interim Vice Chancellor for Research, Innovation, and Economic Development
University of Arkansas at Pine Bluff

1200 North University Drive, Mail Slot 4791 · Pine Bluff, AR 71601
Office: (870) 575-8216 · Fax: (870) 575-4695 · Email: fletchert@uapb.edu
www.uapb.edu/research

Organizing Committee

Dr. Trina Fletcher
Interim Vice Chancellor for Research,
Innovation and Economic Development

Dr. Joseph Onyilagha
Professor of Biology
Interim Director of Undergraduate Research

Mrs. Genevia Thomas
Project/Program Specialist
Office of Research

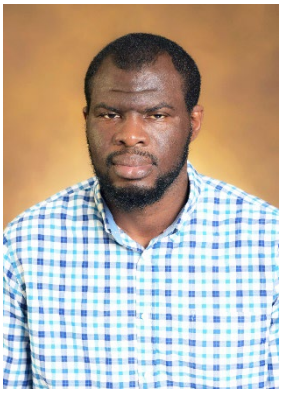
Ms. Azarin Yazdani
Research Project Analyst
Office of Research

Dr. Emily R. Bartz
Arkansas Archeological Survey (ARAS)
UAPB Research Station Archeologist

Dr. Stephanie R. Cox
Assistant Professor
Department of Accounting

Dr. Leonard Williams, Jr.
Associate Professor
Department of Health, Physical Education
and Recreation

Mrs. Laura Hildreth
STEM Academy Program Coordinator



Dr. Obiora Onyilagha
Assistant Professor
Department of Chemistry and Physics

Dr. Karleah Harris
Associate Professor
Department of Human Sciences

Dr. Grace Ramena
Associate Professor
Department of Aquaculture and Fisheries

Keynote Speaker

Dr. Lawrence E. Cornett
Director, Arkansas INBRE
Distinguished Professor of Physiology and Cell Biology
University of Arkansas for Medical Sciences

Dr. Cornett is a distinguished professor in the Department of Physiology and Cell Biology at the University of Arkansas for Medical Sciences. Dr. Cornett earned a BS in biology from the University of California, Riverside, his Ph.D. in physiology from the University of California, Davis, and was a postdoctoral fellow in reproductive endocrinology and cardiovascular physiology at the University of California, San Francisco. His research interests include the role of β_2-adrenergic receptors in mediating airway responsiveness in asthma and hormonal regulation of stress responses at the level of the pituitary gland.

Since 2001, he has been the Director of the Arkansas IDeA Network of Biomedical Research Excellence (INBRE). Since 2011, Dr. Cornett has been a member of the EPSCoR/IDeA Foundation Board. He serves on the Scientific Advisory Board of Southeast IDeA Region XLerator Hub and is a member of the Board of Directors of the Arkansas Children's Research Institute. Among his many honors, Dr. Cornett received a fellowship from the NIH Fogarty Center, a Research Career Enhancement Award from the American Physiological Society and the W. Fred Taylor Award for Contributions to the NIH IDeA Program.

Featured Speaker

Mr. Bryan J. Barnhouse
President and Chief Executive Officer
Arkansas Research Alliance

As the President and CEO of the Arkansas Research Alliance (ARA), Mr. Barnhouse leads a statewide non-profit, public-private partnership organization that focuses on leveraging university-based, job-creating research for economic growth and development in Arkansas.

Established in 2008 and governed by a dedicated Board of Trustees, ARA invests in research talent recruitment, retention, and recognition to generate scientific and engineering breakthroughs that foster collaboration and create value and impact across high-growth business and industry sectors. In its first 15 years of operation, these investments have assembled nearly 40 world class researchers who have attracted more than $205 million in research funding, created 13 science and tech-driven startup companies, all of which culminated in a $1.3 billion economic impact in Arkansas.

Before becoming the ARA CEO, he served as the organization's Chief Operating Officer and Vice President of ARA. He previously worked with the Economic Development Alliance for Jefferson County in Southeast Arkansas, where he oversaw industrial recruitment and expansion projects, regional workforce development efforts, and site location marketing. He has also managed the Arkansas Economic Development Commission programs on foreign direct investment recruitment and trade opportunities with Asia. Prior to moving to Arkansas, Mr. Barnhouse worked in Washington, D.C., at the International City/County Management Association, coordinating federal business development and managing military and technology projects, and in Los Angeles, California, at Consensus Planning Group, supporting the management of public-involvement programs around land use, transportation, and technology initiatives.

Mr. Barnhouse is a graduate of the University of Southern California (USC), holding a Master of Public Administration and a Bachelor of Arts in International Relations. He and his wife, Jennifer, reside in downtown Little Rock and are both dedicated to the growth and prosperity of the Natural State.

University of Arkansas at Pine Bluff
Spring 2026 Research Symposium
Agenda

Time	Event
8:30 AM - 9:00 AM	**Registration & Poster Setup**
9:00 AM - 9:30 AM	**Welcome & Opening Remarks** **Dr. Anthony Graham**, *Chancellor* **Dr. Trina Fletcher**, *Interim Vice Chancellor for Research, Innovation, and Economic Development*
9:30 AM - 10:00 AM	**Keynote Speaker** **Dr. Lawrence E. Cornett**, *Director, Arkansas INBRE & Distinguished Professor of Physiology and Cell Biology, UAMS*
10:00 AM - 10:45 AM	**Poster Presentations**
10:45 AM – 11:15 AM	**Undergraduate & Graduate Panel Discussion**
11:15 AM - 12:15 PM	**Lunch** **Featured Speaker** **Mr. Bryan J. Barnhouse**, *President & Chief Executive Officer, Arkansas Research Alliance* **Poster Awards Ceremony**
12:15 PM - 2:00 PM	**Oral Presentations**
2:00 PM - 2:30 PM	**Featured Speaker** **Dr. Carleitta L. Paige-Anderson**, *Program Director, National Science Foundation Directorate for STEM Education* - Introduction by **Dr. Vinay Raj,** *Associate Professor, UAPB & President, Arkansas Academy of Science* **Oral Presentations Recognition & Adjournment**
2:30 PM - 4:00 PM	**Tours of Selected UAPB Laboratories**

Oral Presentations

Conference Center

School of Agriculture, Fisheries, and Human Sciences

School of Arts and Sciences

12:15 PM - 12:30 PM	**Sonya Williams Reed** (G) Functionalizing Chitosan Nanoparticles against A. hydrophila in catfish, a Potential Antibiotic Alternative
12:30 PM - 12:45 PM	**Annette D. Williams Yussif** (G) What factors are associated with past participation in recreational fishing among college students in the Southeastern United States? A comparative analysis of Black HBCU and White PWI students.
12:45 PM - 1:00 PM	**Kailash Bohara** (G) PGH–PTD based Approach for Controlling Intracellular Streptococcus iniae Infections in Fish
1:00 PM - 1:15 PM	**Humphrey Wanjala** (G) Development of a Patient-Derived Zebrafish Xenograft Model for Glioblastoma
1:15 PM - 1:30 PM	**Arielle Shelby** (G) Enhancing Growth and Health of Largemouth Bass Fingerlings with Single Cell Proteins and Probiotics in Basal Diets
1:30 PM - 1:45 PM	**Ram babu Kurapati** (G) From Nauplii to Nutrition: Optimizing different forms of Artemia life stages to enhance Growth, Immunity, and Microbiome Stability in L. vannamei Postlarvae
1:45 PM – 2:00 PM	**Myah Webb** (UG) AI & the Future of the Engineering & Computing Workforce

Oral Presentations

Room 103

School of Agriculture, Fisheries, and Human Sciences

12:15 PM - 12:30 PM	**Priya Yadav** Anti-Aging Cellular Protection and Vascular Endothelial Restoration through Nanoencapsulated Gamma-Oryzanol: An In Vitro Study
12:30 PM - 12:45 PM	**Kimberly Haynie** Training Undergraduate Students to Implement Best Practices for Nutrition Education and Wellness in Early Learning Centers
12:45 PM - 1:00 PM	**Kylan Ray** (UG) Assessing The Effect of Potyviruses on Different Generations of Beauregard Sweetpotato Variety
1:00 PM - 1:15 PM	**Andre Shelby** (UG) Role of Modern Tools for Increasing the Supply of Seedlings to Community Gardeners of Pulaski and Jefferson Counties in Arkansas
1:15 PM - 1:30 PM	**Ajitha Ravikumar** (G) Weed Species Hosting Sweetpotato Potyviruses in Arkansas
1:30 PM - 1:45 PM	**Yunru Shen** Family Support as a Catalyst for Leadership Development Among Minority Women in Higher Education
1:45 PM - 2:00 PM	**Jane Opiri** Quilting as a Catalyst for Mental Health Promotion and Social Cohesion among Mature Women

Oral Presentations

Room 109

School of Agriculture, Fisheries, and Human Sciences

12:15 PM - 12:30 PM	**Annik T Segree** Peptidoglycan Hydrolases as Alternative Antimicrobials for Streptococcus iniae
12:30 PM - 12:45 PM	**Yasser Sanad** Genomic Evaluation of Antimicrobial Resistance and Virulence Factors in Incompatibility Group FIB Plasmid-positive Salmonella enterica from Food and Food Animals Sources
12:45 PM - 1:00 PM	**Erika Jackson** (UG) Green Classrooms: Linking Farms, Schools, and Student Success
1:00 PM - 1:15 PM	**Chase Campbell** (UG) Economic Analysis of Cover Crops in Arkansas Agriculture
1:15 PM - 1:30 PM	**Kashyap Adhikari** (G) Ammonia Pre-Conditioning Enhances Resistance and Gene Expression in Channel Catfish Exposed to Elevated Ammonia Levels
1:30 PM - 1:45 PM	**Nishan Kafle** (G) Induction of Stress Memory through Mild Iron Pre-Exposure Enhances Tolerance in Juvenile Catfish
1:45 PM - 2:00 PM	**Tiluttom Bhattacharjee** (G) Mitigation of Waterborne Iron Toxicity Through Ph Elevation: Evidence from Plasma Ions, Gill Atpases, Energy Stores, And Gene Profiles in Channel Catfish

Oral Presentations

Room 213

School of Business

School of Education

12:15 PM - 12:30 PM	**Stephanie Cox** Pedagogical Use of the Peregrine CPC Exam to Improve Undergraduate Business Education
12:30 PM - 12:45 PM	**Jacquelyn Faucette** *Management Information Systems Strategies for Leaders*
12:45 PM - 1:00 PM	**Leonard Williams** (G) Strategic Planning and Market Positioning for a Boutique Hotel in a Southern Market: The Development of "The Bon Vivant"
1:00 PM - 1:15 PM	**Kamlesh Tiwari** How AI (Especially LLMs) is Transforming Marketing Research
1:15 PM - 1:30 PM	**Peter Wui** Autonomous, Energy-Resilient Biosurvival Architectures: Fusing Deep Learning, Quantum Science, and Precision Logistics for Contested Environments
1:30 PM - 1:45 PM	**Leonard Williams** Examining Celebrity Coach Influence on Generation Z Consumer Behavior: The Wow Factor
1:45 PM - 2:00 PM	**Stacy McKisick** It is all about ethics !

Oral Presentations

Room 214

School of Arts and Sciences

School of Education

12:15 PM - 12:30 PM	**Ivan Raykov** Method for Solving Global Minimizations and Nonlinear Systems
12:30 PM - 12:45 PM	**Emad Badradeen** Quantum Materials Research at UAPB: From Synthesis to Characterization
12:45 PM - 1:00 PM	**Tasnuva Enam** Swipe to Study: Rethinking Self-Regulated Learning in the Age of Digital Literacy
1:00 PM - 1:15 PM	**Jada Crusterson** (UG) The Effects of Study Habits on Academic Performance Among University Students
1:15 PM - 1:30 PM	**Kristian Payne** (UG) Effects of a Strong Faith/Spiritual Life on Stress & Anxiety in College Students
1:30 PM - 1:45 PM	**Anand P Geddam** (G) AI Based Threat Detection System Using Machine Learning
1:45 PM – 2:00 PM	**Dwaine Turner** Assistive Technology for visually impaired

Poster Presentations

STEM Building Lobby
10:00 AM – 10:45 AM

1. **David Adedeji**
   School of Arts and Sciences (UG)
   The Unsustainable Trajectory of AI Data Center Energy Consumption: Environmental Impacts, Emerging Alternatives, and a Roadmap Toward Miniaturized, Affordable Artificial Intelligence Infrastructure

2. **Jalen Bass**
   School of Arts and Sciences (UG)
   The effects of social media on attention and academic performance

3. **Audrianne Bradford**
   School of Arts and Sciences (UG)
   From Farm to Table: Virulent Gene Profiling of Listeria in Food Animals

4. **Mateo Cook**
   School of Arts and Sciences (UG)
   Development of Stable Halide Perovskite-Polymer Composite Films for Light-Emitting Devices

5. **Praise Fabiyi**
   School of Arts and Sciences (UG)
   Analysis of Virulent Genes of Campylobacter and Salmonella

6. **Joell Finley**
   School of Arts and Sciences (UG)
   College student's attitudes toward fake news and their information media use behaviors and perceived credibility

7. **Ah'Maya Green**
   School of Arts and Sciences (UG)
   Comparison of Baby Kale Growth Preformance in Soil-based and Hydroponic Growing System

8. **Joshua McClinton**
   School of Arts and Sciences (UG)
   College student's preferred news sources and their perceived news credibility

9. **Karlei McCree**
   School of Arts and Sciences (UG)
   Swipe, Watch, Repeat: Understanding Media Motivations and Negative Outcomes in College Students

10. **Hawulethu Ndlovu**
    School of Arts and Sciences (UG)
    Web-Based Visualization of Virulence Gene Clusters in Campylobacter and Salmonella

11. **Ayana Pacley**
    School of Arts and Sciences (UG)
    Sharing the Self Online: Examining College Students' Self-Disclosure on Social Media

12. **Joel Ruzindana**
    School of Art and Sciences (UG)
    Study of Temperature-Dependent Raman Modes of 2D Semiconductor and their Heterostructure

13. **Gerald Shimo**
    School of Arts and Sciences (UG)
    Data-Driven Interactive Web Platform for Metastatic Breast Cancer (MBC) Research

14. **Taureen Sprinkle**
    School of Arts and Sciences (UG)
    Python Based Feature Ranking for Heart Failure Survival: A Reproducible Analytics Workflow

15. **Trinity Terrell**
    School of Arts and Sciences (UG)
    The relationship between social media use and psychosocial well-being among college students

16. **Aldine Willacey**
    School of Arts and Sciences (UG)
    Graphene Quantum Dots: Composites and Derivatives

17. **Angel Yuzya**
    School of Arts and Sciences (UG)
    Audio Feature Representation for Automatic Piano Audio Transcription: A Case for the Constant-Q Transform

18. **Kasey Brown**
    School of Arts and Sciences (G)
    Comparative Genomic Analysis of Functionally Analogous Genes in Campylobacter and Salmonella

19. **Alexis Whitten**
School of Arts and Sciences (G)
Variable-Level Patterns in Diabetes Progression: Insights from CDC Health Indicators

20. **Julian Randolph Wiggins**
School of Arts and Sciences (G)
How Effective are Treatment Courts as an Intervention for Justice Involved Minorities with Substance Use Disorder

21. **Mason Smith**
School of Business (UG)
From Factories to Algorithms: Revisiting Marshall in a Digital World

22. **Leonard Williams**
School of Business (G)
Strategic Planning and Market Positioning for a Boutique Hotel in a Southern Market: The Development of "The Bon Vivant"

23. **Stephanie Cox**
School of Business
Assessing the Interest of African American Students in the Field of Accounting

24. **Kamlesh Tiwari**
School of Business
How AI (Especially LLMs) is Transforming Marketing Research

25. **Leonard Williams**
School of Education
Examining Celebrity Coach Influence on Generation Z Consumer Behavior: The Wow Factor

26. **Machell Dailey**
School of Education
What Soil Are You Using To Grow Your Geniuses?

27. **Jamarion Beasley**
School of Agriculture, Fisheries, and Human Sciences (UG)
Evaluating The Role of Native Grasses in Improving Water Quality and Soil Health in Agricultural Fields

28. **Simon Chambo**
School of Agriculture, Fisheries, and Human Sciences (UG)
The Role of Artificial Intelligence in Precision Agriculture and Sustainable Food Production: A Food Safety and Environmental Sustainability Perspective

29. **Innocence Reed Guy**
School of Agriculture, Fisheries, and Human Sciences (UG)
Temporal Variation in Glycerol and Biochemical Composition of Artemia Reared Under Controlled Salinity Conditions

30. **Jeronee Hinton**
School of Agriculture, Fisheries, and Human Sciences (UG)
From Grain to Growth

31. **Moniq Muhia**
School of Agriculture, Fisheries, and Human Sciences (UG)
Development of a Patient Derived Zebrafish Xenograft model for Gliblastoma

32. **Kendrick Nelson**
School of Agriculture, Fisheries, and Human Sciences (UG)
The Effects of Compost on Soil Health

33. **Oluwademilade Ogunbade**
School of Agriculture, Fisheries, and Human Sciences (UG)
Sustainable Crop Management Through the Integration of Artificial Intelligence for Weed Detection and Food Safety

34. **Kylie Rhodes**
School of Agriculture, Fisheries, and Human Sciences (UG)
Weather-Based Irrigation Scheduling and Comparison of Water Productivity of Soybeans under Furrow and Subsurface Drip Irrigation (SDI)

35. **Andre Shelby**
School of Agriculture, Fisheries, and Human Sciences (UG)
Assessment of Climate Change Impact on Flow, Volume, Erosion, Sediment Load, and Deposition Dynamics within the Arkansas River

36. **Semiyah Smith**
School of Agriculture, Fisheries, and Human Sciences (UG)
AI-Powered Smart Textiles: Redefining Profitability and Wellness in the Hospitality Industry

37. **Dharma Prasad Chapai**
School of Agriculture, Fisheries, and Human Sciences (G)
Estimating The Effect of Potyviruses on The Yield of Different Generations of The Beauregard Variety

38. **Ram babu Kurapati**
School of Agriculture, Fisheries, and Human Sciences (G)
Next-Gen Aqua Farming: Automated Growth Insights and Smart Feeding with AI & IoT

39. **Saleh Shafique Chowdhury**
School of Agriculture, Fisheries, and Human Sciences (G)
Comprehensive Genome-wide Analysis and Functional Characterization of the Glyoxalase Detoxification System and Its Role in Methylglyoxal Scavenging During Abiotic Stress in Sweet Potato (Ipomoea batatas L.)

40. **Zachariah McGowan**
School of Agriculture, Fisheries, and Human Sciences (G)
Peptidoglycan Hydrolases (Pghs) As Alternative Antimicrobials for Streptococcus Iniae Infections in Fish

41. **Zoe McGowan**
School of Agriculture, Fisheries, and Human Sciences (G)
Quantum-Level Green Light-Emitting Device as Treatment for Virulent Bacterial Pathogens

42. **Che Rochford**
School of Agriculture, Fisheries, and Human Sciences (G)
How Biochar Modifies Soil Structure and its Impact on runoff in Agriculture fields

43. **Arielle Shelby**
School of Agriculture, Fisheries, and Human Sciences (G)
Enhancing Growth and Health of Largemouth Bass Fingerlings with Single Cell Proteins and Probiotics in Basal Diets

44. **Morgan White**
School of Agriculture, Fisheries, and Human Sciences (G)
Building Resilient Food Systems: Transformative One Health Strategies for Climate Change and Food Safety

45. **MD Jahurul Haque**
School of Agriculture, Fisheries, and Human Sciences
Extraction and characterization of soybean oil from irrigation under different growth states

46. **Samia Sultana Lira**
School of Agriculture, Fisheries, and Human Sciences
Genome-Wide Identification and Expression Profiling of Aldehyde Dehydrogenase (ALDH) Genes in sweet potato (Ipomoea batatas L. Lam)

47. **Nitish Kumar Sankurabhukta**
School of Agriculture, Fisheries, and Human Sciences
Breast Cancer Prediction Using Machine Learning

Oral Presentations Abstracts

Ammonia Pre-Conditioning Enhances Resistance and Gene Expression in Channel Catfish Exposed to Elevated Ammonia Levels

Kashyap Adhikari, Tiluttom Bhattacharjee, Fatin Ilham Fahim, Nishan Kafle, Sujan Bhattarai, Rebecca Lochmann, and Amit Kumar Sinha

Ammonia accumulation is a persistent challenge in intensive aquaculture, where high stocking densities and limited water exchange increase the risk of toxicity, impairing fish growth and survival. Because no rapid treatment exists, preventive strategies are critical. This study tested whether pre-acclimation to low ammonia levels could induce an adaptive "stress-avoidance memory" in channel catfish (*Ictalurus punctatus*), improving tolerance to subsequent exposure. Fish were pre-exposed to 2.17 mg/L total ammonia (10% of 10-day LC_{50}) for 14 and 21 days, followed by a 7-day recovery in clean water. Groups were then challenged with lethal (100% 96 h LC_{50}) and sub-lethal 12.2 mg/L ammonia (~25% 96 h LC_{50}) for 14 days. Fish pre-exposed for 14 days showed markedly improved survival under lethal challenge. Under sub-lethal exposure, ionic balance (Na^+, K^+, Ca^{2+}, Mg^{2+}, Mn^+) and gill ion transporter (Na^+/K^+-ATPase) activities were better maintained, supporting enhanced ion-regulation. Energy reserves (glycogen, protein, lipid) were also conserved under sub-lethal exposure, whereas naïve and 21-day pre-exposed fish showed accelerated depletion. Gene expression analyses revealed significant upregulation of ammonia transporters (Rhbg, Rhcg) in pre-exposed groups, particularly after 14 days, indicating transcriptional adjustments that favor ammonia excretion. In contrast, prolonged pre-exposure (21 days) offered no additional protection and in some cases reduced resilience, suggesting stress fatigue. Overall, short-term pre-acclimation (14 days) effectively enhances physiological and molecular defenses against ammonia toxicity in channel catfish, providing a practical conditioning strategy to mitigate risk in aquaculture systems.

Quantum Materials Research at UAPB: From Synthesis to Characterization

Emad Badradeen

Quantum materials play a central role in the development of next-generation technologies spanning nanoelectronics, optoelectronics, energy storage, and quantum-enabled devices. At the University of Arkansas at Pine Bluff (UAPB), ongoing research within the Departments of Chemistry and Physics focuses on the synthesis, processing, and characterization of low-dimensional quantum materials, with particular emphasis on graphene quantum dots (GQDs) and two-dimensional (2D) transition metal dichalcogenides (TMDs).

This talk will highlight current research on the hydrothermal synthesis of graphene quantum dots, a scalable, cost-effective bottom-up approach that enables control over particle size, surface chemistry, and optical properties. In parallel, the presentation will cover research on 2D TMD materials, including mechanical exfoliation to obtain atomically thin layers and chemical vapor deposition (CVD) synthesis to improve crystallinity, uniformity, and scalability. Beyond individual research projects, the talk will showcase the experimental, synthesis, and characterization capabilities available within the UAPB Departments of Chemistry and Physics. These capabilities support interdisciplinary research at the intersection of quantum physics, materials science, and nanotechnology, while providing hands-on research training for undergraduate and graduate students. Overall, the presentation will position UAPB as an emerging hub for quantum materials research, highlighting both active scientific investigations and the growing institutional infrastructure that enables collaborative research and workforce development in advanced materials science.

Mitigation of Waterborne Iron Toxicity Through Ph Elevation: Evidence From Plasma Ions, Gill Atpases, Energy Stores, And Gene Profiles In Channel Catfish

Tiluttom Bhattacharjee, Fatin Ilham Fahim, Kashyap Adhikari, Sujan Bhattarai, Nishan Kafle, Amit Kumar Sinha

The success of fish farming heavily relies on maintaining optimal water quality. Among various water quality factors that impact fish productivity, waterborne high iron is a significant concern, which can adversely affect fish health and growth. To achieve maximum growth and overall fish fitness, iron-induced toxicity must be alleviated. This research was undertaken to investigate the potential mitigation of iron toxicity by raising the pH of the fish culture water. Channel catfish (Ictalurus punctatus) was used as the test species as it is the leading aquaculture species in the United States. For determining the protective effect of elevated pH levels on iron-induced toxicity, three levels of water pH, viz. 7.8 (control), 8.3, and 8.8 were tested against high iron (Fe, 4.33 mg/L representing 25% of 10-day LC50). Catfish were randomly divided into six groups in triplicate. The groups were (i) pH7.8 (Control), (ii) pH8.3, (iii) pH8.8, (iv) pH7.8 (Control)+Fe, (v) pH8.3+Fe, and (vi) pH8.8+Fe. Following the two-month trial, exposure to high iron at neutral pH caused marked disturbances in plasma ion homeostasis. Concentrations of Na^+, K^+, Ca^{2+}, and Mg^{2+} were significantly reduced, indicating compromised osmoregulatory capacity (Fig. 1). Elevating water pH to 8.3 and 8.8 ameliorated these disruptions, restoring plasma ion balance toward control levels. Gill ion transporter activity was strongly impaired by iron at pH 7.8, with significant suppression of Na^+/K^+-ATPase and H^+-ATPase, indicating disrupted ion regulation. At higher pH, ATPase activities remained elevated, showing that alkalinity mitigated iron's inhibitory effects. Iron exposure also depleted energy reserves, lowering glycogen, protein, and lipid content in liver. Alkaline pH, especially 8.8, preserved energy substrates, reducing physiological costs under iron stress. Gene expression analyses showed that iron stress downregulated the pathways related to ammonia excretion transport (Rhbg, Rhcg) and iron storage (Ferroportin, Ferritin), whereas elevated pH levels up-regulated/moderated these responses under iron exposure, suggesting improved ammonia and iron handling. In summary, this study shows that high iron disrupts ion balance, gill transport, energy metabolism, and gene regulation in channel catfish. Elevated pH restores homeostasis, preserves energy, and modulates stress responses.

PGH–PTD based Approach for Controlling Intracellular Streptococcus iniae Infections in Fish

Kailash Bohara, Zachariah McGowan, Annik Segree, and Grace Ramena

Streptococcus iniae is a gram-positive bacterial pathogen causing streptococcosis in fish, leading to significant mortality and economic losses in aquaculture industry. With increasing antibiotic resistance, alternative therapeutics are needed. Phage-derived peptidoglycan hydrolases (PGHs) have shown promising results as antibacterial agents due to their ability to degrade the peptidoglycan layer in gram-positive bacteria; however, their activity is limited to extracellular bacteria making them ineffective against intracellular infections. To address this limitation, we developed nine PGH–protein transduction domain (PGH-PTD) fusion constructs to facilitate intracellular delivery of the PGH. These constructs were evaluated for cytotoxicity and cell viability at three concentrations (0.85, 1.7, and 2.55 µg) using OmB cells derived from tilapia brain. LDH assays showed low cytotoxicity (<5%) across all constructs and concentrations, while trypan blue assays indicated high cell viability (>95%) similar to the negative control group. To test the antimicrobial potential of PGH-PTDs, OmB cells were infected with six different S. iniae strains at MOI 1:100, and intracellular killing was assessed after treatment with 1.7 µg PGH-PTDs in a 96-well plate. PGH-PTDs significantly reduced intracellular bacterial loads in a strain-dependent manner, whereas PGH alone showed minimal activity. PTD-7, PTD-10, and PTD-11 were most effective against strain 35Br; PTD-12 was effective against ATCC-29178; PTD-7 also showed strong activity against ARS-98-60 and MN15Br; and PTD-8 and PTD-9 were most effective against YV16 and BZ1. These findings demonstrate that PGH-PTD constructs effectively target intracellular S. iniae with minimal cytotoxicity, supporting their potential as a novel therapeutic strategy for controlling streptococcosis in aquaculture.

Economic Analysis of Cover Crops in Arkansas Agriculture

Chase Campbell

Nutrient runoff, particularly excess nitrogen and phosphorus, remains one of the most pressing water quality challenges in Arkansas. As agricultural production expands and climate variability intensifies, the need for robust monitoring and conservation strategies become increasingly urgent. Agriculture is the state's leading economic sector, contributing nearly $16 billion annually across 13.8 million acres. As the nation's top rice producer, Arkansas faces elevated risks of nutrient loss and sedimentation in waterways. This study, led by the UAPB Discovery Farm Educational Center in collaboration with Arkansas Discovery Farms, focuses on evaluating the impact of conservation practices-including nutrient management, native grass implementation, and cover cropping- on soil health and water quality.

Demonstration plots were established side-by-side, separated by a levee, with each plot featuring discrete runoff outlets, ISCO 6712 edge-of-field monitoring stations. Soil samples taken from nine field locations at depth of 6 inches using soil probe revealed an average pH of 4.8, indicating highly acidic conditions which lead to limited nutrient retention. Based on local extension recommendations, correcting this may require lime applications of up to 2,500 lbs. /acre- posing a significant cost to producers. In addition to environmental outcomes, the study aims to compare the economic benefit-cost-analysis of using cover crops versus leaving fields fallow. By integrating water quality monitoring, soil testing, and economic analysis, this research will provide actionable insights for farmers and policymakers. The goal is to support sustainable agriculture by reducing nutrient loss, improving soil function, lowering input costs, and enhancing long-term productivity.

Pedagogical Use of the Peregrine CPC Exam to Improve Undergraduate Business Education

Dietrick Govan, and Stephanie Cox

The Peregrine Common Professional Component (CPC) Exam is a nationally recognized assessment instrument used to evaluate undergraduate business students' mastery of foundational concepts across core business disciplines. Administered at both the entry (inbound) and completion (outbound) stages of a business program, the CPC Exam provides longitudinal data that supports pedagogical research focused on student learning development. This presentation examines how the University of Arkansas at Pine Bluff utilizes CPC Exam results to evaluate instructional effectiveness, identify learning gaps, and inform evidence-based teaching strategies across accounting, management, marketing, finance, and economics.

Through systematic analysis of CPC performance data, faculty assess the alignment between course-level learning objectives and program-level outcomes, refine instructional approaches, and implement targeted pedagogical interventions designed to improve student comprehension and knowledge retention. The presentation further explores how CPC Exam findings contribute to reflective teaching practices, curriculum mapping, and continuous improvement initiatives within the School of Business.

At the undergraduate level, the CPC Exam functions not only as a summative assessment tool but also as a pedagogical research mechanism that supports the Scholarship of Teaching and Learning (SoTL). The findings discussed highlight the value of assessment-driven instruction in strengthening student outcomes, supporting accreditation requirements, and promoting data-informed decision-making in business education.

The Effects of Study Habits on Academic Performance Among University Students

Jada Crusterson, Keydra Hatchett, Hope Pearson, June Steward, Jameca Elam, and Tasnuva Enam

This study examined the effects of two distinct study habits—cramming and distributed practice—on academic performance among university students. Grounded in theories of memory and learning, particularly Ebbinghaus's forgetting curve and the spacing effect, the study tested whether students who engaged in distributed practice outperformed those who relied on massed study sessions. Using a randomized experimental design, participants were assigned to either a cramming or distributed practice condition and completed a comprehension test.

Results indicated that there was no statistically significant difference between the distributed practice group ($M = 7.00$, $SD = 2.37$) and the cramming group ($M = 8.00$, $SD = 0.89$), $t(10) = -0.97$, $p = .36$.

Although distributed practice is widely supported in cognitive research, these findings suggest that, within this sample, study method did not significantly impact immediate academic performance. This study contributes to the growing body of literature examining how study strategies influence learning outcomes and highlights the need for further investigation with larger samples and varied conditions.

Swipe to Study: Rethinking Self-Regulated Learning in the Age of Digital Literacy

Tasnuva Enam, and Seungyeon Lee

This study examined how short-form social media study tip videos ("study reels") represent self-regulated learning (SRL) components and influence students' SRL skills and test performance. Participants completed SRL questionnaires, viewed study reels and a digital lecture, then completed an assessment and post-SRL questionnaires. Results showed significant post-SRL score increases, suggesting that reels may support certain SRL dimensions. However, analysis revealed consistent omissions of key components such as metacognitive monitoring and planning. Given the growing prevalence of study reels in digital learning communities, these findings highlight their dual potential to enhance engagement while also risking shallow or unsustainable study practices.

Management Information Systems Strategies for Leaders

Jacquelyn Faucette

Faith based organizations that lack consistent funding face significant operational risk, including the potential discontinuation of essential programs. To sustain financial stability, leaders must apply effective information systems management practices that support strategic decision making. Grounded in the Management Information Systems (MIS) framework, this qualitative pragmatic inquiry explored the information systems management strategies that leaders of faith based organizations use to secure and maintain funding for ongoing operations.

Participants included six leaders from faith based organizations in central Arkansas. Data were collected through semi structured interviews and a review of publicly available documents, including MIS related materials and organizational financial statements. Thematic analysis revealed three central themes: (a) the use of MIS to support strategic management practices, (b) diversification of funding opportunities, and (c) the importance of an effective organizational structure.

A key recommendation is that leaders leverage MIS tools to systematically identify, track, and manage a broader portfolio of funding sources. Implications for positive social change include enhancing the capacity of faith based organizations to deliver programs that improve community members' quality of life and support employment stability, thereby reducing reliance on government assistance programs.

AI Based Threat Detection System Using Machine Learning

Anand P Geddam

Application Programming Interfaces (APIs) have become a fundamental component of modern cloud-based and distributed systems, enabling seamless communication between services and applications. As organizations increasingly rely on APIs for data exchange and service integration, the attack surface of these systems has expanded significantly. APIs are now a primary target for cyber threats such as distributed denial of service (DDoS), brute force attacks, credential stuffing, bot activity, and API abuse. Detecting these threats is particularly challenging because malicious behavior often closely resembles legitimate user interactions.

This project presents an AI-based API threat detection system that focuses on analyzing behavioral patterns in API traffic to identify abnormal activity. Instead of relying solely on traditional rule-based approaches, the proposed system extracts and analyzes key behavioral features, including request count, endpoint diversity, user-agent diversity, geographic distribution, and average time between requests. These features provide a comprehensive representation of user behavior and enable the detection of subtle anomalies that may indicate malicious intent.

A supervised machine learning approach based on Logistic Regression is employed to classify API traffic as normal or malicious. The model is trained using structured behavioral data, allowing it to learn patterns associated with both legitimate and malicious activities. In addition to binary classification, the system incorporates an enhanced analytical layer that categorizes malicious traffic into specific attack types, including DDoS, brute force attacks, credential stuffing, bot activity, and API abuse. This improves interpretability and provides deeper insights into detected threats.

Training Undergraduate Students to Implement Best Practices for Nutrition Education and Wellness in Early Learning Centers

Kimberly Haynie, and Marilyn Bailey

Early childhood is a critical period for establishing lifelong dietary patterns, and early learning environments play a central role in shaping children's eating behaviors. Because most young children spend substantial time in organized care settings, early childhood educators are uniquely positioned to influence food preferences and nutrition-related norms, yet many receive limited formal training in evidence-based nutrition practices. This study evaluated the impact of the Feeding Brighter Futures workshop, an experiential, case-based training intervention, on participants' nutrition-related knowledge, perceptions, and attitudes. Using a pre–post survey design, undergraduate and graduate students and faculty and staff from universities in Mississippi and southeastern Arkansas (N = 33 pre; N = 19 post) completed electronic surveys immediately before and after the workshop. Results showed a statistically significant increase in agreement that teachers should only consume snacks available to children and further strengthening of already positive attitudes toward involving children in snack preparation. Attitudes toward using food as a reward did not change significantly. These

findings suggest that brief, experiential, policy-aligned training can strengthen key attitudes related to early childhood nutrition environments and support workforce preparation and upstream obesity prevention efforts.

Green Classrooms: Linking Farms, Schools, and Student Success

Erika Jackson

The Farm to School Initiative was launched to connect schools with local farms and provide students with access to fresh, healthy, locally grown food. Established in Arkansas under Act 506 by former Governor Asa Hutchinson in 2019, the program aims to embed farm-to-school practices in local education systems to improve health, strengthen community ties, boost local economies, and support environmental sustainability. A key component of this initiative is the integration of school gardens into wellness plans, promoting food security by ensuring consistent access to nutritious food and fostering physical, social, and economic inclusivity. This study explored the impact of a school gardening program involving the principal, 2 teachers, 4 volunteer parents, and 25 students, of varying learning abilities who participated in preparing and maintaining the garden. The objective was to provide hands-on opportunities for all children to learn how food is grown, encouraging healthier eating habits and a deeper appreciation for agriculture. The garden served as a platform for experiential learning across subjects such as science, nutrition, and environmental studies. It also fostered community engagement, bringing together educators, parents, and volunteers to support the garden's development. Findings indicated that gardening activities enhanced students' self-esteem, responsibility, and teamwork, while also promoting patience and cooperation. Notably, the experience had therapeutic benefits—reducing stress, anxiety, and symptoms of depression among participants. Students with learning disabilities or special needs worked collaboratively with their peers, reinforcing inclusivity and a sense of shared purpose.

Induction of Stress Memory through Mild Iron Pre-Exposure Enhances Tolerance in Juvenile Catfish

Nishan Kafle, Kashyap Adhikari, Tiluttom Bhattacharjee, Fatin Ilham Fahim, Sujan Bhattarai, Sharareh Jahanbin, Rebecca Lochmann, Amit Sinha

Iron serves as a key micronutrient in fish physiology, yet excess levels trigger oxidative stress, hinder growth, and weaken immune function within aquaculture settings. Approaches to counteract iron toxicity and bolster fish resilience are essential for advancing sustainable practices in food and agriculture. This investigation explored the impact of mild iron pre-exposure on developing stress memory in juvenile channel catfish (*Ictalurus punctatus*), aiming to boost tolerance to later lethal and sub-lethal iron challenges. Juvenile catfish received pre-exposure to sub-lethal iron levels over 21 days, alongside a control group without such treatment. After pre-exposure, all fish recovered in clean water for 7 days to resolve immediate stress, prior to exposing recovered groups and fresh naïve controls to lethal or sub-lethal iron for another 21 days. Such pre-exposure markedly improved resilience to ensuing iron stress, where greater pre-exposure intensities produced stronger benefits. Compared to naïve controls, pre-exposed fish displayed enhanced survival and superior growth metrics, reflecting a dose-related mechanism for establishing stress memory. Overall, targeted sub-lethal iron pre-exposure fosters stress memory that promotes survival and growth in juvenile channel catfish facing iron toxicity. This method holds promise for strengthening ecological resilience and economic viability in iron-prone aquaculture operations, aligning with innovations for sustainable production.

From Nauplii to Nutrition: Optimizing different forms of Artemia life stages to enhance Growth, Immunity, and Microbiome Stability in L. vannamei Postlarvae

Ram babu Kurapati, Yathish Ramena, Adam Fuller, Tomekia White, and Grace Ramena

The unregulated use of live and decapsulated Artemia across shrimp hatcheries worldwide continues to impact larval growth, survival, and metamorphosis. This study evaluated the effect of four Artemia feeding regimens sourced from GSL™ on Litopenaeus vannamei postlarvae: D1 (100% live instar I nauplii), D2 (100% decapsulated cysts), D3 (75% live:25% decapsulated), and D4 (25% live:75% decapsulated). Postlarvae were assessed for proximate composition, essential amino acid and fatty acid profiles, HSP60, HSP70, and HSP90 gene expression, gut microbiome via 16S rRNA sequencing, and hepatopancreas histology. Data were analyzed using MANOVA, ANOVA, and the MIXED model in SAS 9.4 ($P \leq 0.05$). D1 yielded the highest protein retention, lipid content, and essential amino acid and omega-3 fatty acid profiles; D2 recorded the lowest nutritional indices; D3 and D4 were intermediate. Gut microbiome analysis revealed that postlarvae fed live Artemia (D1, D3, D4) harbored predominantly probiotic bacterial communities, while D2 was dominated by opportunistic bacteria. HSP gene expression demonstrated that D1-fed postlarvae exhibited the least HSP60, HSP70, and HSP90 upregulation, indicating low physiological stress, whereas D2, D3, and D4 showed progressively elevated HSP expression with increasing decapsulated Artemia inclusion. Histologically, D1 exhibited well-preserved hepatopancreatic epithelium with distinct tubular architecture, uniform cellular arrangement, and prominent absorptive and secretory cell populations, while D2 exhibited marked epithelial deterioration; D3 and D4 presented intermediate profiles. A 75% live:25% decapsulated Artemia (D3) best supported nutritional quality, favorable microbiome composition, reduced physiological stress, and hepatopancreatic integrity in L. vannamei postlarvae.

It is all about ethics !

Stacy McKisick

Ethics is a group of standards by which we govern ourselves in a given discipline. Since we are counselors and many are Certified Rehabilitation Counselors, the CRC Code of Ethics governs us. My presentation will focus on six key aspects of ethics in counseling.

Quilting as a Catalyst for Mental Health Promotion and Social Cohesion among Mature Women

Jane Opiri

Rural women face limited mental health support and social isolation. This ethnographic study of quilting circles (n=8, ages 60–79) found that participants experienced improved stress relief and emotional well-being. Communal quilting offers a low-cost, culturally grounded approach to mental health.

Effects of a Strong Faith/Spiritual Life on Stress & Anxiety in College Students

Kristian Payne, Aziriyah Foy, Myla Ellis, and RaMazha Watkins, Tasnuva Enam

The purpose of this study was to examine how a strong sense of faith or spirituality relates to stress and anxiety levels among college students. This work aims to support students in reflecting on their spiritual beliefs as a potential resource for navigating the challenges of college life, while also contributing to a broader understanding of how psychology and faith intersect.

Weed Species Hosting Sweetpotato Potyviruses in Arkansas

Ajitha Ravikumar, Prakriti Dhaka, Shaun A. Francis, Nilda Roma-Burgos, and Sathish Kumar Ponniah

Sweetpotato (Ipomoea batatas (L.) Lam.) is an important crop in Arkansas, providing essential economic value to small-scale farmers. Virus infections, particularly from potyviruses (Sweetpotato Feathery Mottle Virus-SPFMV, Sweetpotato Virus C-SPVC, Sweetpotato Virus G-SPVG, and Sweetpotato Virus 2-SPV2) are predominantly transmitted by whiteflies and aphids, significantly reducing sweetpotato yield and quality. The potential role of weeds as alternate hosts for insects and virus reservoirs remains unclear; therefore, understanding the spread of these viruses is critical for developing effective weed control measures. This study investigates the role of weeds as alternate hosts and reservoirs for sweetpotato viruses and facilitating the spread of infections. The study highlights the significance of virus-vector interactions and plant diseases. The study aims to identify weed species that act as sweetpotato virus reservoirs during summer in Arkansas. We collected 53 and 173 weed samples from nine sweetpotato farms including Jefferson County, and three farms in Cross County during the summer of 2023 and 2024, respectively. In total, 226 samples were randomly collected, which included cutleaf groundcherry (14), smell melon (20), Palmer amaranth (42), entireleaf morningglory (35), ivyleaf morningglory (20), yellow nutsedge (29), horsenettle (13), pitted morningglory (4), common lambsquarters (2), yellow foxtail (7), curly dock (4), hophornbeam copperleaf (13), and Johnsongrass (23). Leaf samples were transported in ice coolers and stored in -80º C on the same day. The samples were analyzed for the four potyviruses including SPVG, SPVC, SPFMV & SPV2 using the standard multiplexed Reverse Transcriptase Polymerase Chain Reaction. In 2023, the weed species that tested positive for viruses include ivyleaf morningglory (SPVC), yellow nutsedge (SPVG), and entireleaf morningglory (SPVG, SPVC, SPFMV, and SPV2), entireleaf morningglory (SPFMV), entireleaf morningglory (SPVG and SPFMV), and horsenettle (SPVG and SPFMV).In 2024, horsenettle (SPFMV), yellow foxtail (SPFMV), Palmer amaranth (SPFMV), Palmer amaranth (SPFMV), Palmer amaranth (SPFMV), hophornbeam copperleaf (SPVG & SPFMV), pitted morningglory (SPFMV), pitted morningglory (SPVC), yellow nutsedge (SPFMV), yellow nutsedge (SPFMV), yellow nutsedge (SPFMV), horsenettle (SPFMV), horsenettle (SPFMV). Horsenettle and yellow nutsedge were consistently hosting potyviruses in both years.

Assessing The Effect of Potyviruses on Different Generations of Beauregard Sweet Potato Variety

Kylan Ray, and Sathish Ponniah

Sweetpotato (Ipomoea batatas (L.) Lam.) is the most important root vegetable with good fiber. It is vegetatively propagated and susceptible to viral infections. Viral titers accumulate disproportionately with each planting cycle (generation). These viruses are transmitted by insect vectors, Aphids (Myzus persicae), responsible for transmitting potyviruses, namely Sweetpotato Feathery Mottle Virus (SPFMV), Sweetpotato Virus G (SPVG), Sweetpotato Virus 2 (SPV2), and Sweetpotato Virus C (SPVC). These viruses are known to reduce both the quality and quantity of sweetpotato yields, with potyviruses reducing yields by 25-50%. This study aims to quantify the infection rate of potyviruses in five different generations of sweetpotato, understand any changes in the shape of the sweet potato roots across the various generations, and investigate any differences in its yield components. The treatments applied for this study are G0, G1, G3, G4, and G6. The research design used is a Randomized Complete Block Design (RCBD). The treatments used were G0, G1, G3, G4, and G6. Storage roots harvested from treatments were randomly sampled for total nucleic acid extraction. Standard gene-specific primers were used to test the infection rate of sweetpotato potyviruses using reverse transcriptase polymerase chain reaction (RT-PCR). The older generations, G6 and G4, showed higher virus titrations than the younger generations, G0 and G1. Hence, growers are advised to use younger generations rather than older generations to avoid yield loss.

Method for Solving Global Minimizations and Nonlinear Systems

Ivan Raykov

In this work we introduce a method of finding the global minimum of bounded from below functions with continuous partial derivatives in an Euclidean space E^n. We create a function which finds the zeros of the sign function of the sum of the squares of the partial derivatives of the function to minimize. We can solve with this method also systems of simultaneous continuous nonlinear equations. We find in that case the zeros of the sign function of the sum of the squares of the equations of the system to solve.

Functionalizing Chitosan Nanoparticles against A. hydrophila in catfish, a Potential Antibiotic Alternative

Sonya Williams Reed

Aeromonas hydrophila ias a is gram negetive bacillus bacteria, that moves by a single polar flagellum. Aeromonas hydrophila causes Motile Aeromonas Septicemia (MAS) in fish, leading to significant economic losses and substantial global financial impact. The inefficacy of vaccines and the rise of antibiotic resistance call for alternative treatments to combat A. hydrophila infections in fish. Plant extracts contain bioactive compounds, including phenols, flavonoids, and carotenoids, which possess antioxidative, antifungal, bactericidal, and bacteriostatic properties. Our preliminary data show that clove (Syzygium aromaticum) extracts, particularly eugenol, exhibit strong antimicrobial effects against A. hydrophila, with no cytotoxic, genotoxic, or growth-inhibitory effects in channel catfish ovary (CCO) cells. However, its volatility limits practical application. To address this, we developed a strategy involving the functionalization of chitosan–tripolyphosphate (CS-TPP) nanoparticles (CS-TPP-E-NPs) for the delivery of eugenol and clove extract. Nanoparticles, due to their small size and large surface area, have demonstrated notable efficacy in drug delivery in human medicine and are increasingly being explored in fish medicine. Chitosan, a natural polymer with non-cytotoxic, antimicrobial, immunostimulant, and biodegradable properties, is ideal for nanoparticle formulation. We have successfully synthesized chitosan NPs, CS-TPP-E-NPs, and CS-TPP-clove oil NPs, and verified and characterized them using Fourier Transform Infrared Spectroscopy (FTIR) and Scanning Electron Microscopy (SEM). FTIR confirmed functionalization, while SEM validated the nanoparticles' morphology, composition, and size.

Genomic Evaluation of Antimicrobial Resistance and Virulence Factors in Incompatibility Group FIB Plasmid-positive Salmonella enterica from Food and Food Animals Sources

Yasser Sanad, Nesreen Aljahdali, Jing Han, Ashlyn Carlton, and Steven Foley

Many Salmonella enterica strains carry plasmids, such as incompatibility group (Inc) FIB that carry antimicrobial resistance (AR), virulence, and transfer genes that allow these strains to survive in variable conditions. This study was conducted to evaluate IncFIB positive Salmonella isolates from foods and food animal sources to characterize AR, virulence factors associated with these plasmids. The presence of virulence, AR and transfer-associated genes were detected in 93 IncFIB-positive Salmonella isolates using PCR analyses. Plasmid transfer ability was assessed using conjugation experiments. A subset (N=46) of isolates was tested for invasion and persistence potential in human intestinal epithelial (Caco-2) cells. Whole genome sequence (WGS) analysis was conducted for 18 of the isolates.

Over 75% of the isolates possessed all transfer genes and over 69% were resistant to at least five antimicrobials, carried corresponding AR genes and 61% of strains could transfer AR to a recipient conjugally. All strains infected the Caco-2 cells, however there was variability observed in persistence dynamics, with ~40% increasing in numbers and others decreasing. Based on WGS analyses, genes involved in integral functions and/or energy production transcription were conserved among the isolates; however, genes involved in transport, acquisition, motility, virulence, and AR occurred variably among the isolates. Together, most IncFIB positive strains carried multiple virulence genes and were able to infect and persist in intestinal cells. High transferability of the IncFIB plasmids that carry both AR and virulence-associated genes is a potential concern due the possibility of creating more virulent and resistant organisms in a single genetic event.

Peptidoglycan Hydrolases as Alternative Antimicrobials for Streptococcus iniae

Annik T Segree, David M. Donovan, Jason Abernathy, Craig A. Shoemaker, and Grace Ramena

Streptococcus iniae is a major aquatic pathogen responsible for Streptococcosis, a disease affecting about 30 fish species and causing significant economic losses in aquaculture worldwide. The pathogen spreads rapidly through the bloodstream, making infections difficult to control. Although antibiotics are widely used for prevention and treatment, their effectiveness is increasingly compromised by the emergence of multi-drug-resistant strains and concerns about resistance transfer from aquaculture to human clinical settings. These challenges highlight the urgent need for alternative antimicrobial strategies that are both effective and sustainable.

One promising approach is bacteriophage-derived endolysins, specifically peptidoglycan hydrolases (PGHs), which target bacterial cell walls. In this study, bioinformatics tools were used to identify PGHs with potential activity against S. iniae. Selected enzymes were cloned into a pET21a (+) vector with a 6×His tag, overexpressed in E. coli, and purified using nickel column chromatography. Their antimicrobial activity was tested against eight S. iniae strains and four Gram-positive commensal bacteria from tilapia gut microbiota.

The study identified ten PGHs capable of targeting S. iniae. Experimental assays, including plate lysis, zymography, and turbidity reduction tests, demonstrated that purified PGHs effectively lysed multiple S. iniae strains. Two enzymes showed particularly strong lytic activity. Importantly, no activity was observed against beneficial commensal bacteria, indicating high specificity. Additionally, these PGHs retained functional stability and activity for up to 96 hours at room temperature.
Overall, the findings suggest that PGHs are promising, targeted alternatives to antibiotics for controlling S. iniae infections in aquaculture.

Role of Modern Tools for Increasing the Supply of Seedlings to Community Gardeners of Pulaski and Jefferson Counties in Arkansas

Andre Shelby, Sathish Ponniah, and Tomekia White

There is a wealth of emerging issues facing global society. Of these issues, food and social security are among the highest rankings. Many struggle to afford food as prices soar and are dissatisfied with their work and/or social status. This is especially true in low-income communities where crime, drug abuse, and suicidal ideation are likely exacerbated or caused by a lack of food and social security. To these problems, community gardens can present an emerging

solution. Community gardens promote better lifestyles through potentially inexpensive, healthy eating, gentle/intense physical activity promoting physical health, and fostering a sense of community outlook/networks. Community gardens also improve air quality, increase property value/improve neighborhood stability, allow for plot reclamation, improve urban soils, reduce the severity of heat islands, improve surface water retention whilst reducing surface runoff, and improve urban biodiversity – including weed/native plants and insects. Community gardens also allow for interpersonal, cross-generational, and multi-cultural interaction that other activities do not. The project aims to increase the awareness of community gardeners through the supply of raw materials for the successful growing of green space in Pulaski and Jefferson counties. In-house hydroponics/vertical farming models and greenhouse spaces at the University of Arkansas at Pine Bluff (UAPB) helped to germinate the seedlings. We will discuss our research experience using hydroponics and greenhouse spaces to germinate seedlings. In addition, we will discuss the observations from the seasonal selection of crops for the community gardeners.

Enhancing Growth and Health of Largemouth Bass Fingerlings with Single Cell Proteins and Probiotics in Basal Diets

Arielle Shelby, Fard Karim, Annik Segree, Humphrey Wanjala, Sonya Reed, Yathish Ramena, and Grace Ramena

Introduction: The ever increasing need to meet the nutritional needs of a growing population projected to reach nearly 10 billion by 2050. Aquaculture presents a promising solution with Largemouth Bass as a high-value species and an emerging food fish for U.S. aquaculture. Advances in technologies such as recirculating aquaculture systems have improved production efficiency and sustainability. However, the scalability of aquaculture remains limited by high feed costs, reliance on fishmeal-based diets, and the associated environmental concerns. The growth, survival, and health of Largemouth Bass are significantly influenced by diet quality.

Methods: This study aims to evaluate the growth and Health of largemouth bass fingerlings with single cell proteins and probiotics in basal diets. Over 90 days, LMB fingerlings were maintained in a RAS and subjected to four dietary treatments: Basal, yeast, spirulina and probiotics. We evaluated the growth and survival, assessed the target stress response genes, and evaluated the gut microbiome and did a histopathological analysis of the distal gut.

Results The incorporation of probiotics and yeast into LMB diets significantly improved survival and gut health, while growth and feed utilization remained consistent across all diets. Better Cumulative weight gain, better survival in Yeast and Probiotic fed LMB, Yeast had immunostimulant effect, better intestinal homeostasis and reduced stress. We observe an abundance of good microbiome (probiotic) and an increased diversity in Yeast and Spirulina fed LMB.

Conclusion: However, an increased concentration of dietary supplements to achieve optimal specific growth rate for sustainable LMB production needs to be assessed.

Family Support as a Catalyst for Leadership Development Among Minority Women in Higher Education

Yunru Shen

This qualitative phenomenological study explores the leadership development experiences of Asian and Asian American women in higher education. Based on in-depth interviews with six participants, the study examines how cultural values and family relationships shape their leadership trajectories.

Findings identify family support as a central theme, highlighting its critical role in participants' academic and professional development. Family support provided emotional encouragement and practical assistance, strengthening participants' confidence and ability to navigate leadership challenges.

Situated within the broader context of the underrepresentation of minority women in leadership, this study demonstrates that leadership development is deeply influenced by family and cultural contexts rather than occurring in isolation.

The findings offer implications for higher education institutions to develop more culturally responsive leadership programs and support systems that recognize the influence of family and community.

How AI (Especially LLMs) is Transforming Marketing Research

Kamlesh Tiwari

Artificial Intelligence (AI), particularly Large Language Models (LLMs), is transforming marketing research by enabling faster and more efficient analysis of large volumes of consumer data. These technologies enhance tasks such as sentiment analysis, survey interpretation, and trend forecasting, providing deeper and real-time insights compared to traditional methods.

LLMs also enable the use of synthetic data, allowing researchers to simulate consumer behavior when real data is limited or sensitive. While this offers advantages such as scalability and privacy, synthetic data has limitations, including potential bias, lack of real-world accuracy, and the need for careful validation.

Overall, AI is significantly improving marketing research capabilities, but its effective use requires balancing technological advantages with ethical considerations and human judgment.

Assistive Technology for visually impaired

Dwaine Turner

The presentation will focus on the assistive technology for individuals with vision impairment can utilize to help them be able to navigate in their home and their local communities. The presentation will highlight new technology from the bedroom to the kitchen.

Development of a Patient-Derived Zebrafish Xenograft Model for Glioblastoma

Humphrey Wanjala, Grace Ramena, Rania Cheriyan, and Moniq Muhia

Glioblastoma (GBM) is the most aggressive primary brain tumor, characterized by rapid proliferation, diffuse infiltration, and resistance to conventional therapies, resulting in poor patient prognosis (Figure 1). Preclinical evaluation of GBM relies heavily on rodent xenograft models; however, these systems are costly, labor-intensive, and often limit high-throughput applications.

To address these challenges, we developed a zebrafish xenograft platform as a complementary in vivo model for studying glioblastoma biology. Human glioblastoma cell lines U87 (GFP-labeled) and U251 (mCherry-labeled) were transplanted into zebrafish embryos, enabling real-time visualization of tumor dynamics, including proliferation, migration, and angiogenic interactions within a transparent host environment.

This approach further provides a rapid and scalable system for testing therapeutic compounds and assessing tumor responses. By leveraging the advantages of zebrafish—optical accessibility, genetic tractability, and cost-effectiveness—this study establishes a versatile preclinical model that bridges the gap between in vitro assays and mammalian systems, with potential to accelerate glioblastoma research and drug discovery.

AI & the Future of the Engineering & Computing Workforce

Trina Fletcher, Ahlam Alharbi, Tina Fletcher, and Myah Webb

The growth of artificial intelligence has made its mark by reshaping the job market and reorienting careers to require skill-based qualifications. It is observed through various formats of grey literature that occupations such as computing or engineering anticipate job growth, but the automation of certain traditional tasks is leading to job decline. Federal planning, such as AI.gov, identifies initiatives to balance embracing AI and to "invest in the workforce that will build, operate, and maintain it" (AI.gov, n.d., p. 14-17). In the process of AI reshaping the workforce, there are potential scenarios ranging from adoption exceeding the rate at which workers can obtain the skills to leverage it to companies taking the time to invest in their workers' skill development to preserve human-centered ingenuity. The potential effects of these scenarios include the creation of new jobs alongside the decline of some existing jobs, an overdependence on automation to compensate for talent scarcity, or even the development of human-AI collaborative workflows. Through the systematic review of grey literature, synthesizing technical reports, working papers, and policy briefings, this study aims to bring awareness to the urgency of adopting AI initiatives on their campuses to prepare their students for an AI-integrated workforce. Some universities are beginning to take the first steps to implement AI skill-building initiatives through partnerships between themselves and corporations. Working towards upskilling appears to be the way toward facing the duality of challenges between AI, which is either the disruptor of jobs or the creator of jobs.

Strategic Planning and Market Positioning for a Boutique Hotel in a Southern Market: The Development of "The Bon Vivant"

Leonard Williams

This study presents a comprehensive strategic framework for the development and market positioning of The Bon Vivant, a boutique hotel concept designed to embody the essence of Southern hospitality while integrating modern technological innovations and operational efficiencies. As the hospitality industry continues to evolve in response to shifting consumer preferences, boutique hotels have emerged as a competitive alternative to traditional lodging by emphasizing authenticity, personalization and experiential value. This report explores how environmental psychology, servicescape theory and hedonic consumption principles inform the design and operational strategies of boutique properties, particularly in creating emotionally engaging guest experiences that foster loyalty and repeat visitation.

Utilizing a qualitative research methodology that incorporates literature review, industry insights and data-driven analysis, the study identifies key factors influencing boutique hotel success. Central to the findings is an eight-dimensional environmental model, comprising location, facility aesthetics, theme, entertainment, amenities, ambience, spatial layout, and employee service, which collectively explains a significant proportion of guest satisfaction and behavioral intention. Additionally, the integration of artificial intelligence technologies, such as contactless check-in, AI concierge systems, and smart energy management, is examined as a mechanism for enhancing operational efficiency while maintaining human-centered service delivery.

The study further evaluates financial feasibility through detailed development cost projections, capital structuring and incentive strategies, demonstrating the importance of aligning technological investments with measurable performance outcomes. Ultimately, the findings suggest that boutique hotel success is driven by the strategic integration of cultural authenticity, environmental coherence, technological innovation and leadership alignment. This integrated approach positions The Bon Vivant as a sustainable and competitive model within the contemporary hospitality landscape.

Examining Celebrity Coach Influence on Generation Z Consumer Behavior: The Wow Factor

Leonard Williams

This study examines the emerging role of celebrity coaches as influential figures in shaping Generation Z (Gen Z) consumer behavior within the contemporary sport industry. As sport continues to evolve through commercialization, digital media expansion and personality-driven branding, coaches have transitioned from behind-the-scenes strategists to highly visible public figures and cultural leaders. Despite this shift, existing sport marketing research has largely focused on athlete endorsements, leaving a critical gap in understanding how leadership figures influence consumer attitudes, purchase intentions and brand loyalty. This study addresses that gap by developing and empirically testing a comprehensive theoretical model grounded in Source Credibility Theory, Parasocial Interaction Theory, Social Identity Theory, Self-Determination Theory and Signaling Theory.

Using a mixed-methods approach that includes qualitative interviews, a large-scale survey of 512 Gen Z consumers and an experimental comparison between coach and athlete endorsements, the study explores the mechanisms driving consumer response.

Findings from structural equation modeling reveal that perceived authenticity serves as the strongest mediator between coach credibility and purchase intention, while parasocial interaction significantly enhances engagement and brand attitude. Additionally, value alignment between the consumer, coach, and brand strengthens loyalty formation, highlighting the importance of shared beliefs and social identity in modern endorsement effectiveness.
The results further indicate that celebrity coaches are perceived as more authentic than athletes among Gen Z consumers, suggesting a shift in endorsement dynamics toward leadership-based influence. This study contributes to sport marketing literature by positioning coaches as a distinct and impactful endorsement category while offering practical insights for sport organizations and brands seeking to engage a values-driven, digitally connected generation.

Autonomous, Energy-Resilient Biosurvival Architectures: Fusing Deep Learning, Quantum Science, and Precision Logistics for Contested Environments

Peter Wui

The University of Arkansas at Pine Bluff (UAPB) presents the Logistics, Energy, and AI for Defense (LEAD-AI) initiative, a five-year, $10 million defense research capacity-building program funded under the Department of War's Pilot Program for HBCUs and Minority-Serving Institutions (FOA W911NF26S0075). LEAD-AI advances UAPB's trajectory from its current Carnegie R2-eligible standing toward Very High Research Activity (R1) status by establishing a dual-use autonomous research testbed that integrates UAPB's Integrated High Energy Density Storage Laboratory with its internationally recognized Center of Excellence in Aquaculture.
The program is organized around three interlocking technical pillars aligned with Department of War critical technology priorities. The first pillar, Applied Artificial Intelligence (AAI), deploys custom Long Short-Term Memory (LSTM) neural networks to predict lithium battery thermal degradation and capacity fade under high-stress field conditions — directly addressing the logistical vulnerabilities of forward-deployed military units dependent on off-grid power. The second pillar, Quantum and Battlefield Information Dominance (Q-BID), develops variational quantum algorithms — including the Quantum Approximate Optimization Algorithm (QAOA) and Variational Quantum Eigensolver (VQE) — to solve high-dimensionality contested logistics optimization problems at speeds that exceed classical computational limits. The third pillar, Contested Logistics Technologies (LOG), operationalizes UAPB's YOLOv11-based edge-native computer vision platform for real-time infrastructure anomaly detection under Disconnected, Intermittent, and Low-bandwidth (DIL) constraints, hardened by Post-Quantum Cryptography protocols against adversarial data poisoning and sensor manipulation.

UAPB's Aquaculture Center of Excellence — operating 24 hours a day, seven days a week under conditions that directly mirror the "dirty, dull, and dangerous" profile of isolated forward military bases — serves as the primary high-fidelity testbed, advancing all three technical pillars from Technology Readiness Level (TRL) 3 to TRL 6 over the five-year performance period. The program's geographic position adjacent to the Smackover Formation, the largest domestic lithium brine deposit in North America, provides unique access to industry-grade battery materials and supply chain data through partnerships with ExxonMobil and Standard Lithium.
LEAD-AI directly implements the recommendations of the National Academies of Sciences, Engineering, and Medicine (NASEM) report on defense research capacity at HBCUs by targeting $10 million in STEM-designated research expenditures, conferring a minimum of 10 doctoral degrees across three programs (Aquaculture Ph.D., DBA in Applied Business Analytics, and Ph.D. in Quantum Science), producing 50 peer-reviewed publications, and institutionalizing research administration through an expanded Office of Research, Innovation, and Economic Development (ORIED). By Year 5, LEAD-AI will have established UAPB as a sustained, Carnegie R2-stabilized contributor to the Department of War's defense research enterprise and a credible candidate for R1 reclassification — translating UAPB's federally established 1890 land-grant research mission into measurable national security impact.

Anti-Aging Cellular Protection and Vascular Endothelial Restoration through Nanoencapsulated Gamma-Oryzanol: An In Vitro Study

Priya Yadav, Janani Sankar, Shengyu Mu, Fumiya Watanabe, Gregory Guisbiers, and Sankar Devarajan

Nanoencapsulation of bioactive phytochemicals offers a transformative strategy to improve their stability, bioavailability, and therapeutic potential. This study combines two complementary approaches to evaluate nanoencapsulated gamma-oryzanol (GO), a rice bran–derived phytochemical, for its protective effects against oxidative stress–mediated cellular aging and endothelin-1 (ET-1)-induced endothelial dysfunction. Nanoencapsulated GO (NEGO) demonstrated excellent physicochemical properties, including uniform particle size with high stability, and spherical morphology. NEGO exhibited significant antioxidant ability, inhibited extracellular matrix (ECM)–degrading enzymes (elastase, collagenase, hyaluronidase), and tyrosinase, and reduced reactive oxygen species (ROS) levels. These biological effects were reflected in enhanced cell viability, proliferation, and migration in H_2O_2-induced NIH/3T3 fibroblasts, supporting its potential anti-aging efficacy. In another separate study, poly(lactic-co-glycolic) acid (PLGA)-based gamma-oryzanol nanoparticles (GO@PLGA NPs) demonstrated significant vascular protective effects against ET-1–induced endothelial injury in EA. hy926 cells. GO@PLGA NPs maintained endothelial cell viability, enhanced proliferation, and reduced premature cellular senescence. Also, GO@PLGA NPs treatment improved nitric oxide bioavailability, significantly reduced pro-inflammatory mediators (IL-6, IL-8), adhesion molecules expression (ICAM-1, VCAM-1), and maintained endothelial barrier integrity through regulation of tight junction proteins. Further, ROS levels were significantly reduced, and endothelial migration and wound-healing efficacy were enhanced. Our study demonstrates that nanoencapsulation enhances the bioavailability of GO across different cellular systems. Nanoencapsulated GO can be a promising, food-derived nanotherapeutic candidate for targeting oxidative stress, inflammation, and cellular dysfunction associated with aging-related damage and cardiovascular disease.

What factors are associated with past participation in recreational fishing among college students in the Southeastern United States? A comparative analysis of Black HBCU and White PWI students.

Annette D. Williams Yussif

Recreational fishing participation shows significant disparities across racial and institutional lines in higher education. This study examines whether Black students at Historically Black Colleges and Universities (HBCUs) are less likely than White students at Predominantly White Institutions (PWIs) to have participated in recreational fishing and identifies additional demographic factors associated with past fishing participation. Using survey data from 4,763 White PWI students and 622 Black HBCU students across the Southeastern United States (2018-2020), we found substantial participation disparities. White PWI students demonstrated significantly higher past fishing participation (92.8%) than Black HBCU students (67.9%; $\chi^2 = 139.16$, $p < 0.001$). White PWI students also began fishing earlier (mean age 6.5 ± 3.4 years vs. 10.2 ± 5.1 years, $p < 0.001$, Cohen's $d = 0.86$) and fished more frequently (6.3 vs. 1.6 trips annually). Beyond race and institution type, male gender, rural childhood location, and Agriculture/Natural Resources majors were positively associated with past fishing participation. Social support networks showed dramatic differences, with White PWI students significantly more likely to have fathers (60.2% vs. 30.5%), friends (72.1% vs. 35.7%), and other family members who fished (57.2% vs. 46.9%). Black HBCU students with immediate family who fished were 6.9 times more likely to be active anglers. These findings confirm substantial racial and institutional disparities in recreational fishing participation and highlight the critical role of social support networks in fishing engagement.

Poster Presentations Abstracts

The Unsustainable Trajectory of AI Data Center Energy Consumption: Environmental Impacts, Emerging Alternatives, and a Roadmap Toward Miniaturized, Affordable Artificial Intelligence Infrastructure

David Adedeji

The exponential growth of artificial intelligence (AI) has precipitated an unprecedented surge in data center energy consumption, creating a nexus of environmental, economic, and land-use challenges that demand urgent scholarly and policy attention. Global data center electricity consumption reached an estimated 415 terawatt-hours (TWh) in 2024, approximately 1.5% of global electricity use, and is projected to more than double to 945 TWh by 2030 according to the International Energy Agency (IEA). AI-optimized servers, which represented 21% of total data center power usage in 2025, are forecast to account for 44% by 2030, with their electricity consumption rising nearly fivefold from 93 TWh to 432 TWh. This study presents a comprehensive, interdisciplinary analysis of the environmental footprint of AI infrastructure across four dimensions: (1) energy consumption and carbon emissions; (2) water depletion and land-use transformation; (3) natural resource extraction and electronic waste generation; and (4) emerging solutions including orbital data centers, neuromorphic computing, algorithmic efficiency, and renewable energy integration. Drawing an analogy to the historical miniaturization of computing, from room-sized mainframes to wristwatch-sized devices, this research examines whether a comparable trajectory of energy efficiency improvement is achievable for AI systems. We evaluate breakthrough technologies such as neuromorphic chips that promise 100- to 1,000-fold reductions in power consumption, space-based data centers leveraging continuous solar energy in sun-synchronous orbit, and software optimization paradigms exemplified by DeepSeek's demonstration of frontier AI performance at a fraction of conventional computational cost. The paper proposes a multi-pronged "Sustainable AI Roadmap" encompassing hardware innovation, policy reform, transparency mandates, and strategic infrastructure siting. Our findings suggest that without coordinated intervention, AI's annual carbon footprint could reach 24 to 79.7 million metric tons of CO_2 by 2030, while its water footprint may rival the annual consumption of 6 to 10 million American households. However, the convergence of neuromorphic architectures, energy-efficient algorithms, and space-based infrastructure offers a viable pathway toward affordable, environmentally responsible AI.

The effects of social media on attention and academic performance

Jalen Bass

The study examines the effects of social media use, particularly TikTok, on students' attention, distraction, and academic performance. A survey will be conducted with questions on the main variables. Using a statistical tool, hypotheses will be tested to provide a theoretical explanation of the relationship.

Evaluating The Role of Native Grasses in Improving Water Quality and Soil Health in Agricultural Fields.

Jamarion Beasley

Water quality and availability are becoming increasingly critical global concerns, particularly in the face of shifting temperature patterns, changing precipitation dynamics, and the growing frequency of extreme weather events. These environmental changes significantly affect runoff quality by altering nutrient loading and sediment transport. In Arkansas, agriculture plays a vital economic role, with approximately 13.8 million acres of farmland contributing nearly $16 billion to the state's economy. This study aims to assess nutrient, and sediment loads in edge-of-field runoff and utilize native grass as a cover crop and buffer strip to improve soil health and water quality. The experimental design includes adjacent demonstration plots separated by a levee, each equipped with a discrete runoff outlet and an ISCO 6712 edge-of-field monitoring station. Soil samples were collected from nine areas within the field using a 6-inch probe. The Mehlich III Nutrient soil test revealed an average pH of 5.6, which shows the soil being very acidic. At this level it would be difficult to hold nutrients. The recommendation of the Jefferson County extension office would be to apply lime at a rate of 3000 lbs./acre. Our hypothesis is that our use of conservation practices will reduce nutrient and sediment loss while enhancing soil health. Through the UAPB Discovery Farm Educational Center, our goal is to provide practical, data-driven recommendations to landowners and local policymakers. This work contributes to the broader understanding of how native vegetation and sustainable land management practices can improve water quality and promote long-term agricultural resilience. Work supported by USDA-NIFA Grant #GR019246.

From Farm to Table: Virulent Gene Profiling of Listeria in Food Animals

Audrianne Bradford and Vinay Raj

Listeria species include several gram-positive bacteria found in the environment, with Listeria monocytogenes a highly pathogenic species responsible for causing a major foodborne illness listeriosis. Listeria species are commonly found in soil, water, and animal feces, creating multiple pathways for transmission to humans. Infection typically occurs through consumption of undercooked meat, unpasteurized dairy products, and contaminated raw vegetables. Once ingested, the organism primarily targets the gastrointestinal tract and liver. Common symptoms include fever, muscle aches, nausea, diarrhea, headache, and stiff neck. In severe cases, the infection may progress to meningitis or septicemia, particularly when it spreads to the central nervous system. Populations at highest risk include pregnant women, newborns (via mother to infant transmission), older adults, and individuals with weakened immune systems.

The purpose of this study is to improve understanding and raise awareness of growing antibiotic resistance associated with key virulent genes of Listeria. Databases such as NCBI were used to

conduct a comprehensive review analysis of virulence factors and pathogenicity of Listeria. Additional insights were elucidated from studies using genomic and exome based sequencing approaches. The major virulence genes of Listeria identified include InlA, InlB, LLO (hly), PlcA, PlcB, ActA, and PrfA, all of which contribute to host invasion, intracellular survival, and cell to cell spread.

Our results indicate that most of the strains of Listeria were sensitive to commonly used antibiotics such as gentamicin, vancomycin, levofloxacin, and trimethoprim sulfamethoxazole (Bactrim). However, notable resistance was observed in some strains particularly to clindamycin, with approximately 35.5% of isolates showing resistance. A smaller subset demonstrated resistance to additional antibiotics. These findings highlight a growing concern that emerging antibiotic resistance in Listeria poses a potential threat to future treatment strategies, underscoring the need for continued surveillance and molecular characterization of resistant strains.

Comparative Genomic Analysis of Functionally Analogous Genes in Campylobacter and Salmonella

Kasey Brown, Vinay Raj, and Alexis Whitten

Campylobacter and Salmonella are two of the most common bacterial causes of foodborne illness worldwide. These bacteria pose major public health concerns due to the rise of antimicrobial resistance (AMR) in numerous meat-producing farm animals. Although the bacteria are genetically different, their virulence genes perform similar functions. Due to these similarities in function, Campylobacter and

Salmonella are able to develop resistance to antibiotics. The purpose of this research is to explore how both pathogens achieve the same goals, such as adhesion to cells, invading tissues, avoiding the immune system, and resisting antibiotics, through the different genes that perform similar functions. By performing a systematic review of the literature and a study of databases such as GenBank, VFDB, and CARD, we compared genes that control adhesion, motility, invasion,

and antibiotic resistance in each bacterium. The genes were then grouped by function and analyzed for comparative results. Our research shows that both bacteria use efflux pump systems to resist antibiotics and share similar mechanisms of invasion and adhesion. For example, Salmonella uses invA and sipA genes to invade cells, while Campylobacter uses ciaB and cdtABC genes to perform the same function. This comparison shows that even though Campylobacter and Salmonella evolved through different genetic paths, they have developed some of the same survival mechanisms. Understanding these shared traits will offer a clear path toward controlling foodborne infections more effectively and improving AMR surveillance.

The Role of Artificial Intelligence in Precision Agriculture and Sustainable Food Production: A Food Safety and Environmental Sustainability Perspective

Simon Chambo, Oluwademilade Ogunbade, and Karleah Harris

Managing agricultural resources efficiently while ensuring food safety presents critical challenges in contemporary farming systems and poses significant risks to environmental sustainability. Traditional agricultural practices often result in resource waste, excessive chemical applications, and reduced productivity that can compromise food quality through contamination and environmental degradation. This study uses a qualitative approach. Thus, integrating artificial intelligence (AI) into precision agriculture has revolutionized conventional farming methods, enabling accurate crop monitoring, resource optimization, and sustainable production practices. AI-driven solutions, particularly machine learning algorithms, robotic systems, and predictive analytics, offer innovative approaches to address these multifaceted challenges. Therefore, sustainable agricultural practices supported by AI technologies are essential for food security and align with the principles of Family and Consumer Sciences (FCS) by promoting food safety, enhancing environmental stewardship, and advancing technological innovation for optimal quality of life.

Estimating The Effect of Potyviruses on The Yield of Different Generations of The Beauregard Variety

Dharma Prasad Chapai and Sathish Kumar Ponniah

Sweetpotato (Ipomoea batatas) is a nutritionally important crop rich in beta-carotene, potassium, dietary fiber, and vitamins A and C. Orange-fleshed varieties have been especially valuable in helping reduce vitamin A deficiencies among pregnant women and young children in developing countries. Sweetpotatoes are vegetatively propagated, and viruses tend to build up over successive planting generations, gradually leading to cultivar decline that affects both yield and root quality. Over 30 viruses have been identified in sweetpotato, and four potyviruses, Sweetpotato feathery mottle virus (SPFMV), Sweetpotato virus G (SPVG), Sweetpotato virus 2 (SPV2), and Sweetpotato virus C (SPVC) are the most commonly found in U.S. commercial production fields.

The objectives of this study were to quantify the rate of potyvirus infection across five vegetative generations (G1, G2, G4, G5, and G7) of the Beauregard variety and to investigate differences in yield components across graded categories among generations under field conditions. Slips were propagated under greenhouse conditions at the University of Arkansas at Pine Bluff (UAPB) and planted in a randomized complete block design (RCBD) with four replications during summer 2025. Roots were cured and evaluated for total marketable yield, U.S.#1, Jumbos, Canners, and Culls, and virus detection was performed using multiplex reverse transcription–polymerase chain reaction (mRT-PCR).

Significant differences were found in U.S.#1 and Canner grades across generations, with total marketable yield declining by 42.16% in 2025 from younger (G1, G2) to older (G7) generations. SPFMV was the most frequently detected potyvirus, with infection rates increasing in older generations. These results suggest that using clean planting material at earlier generations could help reduce virus-related yield losses in commercial sweetpotato production.

Comprehensive Genome-wide Analysis and Functional Characterization of the Glyoxalase Detoxification System and Its Role in Methylglyoxal Scavenging During Abiotic Stress in Sweet Potato (Ipomoea batatas L.)

Saleh Shafique Chowdhury, Muhammad Abul Kalam Azad, Nanziba Ibnat and Shahidul Islam

Sweet potato (Ipomoea batatas L.) is a crucial food security crop valued for its nutritional content and adaptability to marginal lands, yet its productivity is severely constrained by abiotic stresses that induce cytotoxic methylglyoxal (MG) accumulation. The glyoxalase system—comprising glyoxalase I (GLYI), glyoxalase II (GLYII), and glyoxalase III (GlyIII)—detoxifies MG through glutathione-dependent pathways to maintain cellular redox homeostasis, but remains uncharacterized in sweet potato's complex hexaploid genome.This study conducted the first comprehensive genome-wide bioinformatics analysis of sweet potato glyoxalase genes using HMMER profiling, BLASTP validation, and domain confirmation via InterProScan/Pfam. Systematic identification revealed multiple IbGLYI, IbGLYII, and IbGlyIII members exhibiting conserved catalytic domains essential for MG detoxification. Physicochemical characterization demonstrated diverse molecular weights (20-45 kDa), isoelectric points (pI 5.2-9.1), and subcellular localizations predominantly in cytosol (60%) and chloroplasts (25%). Phylogenetic reconstruction across 10 species delineated conserved clades alongside hexaploid-specific expansions driven by tandem/segmental duplications under purifying selection (Ka/Ks < 0.4). Promoter analysis uncovered dense arrays of stress-responsive cis-regulatory elements (DRE, ABRE, MYB) suggesting abiotic stress regulation, while conserved motif analysis confirmed critical catalytic residues. Chromosomal mapping revealed gene clustering patterns, and tissue-specific RNA-seq profiling established baseline expression across root, stem, leaf, and storage root tissues.

This foundational genomic resource identifies priority IbGLY candidates and provides essential regulatory insights for future functional validation and stress tolerance breeding. These targets enable CRISPR/Cas9 editing and marker-assisted selection to develop climate-resilient sweet potato varieties for food-insecure regions facing intensifying abiotic stresses.

Development of Stable Halide Perovskite-Polymer Composite Films for Light-Emitting Devices

Mateo Cook, Maoding Cheng, Zoe McGowan, Renke Wang, Wei Du, and Qinglong Jiang

Halide perovskite nanocrystals have emerged as highly promising materials for light-emitting applications, owing to their exceptional photoluminescence quantum yields and narrow emission bandwidths. Through the substitution of halide anions (Br^-, I^-, Cl^-), their emission color can be precisely tuned across the entire visible spectrum, from blue to green and red. However, despite this remarkable spectral tunability, their practical deployment has been hindered by poor environmental stability—especially under exposure to moisture and oxygen. In this study, we implemented a polymer encapsulation approach to fabricate halide perovskite–polymer composite films, which significantly improved both the environmental robustness and optical performance of the resulting light-emitting devices. Additionally, by carefully adjusting the halide composition, we successfully achieved multicolor emissions, further demonstrating the versatility of this material system.

Assessing the Interest of African American Students in the Field of Accounting

Stephanie Cox

This study examines the persistent underrepresentation of African Americans in the accounting profession, where fewer than 4% of Certified Public Accountants (CPAs) identify as African American despite ongoing diversity initiatives. Grounded in Social Cognitive Career Theory (SCCT), the research explores factors influencing African American students' interest in accounting, including self-efficacy, exposure to African American accounting instructors, perceptions of the profession, and structural barriers such as the 150-hour CPA requirement, fear of the CPA exam, and job market competition.

A quantitative survey research design was employed using a stratified sample of African American students, accounting professionals, CPAs, and faculty in the Little Rock, Arkansas metropolitan area. Data were analyzed using descriptive statistics and Analysis of Variance (ANOVA) to examine relationships among variables influencing career choice.

Findings revealed no statistically significant relationship between self-efficacy and the decision to pursue accounting, challenging traditional assumptions that confidence is a primary driver of career selection. Instead, the results highlight the importance of exposure, mentorship, representation, and knowledge of the profession. The limited presence of African American accounting faculty and professionals may reduce awareness and access to role models for students considering accounting careers.

This study contributes to the literature by emphasizing the need for targeted outreach, increased visibility of African American professionals, and enhanced career education initiatives. The findings provide practical implications for educators, advisors, and organizations seeking to increase diversity and participation in the accounting profession.

What Soil Are You Using To Grow Your Geniuses?

Machell Dailey

This project grew from a presentation delivered at The Learning Lounge, a private micro school dedicated to fostering community engagement among educators, parents, and local leaders. The session, inspired by Dr. Debra Ren-Etta Sullivan's Cultivating the Genius of Black Children, examined how the "soil" in which children grow can either nurture or hinder their development. The presentation was peer-reviewed by the school's founder to ensure alignment with the school's mission of culturally grounded, family-centered education.

The topic is critical because early educational spaces often overlook the cultural and intellectual brilliance of children, especially those from marginalized backgrounds. By shifting from deficit thinking to an asset-based approach, families and educators can intentionally create conditions that affirm identity, celebrate cultural heritage, and cultivate confidence. This work aligns with culturally responsive pedagogy, encouraging educators and caregivers to view every child as inherently capable, curious, and creative.

The presentation engaged approximately 30 participants (60% faculty and staff, 40% parents and community members) in dialogue and reflection. Attendees described the experience as "inspiring," "eye-opening," and "a necessary conversation." The session generated renewed commitment among participants to reexamine their educational "soil," foster environments of belonging, and continue community-based conversations that empower both children and adults to grow together in genius.

"Every child is born with genius. Our role is to uncover it, not suppress it." – Dr. Debra Ren-Etta Sullivan

Analysis of Virulent Genes of Campylobacter and Salmonella

Praise Fabiyi, and Vinay Raj

Background: Campylobacter and Salmonella are two of the most common bacterial pathogens affecting food animals and are major causes of foodborne illnesses in humans worldwide. Different strains of Campylobacter and Salmonella affect food animals, and sometimes by extension, the human consumers differently. The major strains, Campylobacter jejuni, Campylobacter coli, and Salmonella Typhi, survive in poultry gut and pigs' intestines without causing obvious disease, although mild enteritis and growth depression have been reported in young or immunocompromised chicks, but lead to infections like diarrhea (sometimes bloody), salmonellolis, abdominal pain, fever, ano rarely, complications like Guillain-Barré syndrome, septic arthritis, osteomyelitis, meningitis, and endocarditis in humans upon ingestion of a carrier animal.

Methods: Virulence-associated genes (cadF, ciaB, cdtA, cdtB, cdtC, flaA, virB11, invA, hilA, prgH, etc.) of the most common strains of Campylobacter and Salmonella in food animals were identified and profiled by a systemic review of the literature. The exon and intron structures of the virulent genes obtained from ENSEMBL gene annotation information were analyzed. For phylogenetic analyses, deduced amino acids sequences encoded by the virulent genes from various species were aligned to assess evolutionary relationships. The co-occurrence patterns and functional roles were assessed using network pathway analysis. The resistance profiles of the Campylobacter strains, adaptation and impacts to hosts, and their functional relevance to human infection were studied.

Results: Preliminary findings indicate a high prevalence of distinct virulent genes expressions in poultry and other food animals' isolates, with distinct gene networks emerging across host species. Specific gene clusters, including cadFciaB-ctABC in Campylobacter and sipABC in Salmonella, were strongly associated with traits implicated in human gastrointestinal stress and reduced productivity in poultry.

Conclusion: Our study highlights how virulence gene networks in Campylobacter and Salmonella contribute to colonization dynamics and potential disease expression in humans and food animals. Analyzing these genetic interactions provides valuable insight into zoonotic risk and improves our understanding of animal health, providing a foundation for strategies to mitigate pathogenic burden on both humans and food animals.

College student's attitudes toward fake news and their information media use behaviors and perceived credibility

Joell Finley

This study examines college students' attitudes toward fake news and AI-generated news, and how these perceptions shape their media use behaviors. It explores whether attitudes toward and perceived prevalence of misleading content influence news consumption, source selection, and perceived credibility.

Using a survey adapted from prior research, data were collected from undergraduate communication students. Findings show that students generally hold negative attitudes toward fake news and express confidence in identifying it, though they vary in recognizing its sources, including AI-generated content. Additionally, their perceptions of fake and AI-generated news significantly influence both their trust in news sources and their overall news consumption.

These findings highlight the growing impact of emerging media technologies on information behavior and underscore the need for stronger media literacy in today's digital environment.

Comparison of Baby Kale Growth Preformance in Soil-based and Hydroponic Growing System

Ah'Maya Green

Urban agriculture-defined by the USDA as the cultivation, processing, and distribution of agricultural products in urban and suburban settings-includes methods such as vertical farming, warehouse production, community gardens, rooftop farming, hydroponics, aeroponics, and aquaponics. These systems support diverse communities by increasing access to nutritious food, creating jobs, fostering engagement, and expanding green spaces. The study compares how soil-based and hydroponic systems affect baby kale growth and development. Baby kale seeds will be planted in both systems, and plant growth will be evaluated by measuring growth rate and overall plant quality. The goal is to determine which method delivers higher yield and quality. providing data-driven insights for sustainable and efficient urban farming.

Temporal Variation in Glycerol and Biochemical Composition of Artemia Reared Under Controlled Salinity Conditions

Innocence Reed-Guy, Ram babu Kurapati, Grace Ramena, and Yathish Ramena

The present study investigated the temporal variation in glycerol content and biochemical composition of Artemia reared under controlled laboratory conditions. Approximately 2 g of Artemia cysts were incubated in 1 L Imhoff cones containing seawater at 25

ppt salinity. The cultures were maintained under optimal hatching conditions with continuous aeration, and the experiment was conducted in triplicate to ensure reproducibility. Post-hatching, Artemia nauplii were harvested at 24, 48, and 72 hours to evaluate developmental and metabolic changes over time.

Glycerol content was quantified exclusively to assess its role in osmotic regulation and stress response during Artemia development.

Additionally, proximate composition, amino acid, and fatty acid analyses were performed to determine the influence of culture duration on the organism's nutritional and biochemical profile. Results demonstrated significant temporal differences in glycerol concentration, with variations corresponding to the duration of incubation. These fluctuations suggest that glycerol synthesis and accumulation are dynamic processes linked to the osmoregulatory and metabolic adjustments of Artemia. The associated changes in amino acid and fatty acid profiles further support the hypothesis of adaptive biochemical modulation during development.

Overall, this study provides insight into the physiological and biochemical adaptations of Artemia across different hatching durations, emphasizing the role of glycerol as a key metabolite in maintaining cellular homeostasis under varying environmental and developmental conditions.

Extraction and characterization of soybean oil from irrigation under different growth states

MD Jahurul Haque, Susmita Sarkar, Nanziba Ibnat., Saleh Shafique Chowdhury, Muhammad Abul Kalam Azad, Ajoy Saha, and Shahidul Islam

Soybean (Glycine max) is one of the most significant crops globally. Therefore, soybean production needs to increase significantly as the population grows and dietary patterns change. A lot of water is consumed in soybean production due to its low water productivity. The aim of this study is to investigate the effects of irrigation on total oil yield and antioxidant activity of soybean at different growth stages at UAPB. The total oil yield and antioxidants were determined using standard methods. The total oil yield ranged from 17.20 to 19.4% for various water treatments applied. Treatment 2 yielded the highest, while treatment 1 yielded the lowest. The results demonstrated that soybean has moderate antioxidant activity (19.46 to 6.38 mg TE/g extract) and TPC (0.17 to 0.52 mg TAE/g extract). Notably, treatments 1 and 4 exhibited the highest TPC and ABTS values among the four treatments investigated. This study provided nutritional information on soybean production under limited water resources.

From Grain to Growth

Jeronee Hinton

This project focuses on rice and revealing the embryo tip, which is the growing point of the seed. After the husk was removed, the seeds were placed in moist conditions to observe germination. The seeds first absorbed water, then began to grow as the root emerged followed by the shoot, forming a sprout. The sprout then can begin its process independently.

Next-Gen Aqua Farming: Automated Growth Insights and Smart Feeding with AI & IoT

Ram babu Kurapati, Yathish Ramena, Adam Fuller, Tomekia White, and Grace Ramena

Conventional biometric assessment of Pacific White Shrimp (Litopenaeus vannamei) and Largemouth Bass (Micropterus salmoides) postlarvae requires physical handling and gravimetric weighing, procedures that increase stress, mortality, and disease susceptibility. This study developed a dual-phase precision aquaculture platform integrating AI-driven image analysis at early developmental stages with IoT-enabled smart feeding during growout. In the AI phase, over 900 shrimp images were annotated using Roboflow software and used to train a custom YOLOv11 object detection model employing CNN feature extraction for real-time instance segmentation and localization. Roboflow API-based models were deployed for Largemouth Bass and Bluegill species identification. The system was built on a FastAPI Python backend with an HTML/CSS/JavaScript frontend deployed on cloud infrastructure. Upon single-image acquisition, the platform delivers total count, average body length, estimated weight ($W = 8.54\times10^{-6} \times L^3$), size-distribution histograms, percent coefficient of variation (CV), and survival rate (%SV), without physical contact. Cross-institutional validation performed on comparable models trained independently on similar datasets yielded consistent results, with the developed model achieving detection accuracy greater than 95%. In the IoT growth phase, electromagnetic sensor-equipped automatic feeders were installed in grow-out ponds to monitor feeding behavior, leftover feed quantity, and optimize feed timing and volume based on real-time consumption data. This novel dual-phase AI–IoT framework significantly reduces manual labor, operational costs, animal handling stress, and disease risk, offering a scalable and cost-effective precision aquaculture solution accessible to small and medium-scale producers.

College student's preferred news sources and their perceived news credibility

Joshua McClinton

This study examines college students' preferred news sources and their perceptions of credibility across three categories: social media, AI-generated news, and legacy media. As digital platforms increasingly dominate the information landscape, many college students rely on social media as their primary source of news, raising important questions about trust and accuracy. Using a survey-based design, this ongoing study collects data on students' news consumption habits and their evaluations of credibility across these sources.

The findings will contribute to existing research on media credibility by offering updated insights into how young audiences assess news in a rapidly evolving environment. In particular, the study highlights the growing influence of social media while comparing it with

emerging AI-generated content and traditional media outlets. This research is significant because, although social media provides convenient access to information, it also enables the spread of misinformation, which can pose risks to informed citizenship and democratic processes.

Swipe, Watch, Repeat: Understanding Media Motivations and Negative Outcomes in College Students

Karlei McCree

This study explores the reasons college students engage with short-form, high-stimulation digital content and how those motivations are linked to negative psychological and behavioral outcomes. Drawing on Uses and Gratifications Theory, it considers how content is used for entertainment, escape, and passing time, while also examining potential downsides of these habits.

The research focuses on whether these usage motives are associated with higher levels of stress, anxiety, loneliness, and decreased academic focus. Data will be collected through a brief survey measuring media habits, motivations, and indicators of psychosocial well-being among college students.

As a work in progress, this study seeks to offer insight into how algorithm-driven media environments shape not only user engagement but also broader psychological and behavioral patterns.

Peptidoglycan Hydrolases (Pghs) As Alternative Antimicrobials for Streptococcus Iniae Infections in Fish

Zachariah McGowan, Kailash Bohara, Annik Segree, and Grace Ramena

Streptococcus iniae is a gram-positive pathogen that causes streptococcosis in fish, resulting in high mortality and economic losses in aquaculture. The emergence of antibiotic resistance necessitates alternative therapeutics. Phage-derived endolysins, or peptidoglycan hydrolases (PGHs), enzymes that degrade bacterial peptidoglycan layer, are promising antimicrobials. In this study, we appended eleven cell-penetrating peptide (PTD) domains to two PGHs we previously shown to be active against eight S. iniae strains. PTDs are short peptides that facilitate translocation of PGHs across host cell membranes, enabling intracellular bacterial targeting. We tested these PGH-PTD constructs in OmB cells co-cultured with six S. iniae strains at an MOI of 1:100, treated with 10µg of each purified enzyme. PGH-PTDs lysin one: 7, 10, and 11 significantly reduced intracellular S. iniae strain 35Br, whereas PGH-PTD 12 was effective against strain ATCC 29178. PGH-PTD 7 also lysed strains ARS-9860 and MN15Br, and PGH-PTDs 8 and 9 were active against strains YV16 and BZ1. PGHs lacking PTDs showed minimal intracellular activity, underscoring the essential role of PTDs in enabling cellular uptake. These results demonstrate that PGHs, when fused with PTDs, can effectively target intracellular S. iniae and hold potential as environmentally friendly alternatives to antibiotics for controlling streptococcosis in aquaculture.

Quantum-Level Green Light-Emitting Device as Treatment for Virulent Bacterial Pathogens

Zoe McGowan, Maoding Cheng, Qinglong Jiang, and Grace Ramena

Antibiotic resistance and biofilm persistence remain major challenges in aquaculture and human health, emphasizing the need for novel, non-antibiotic disinfection strategies. Green-light phototherapy is understudied, and its antimicrobial potential has been limited by the broad, low-purity emission of conventional LEDs. This study will investigate the antimicrobial efficacy of spectrally pure green light generated by Cs_4PbBr_6 perovskite nanocrystals embedded in poly(ethylene oxide) (PEO), which produce narrow-band green emission (~520–535 nm) when optically excited with ~405 nm blue light. Recent advances in perovskite–polymer composites have demonstrated enhanced moisture stability, high photoluminescence efficiency, and tunable emission characteristics, suggesting strong potential for photonic disinfection systems. The planned experiments will expose standardized cultures of Edwardsiella piscicida, Aeromonas hydrophila, Streptococcus iniae, Staphylococcus aureus, and additional aquaculture-relevant pathogens to three conditions: (1) dark/ambient control, (2) blue-light exposure, and (3) blue-excited green light (B-EGL) generated from the Cs_4PbBr_6–PEO device. Treatment durations will range from 15 to 180 minutes. Following illumination, bacteriostatic and bactericidal effects will be quantified using viable counts (CFU/mL) and optical-density growth curves, and biofilm-reduction assays. Because prior work shows minimal green-light efficacy using broad-spectrum sources, this study will determine whether narrow-band, high-photon-density green emission can overcome these limitations and achieve meaningful antimicrobial activity. Outcomes are expected to establish baseline feasibility and identify exposure conditions suitable for translation into aquaculture disinfection, surface-biofilm management, or broader One Health pathogen-control applications.

Development of a Patient Derived Zebrafish Xenograft model for Gliblastoma

Moniq Muhia, Humphrey Wanjala, Grace Ramina, Rania Cheriyan and Analiz Rodriguez

Glioblastoma (GBM) is the most aggressive primary brain tumor, characterized by rapid proliferation, diffuse infiltration, and resistance to conventional therapies, resulting in poor patient prognosis (Figure 1). Preclinical evaluation of GBM relies heavily on rodent xenograft models; however, these systems are costly, labor-intensive, and often limit high-throughput applications. To address these challenges, we developed a zebrafish xenograft platform as a complementary in vivo model for studying glioblastoma biology. Human glioblastoma cell lines U87 (GFP-labeled) and U251 (mCherry-labeled) were transplanted into zebrafish embryos, enabling real-time visualization of tumor dynamics, including proliferation, migration, and angiogenic interactions within a transparent host environment. This approach further provides a rapid and scalable system for testing therapeutic compounds and assessing tumor responses. By leveraging the advantages of zebrafish—optical accessibility, genetic tractability, and cost-effectiveness—this study establishes a versatile preclinical

model that bridges the gap between in vitro assays and mammalian systems, with potential to accelerate glioblastoma research and drug discovery.

Web-Based Visualization of Virulence Gene Clusters in Campylobacter and Salmonella

Hawulethu Ndlovu

This study presents a web-based platform for visualizing virulence gene clusters in Campylobacter and Salmonella, two major causes of bacterial gastroenteritis. The system integrates curated genomic datasets with modern full-stack technologies, including Next.js, React, DataTables.js, and Plotly.js, to enable interactive exploration of gene clusters and host-species relationships. Deployed on cloud infrastructure, the platform supports real-time filtering, scalable data handling, and dynamic visualization of complex biological data. By transforming large genomic datasets into accessible and interpretable insights, this tool enhances research and public health analysis while demonstrating the value of combining computational methods with microbiological studies.

The Effects of Compost on Soil Health

Kendrick Nelson, Tomekia White, and Dameion White

Soil health is a cornerstone of sustainable agriculture and food production. Healthy soil supports plant growth, regulates water, cycles nutrients, and sustains biodiversity. However, practices such as intensive farming, erosion, and poor land management degrade soil quality over time. Composting-recycling organic waste into nutrient-rich amendments- provides a practical, low-cost strategy to restore and maintain soil health. Compost enhances soil structure, boosts microbial activity, improves water retention, and supplies essential nutrients critical for plant growth. This study investigates the impact of compost on three key indicators of soil health: pH, moisture retention, and organic matter content. A comparative experiment was designed with two groups: (1) a control group consisting of untreated garden soil and (2) an experimental group consisting of soil mixed with 25-30% compost by volume. Baseline measurements were taken for all variables, followed by repeated testing at regular intervals. Soil pH was measured using digital meters or test strips, organic matter content through soil testing methods, and moisture retention will be measured by saturating soil and recording water-holding capacity over 24 48 hours. By evaluating differences between compost-amended and control soils, this study aims to provide measurable evidence of compost's benefits in improving soil quality over time. The findings will not only reinforce the scientific value of composting but also highlight its role as a sustainable practice for schools, community gardens, and local agriculture. Demonstrating these benefits can encourage broader adoption of composting as both an educational and environmental strategy. Work supported by USDA-NIFA Grant #GR022251.

Sustainable Crop Management Through the Integration of Artificial Intelligence for Weed Detection and Food Safety

Oluwademilade Ogunbade, and Karleah Harris

Weeds remain one of the most persistent challenges in global food production, threatening crop yield, quality, and ultimately food security (Sow et al., 2024). Recent advances in artificial intelligence (AI) have transformed agricultural weed management, offering data-driven solutions that enhance accuracy, reduce costs, and strengthen food safety practices (Monteiro et al., 2021). Intelligent tools, such as machine learning models and autonomous sprayers, enable site-specific detection and targeted treatment, thereby promoting food safety, which is crucial for human health, advancing environmental sustainability, and ensuring safe food systems. This study examines how AI innovations enhance efficient and environmentally responsible weed management, with a focus on their role in ensuring food safety. It aims to bridge the gap between conventional weed control methods and emerging AI-based agricultural systems.

Sharing the Self Online: Examining College Students' Self-Disclosure on Social Media

Ayana Pacley, Madison Goodloe

This study examines how social media use behaviors influence college students' self-disclosure patterns on social media. Specifically, it focuses on whether frequent use, greater affinity toward social media, and higher levels of gratification are associated with increased willingness to disclose personal information.

The study is guided by Social Penetration Theory, which explains that self-disclosure develops over time as individuals become more comfortable and familiar within a communication environment. Applied to social media, the theory suggests that increased use and familiarity with the platform may encourage users to share more information, both in terms of breadth (variety of topics) and depth (level of intimacy).

The central hypothesis proposes that higher levels of social media use—measured by frequency, affinity, and gratifications—will lead to greater self-disclosure across both breadth and depth. Using a survey-based design, the study will collect data from college students to examine the relationships among these variables.

Weather-Based Irrigation Scheduling and Comparison of Water Productivity of Soybeans under Furrow and Subsurface Drip Irrigation (SDI)

Ajoy Kumar Saha, Kylie Rhodes, Susmita. Susmita

Arkansas is ranked 3rd for irrigated acres in the nation. The most irrigated methods are gravity flow, which usually incur about 50% of water loss. While the Mississippi River Basin is a source of irrigation for Arkansas, the primary source is groundwater from the Mississippi River Valley Alluvial Aquifer (MRVAA). MRVAA faces challenges due to the over-pumping and water levels, declining that is a huge concern about the aquifer's sustainability. This study investigates the feasibility and water productivity of weather-based irrigation scheduling for normal-pressure Subsurface drip irrigation, SDI (install ¾" diameter pipe at 5" depth from the soil surface) over

conventional furrow. Soybean crop has been cultivated (plot size 20 ft X 83 ft) in late summer 2025 at UAPB campus farm (in Pine Bluff, AR), having soil type Grenada Silt loam (slopes 1 to 3%). Three irrigation systems (SDI, furrow and rainfed) were investigated in three plots. The irrigation schedule was developed from historical data and applied (with adjustment) by utilizing the FAO-developed AquaCrop model and weather data (collected from the Air & Water database, USDA NRCS). Sentek soil moisture sensors were used to monitor the variation of water content. During the growing season, the soil moisture fluctuation after irrigation application ensures the feasibility of the normal pressurized SDI method to irrigate the soybean within, without clogging. Preliminary results showed that Irrigation increases yield 50% and 95% for SDI and Furrow compared to the non-irrigated (rainfed) production systems. However, conventional furrow irrigation systems need more water to generate a higher yield, along with significant water loss.

How Biochar Modifies Soil Structure and its Impact on runoff in Agriculture fields

Che Rochford, Tomekia White, Tracy Dunbar, and Ryan Nedd

Economic and Environmental Implications of Biochar Application in Pea (Pisum sativum) Production Systems in Jefferson County, Arkansas

The Mississippi River, known as “America’s River,” supports millions of people through its watershed, which provides water, food, and recreation. However, nutrient runoff from agricultural activities has contributed to a dead zone in the Gulf of America, leading to ecosystem degradation. This study examines the economic and environmental impacts of biochar application compared to non-biochar soil management in pea (Pisum sativum) production systems, including rotation with corn, in Jefferson County, Arkansas. Biochar, a carbon-rich byproduct of biomass pyrolysis, has been linked to improved soil health, reduced nutrient losses, and enhanced crop productivity. Despite these potential benefits, adoption remains limited due to uncertain profitability and variable performance across regions. This research integrates agronomic field data with economic modeling to assess yield performance, nutrient runoff reduction, and economic viability, including net present value and benefit-cost ratio. Water samples collected with the ISCO 6712 automatic sampler will be analyzed for nutrient and sediment content. Findings are expected to guide farmers in assessing the feasibility of biochar adoption while providing insight into its broader policy implications for sustainable agriculture and water quality improvement in the Mississippi River Basin.

Genome-Wide Identification and Expression Profiling of Aldehyde Dehydrogenase (ALDH) Genes in sweet potato (*Ipomoea batatas* L. Lam)

Samia Sultana Lira, Muhammad Abul Kalam Azad, Shahidul Islam

Sweet potato (Ipomoea batatas) is a nutritionally important and stress-resilient crop, yet its productivity is limited by abiotic stresses such as drought, salinity, and oxidative damage. The Aldehyde Dehydrogenase (ALDH) gene family plays a vital role in detoxifying reactive aldehydes generated during stress, thereby maintaining cellular homeostasis. This study aims at a genome-wide identification of aldh genes in sweet potato, identifying 378 members, with 33 from the ALDH family 2 selected for detailed analysis. Functional characterization, including domain conservation, subcellular localization, and physicochemical properties, was performed. Gene expression profiling under salt and drought stress of candidate genes warrants an understanding of stress tolerance and crop improvement.

Study of Temperature-Dependent Raman Modes of 2D Semiconductor and their Heterostructure

Joel Ruzindana, Kenice James, Janai Mathis, Yunsheng Qiu, Shrawan Roy, Manoj Shah, Qinglong Jiang, and Mansour Mortazavi

Transition metal dichalcogenides (TMDs), which are layered semiconductors bound by van der Waals forces, exhibit interesting layer-dependent optoelectronic properties, making them highly promising for next-generation flexible optoelectronic devices. In this study, we explored the temperature-dependent phonon dynamics of molybdenum disulfide (MoS2), tungsten disulfide (WS2), and their van der Waals heterostructures using Raman spectroscopy as a non-destructive characterization technique. Few-layer samples were exfoliated mechanically and identified using a combination of optical contrast, photoluminescence, and machine learning techniques, ensuring high accuracy in layer determination. Temperature-dependent Raman measurements were conducted from 90 K to 300 K with 532 nm laser excitation, revealing systematic redshifts in the Raman vibrational modes with increasing temperature, indicative of phonon softening. These shifts provide insights into the anharmonic phonon interactions and thermal expansion properties of the materials. This study contributes to understanding the optothermal behavior of 2D TMDs and their heterostructures, which is essential for designing thermally robust devices. Future work will focus on accurate monolayer detection, exploring twist-angle effects in heterostructures, and leveraging machine learning for real-time layer identification and property prediction under extreme conditions.

Breast Cancer Prediction Using Machine Learning

Nitish Kumar Sankurabhukta

Breast cancer is one of the most common causes of cancer death worldwide. Classifying tumors as malignant or benign early on helps doctors choose the right treatment faster. This study compares five machine learning classifiers - Logistic Regression, Support Vector Machine, Kernel SVM (RBF), Decision Tree, and Random Forest using the Wisconsin Breast Cancer dataset, which comprises 569 patient records with 30 features computed from digitized fine needle aspirate (FNA) images of breast masses.

The dataset was split 75:25 into training and test sets. Categorical labels were encoded (Malignant = 1, Benign = 0) and all features were scaled to the same range before training. Three models-Random Forest, SVM, and Kernel SVM-tied at 96.50% test

accuracy. Decision Tree scored a perfect 100% on training data but dropped to 93.71% on test data, indicating overfitting. SVM and Kernel SVM gave identical results, suggesting that the non-linear kernel added no benefit for this particular dataset.

Among all five, Random Forest performed best overall because it maintained high accuracy without overfitting. The takeaway is that high training accuracy does not necessarily translate to strong performance on unseen data. Future improvements would include cross-validation, precision and recall metrics, and explainability tools such as SHAP to identify the most influential features in the prediction.

Assessment of Climate Change Impact on Flow, Volume, Erosion, Sediment Load, and Deposition Dynamics within the Arkansas River

Andre Shelby, and Ajoy Kumar Saha

Climate change has a drastic effect on the flow of water through riparian systems, including the Arkansas River. Since climate change affects precipitation, which adds to the water volume in the system, periods of drought and/or periods of increased precipitation, because of climate change, should influence the discharge and volume of water within riparian systems, and, thus, influence the sediment behaviors within the system. The objective of this study is to assess the impact of climate change on the historical variation of the Arkansas River's daily discharge, Total suspended solids (TSS), erosion, and deposition, and its correlation with precipitation. For this study, daily streamflow (ft^3/s) and water quality (Total suspended solids) were collected for five gauging stations of the Arkansas River for 1975-2025 from the U.S. Geological Survey (USGS) and the Department of Environment and Natural Resources (DENR) website, respectively. The precipitation, temperature, and humidity data were collected from the NOAA website for the respective. We found that Arkansas is experiencing about 4% precipitation increase trend from 1925-2-25. To investigate the sediment deposition, we have planned to use the historical data(s), to see if there is any correlation. Using a Revised Universal Soil Loss Equation - Version 2 (RUSLE2) and GIS, erosion volume and map will be calculated for the Arkansas River basin with Arkansas boundaries. Historical daily, monthly, and yearly flow volumes, erosion, and total suspended solids (TSS), were estimated and compared with precipitation.

Enhancing Growth and Health of Largemouth Bass Fingerlings with Single Cell Proteins and Probiotics in Basal Diets

Arielle Shelby, Fard Karim, Annik Segree, Humphrey Wanjala, Sonya Reed, Yathish Ramena, and Grace Ramena

Introduction: The ever increasing need to meet the nutritional needs of a growing population projected to reach nearly 10 billion by 2050. Aquaculture presents a promising solution with Largemouth Bass as a high-value species and an emerging food fish for U.S. aquaculture. Advances in technologies such as recirculating aquaculture systems have improved production efficiency and sustainability. However, the scalability of aquaculture remains limited by high feed costs, reliance on fishmeal-based diets, and the associated environmental concerns. The growth, survival, and health of Largemouth Bass are significantly influenced by diet quality.

Methods: This study aims to evaluate the growth and Health of largemouth bass fingerlings with single cell proteins and probiotics in basal diets. Over 90 days, LMB fingerlings were maintained in a RAS and subjected to four dietary treatments: Basal, yeast, spirulina and probiotics. We evaluated the growth and survival, assessed the target stress response genes, and evaluated the gut microbiome and did a histopathological analysis of the distal gut.

Results The incorporation of probiotics and yeast into LMB diets significantly improved survival and gut health, while growth and feed utilization remained consistent across all diets. Better Cumulative weight gain, better survival in Yeast and Probiotic fed LMB, Yeast had immunostimulant effect, better intestinal homeostasis and reduced stress. We observe an abundance of good microbiome (probiotic) and an increased diversity in Yeast and Spirulina fed LMB.

Conclusion: However, an increased concentration of dietary supplements to achieve optimal specific growth rate for sustainable LMB production needs to be assessed.

Data-Driven Interactive Web Platform for Metastatic Breast Cancer (MBC) Research

Gerald Shimo, Praise Fabiyi and Vinay Raj

Background. Metastatic breast cancer (MBC) is a serious condition that requires clear, evidence-based information on what it is, how it develops and spreads, and how it is treated. Researchers, clinicians, and the public need a single, trusted resource that ties every figure and claim to cited sources such as SEER (NCI) data, peer-reviewed literature, and clinical references.

Methods. We built a web-based MBC research site with Next.js that ingests and structures data from SEER, peer-reviewed PDFs, and clinical literature. Data is managed through PDF extraction scripts that pull numeric values from articles, SEER ingestion into Supabase, and optional Firebase storage. The site is organized into sections covering definition, epidemiology, demographics, clinical outcomes, public health, biology, and treatment, with interactive charts and tables backed by structured, cited data.

Results. The platform delivers a unified evidence synthesis with interactive visualizations and tables, all linked to trusted sources. Figures and claims remain tied to SEER, peer-reviewed PDFs, and clinical literature through the extraction and ingestion pipeline, so users can trace every statistic to its origin.

Conclusion. The MBC research site provides researchers, clinicians, and the public with a single, evidence-based resource for understanding metastatic breast cancer and its burden, outcomes, and treatment options.

AI-Powered Smart Textiles: Redefining Profitability and Wellness in the Hospitality Industry

Semiyah Smith and Jane Opiri

The hospitality industry is shifing toward wellness-centered experiences supported by artificial intelligence. Al-powered smart textiles; bedding, curtains, and upholstery embedded with responsive sensors represent a novel approach to enhancing guest comfort, sleep quality and well-being. This qualitative study explored guest perceptions, excitement, concerns, and loyalty intentions regarding these technologies through 12 open-ended survey responses. Five dominant themes emerged: wellness optimization, innovation enthusiasm, privacy concerns, sustainability questions, and cost barriers. Findings suggest that ethical design and transparent data governance are essential for successful adoption.

From Factories to Algorithms: Revisiting Marshall in a Digital World

Mason Smith

This research examines the contributions of Alfred Marshall and the late nineteenth-century Marginalist school, highlighting their shift away from the Classical labor theory of value toward a framework centered on utility, supply and demand, and marginal analysis. Writing during the Industrial Revolution, Marshall famously described the interactions between the production costs of a good and the utility that consumers derive from it with the now classic "scissors" metaphor. In addition to price theory, Marshall contributed substantially to our understanding of price elasticity of demand and the concept of economic time, both of which play a significant role in modern microeconomics.

In addition to engaging with the ways in which Marginalist school economists, including John Bates Clark, conceived of capitalism and defended it as a system economically and morally superior to socialism, this paper challenges key assumptions that undergird those defenses, in light of recent trends in the US economy including a steadily increasing productivity of labor accompanied by stagnant wages. In an AI driven economy, our traditional understanding of value derived from Marginalist theory, that is, based on marginal contribution, increasingly fails to capture the essence of value in areas such as data and network effects. While large technology companies such as Amazon, Google, Facebook, and Apple reap vast marginal profits, the primary driver of that value, users' data, is often provided without compensation. Marshall remains the most important economic thinker. But his ideas can only remain important by being adapted to deal with new inequalities and new technology, especially requiring a new way of thinking about value and capital.

Python Based Feature Ranking for Heart Failure Survival: A Reproducible Analytics Workflow

Taureen Sprinkle, and Vinay Raj

Accurate identification of clinically meaningful predictors is central to translational data science and reproducible biomedical research. Chicco and Jurman (2020) demonstrated that survival in heart-failure patients can be predicted with high accuracy using only two variables—serum creatinine and ejection fraction—identified through classical biostatistical feature-ranking methods implemented in R. Reproducing such analyses using open, widely accessible tools is essential for transparent and reproducible computational workflows.

This work aims to replicate and extend the feature-ranking methodology of Chicco and Jurman using Python-based statistical and machine-learning libraries instead of R, used by the authors. The goal is to gain hands-on experience in biostatistical analysis, reproducible research practices, and the interpretation of clinically relevant predictors.

Using the publicly available heart-failure clinical dataset, we implemented a Python workflow incorporating: Correlation analysis (Pearson) to quantify linear associations between clinical variables and survival. Univariate statistical testing (t-tests, chi-square tests) to assess group differences between survivors and non-survivors. Model-based feature importance using logistic regression, random forests, and support vector machines from scikit-learn. And finally Reproducibility practices, including environment specification, version-controlled Jupyter notebooks, and automated reporting with Python scripts. Across statistical and machine-learning approaches, serum creatinine and ejection fraction consistently emerged as the strongest predictors of mortality, aligning with the findings of the original publication. Other variables contributed minimal additional predictive value. The Python workflow successfully reproduced the feature-ranking hierarchy while offering transparent, fully documented computational steps. This project demonstrates that Python provides an accessible and reproducible platform for learning biostatistical feature-ranking methods in clinical datasets.

The relationship between social media use and psychosocial well-being among college students

Trinity Terrell

This study examines the relationship between social media use and college students' psychosocial well-being, focusing on loneliness, depression, and interpersonal relationships. As social media dominates the modern communication environment, it influences not only how individuals access information but also how they experience and manage their social and emotional lives. The purpose of this study is to explore how patterns of social media use are associated with variations in students' well-being.

Grounded in mass communication research, this study builds on prior work on problematic Internet use and extends it to contemporary social media platforms. These platforms shape identity formation, social comparison, and relational dynamics through constant interaction and exposure to curated content.

Using a survey-based design, this ongoing study collects data on students' social media habits and psychosocial outcomes. The findings are expected to contribute to current discussions on social media's impact, offering insights into how digital communication can both support and challenge well-being in today's media landscape.

How AI (Especially LLMs) is Transforming Marketing Research

Kamlesh Tiwari

Artificial Intelligence (AI), particularly Large Language Models (LLMs), is transforming marketing research by enabling faster and more efficient analysis of large volumes of consumer data. These technologies enhance tasks such as sentiment analysis, survey interpretation, and trend forecasting, providing deeper and real-time insights compared to traditional methods.

LLMs also enable the use of synthetic data, allowing researchers to simulate consumer behavior when real data is limited or sensitive. While this offers advantages such as scalability and privacy, synthetic data has limitations, including potential bias, lack of real-world accuracy, and the need for careful validation.

Overall, AI is significantly improving marketing research capabilities, but its effective use requires balancing technological advantages with ethical considerations and human judgment.

Building Resilient Food Systems: Transformative One Health Strategies for Climate Change and Food Safety

Morgan White, and Yasser Sanad

Climate change is increasingly recognized as a major threat to global food systems, affecting agricultural productivity, food safety, and public health. Rising temperatures, extreme weather events, and environmental disruptions create favorable conditions for the spread of foodborne pathogens, zoonotic diseases, and antimicrobial resistance across human, animal, and environmental systems. These interconnected risks highlight the need for integrated approaches that strengthen food system resilience while protecting public health. The One Health framework provides a comprehensive strategy by linking human, animal, and environmental health systems to improve surveillance, risk management, and policy responses to emerging food safety threats. This research examines how transformative One Health strategies can strengthen resilient food systems under climate change pressures by emphasizing integrated surveillance systems, predictive modeling, and cross-sector collaboration to detect and respond to emerging disease threats. In addition, climate adaptation practices in agriculture, including improved water management, sustainable farming practices, and enhanced biosecurity measures, are discussed as key components for maintaining food safety and production stability. By promoting interdisciplinary collaboration and strengthening early warning systems, the One Health approach provides an effective framework for mitigating climate-related risks and supporting sustainable food systems while improving global food security and protecting public health.

The Effects of Habitat Variation on Pollinator Community Structure

Alexis Whitten, Vinay Raj, and Kasey Brown

VariableLevel Patterns in Diabetes Progression: Insights from CDC Health Indicators

Background: Diabetes remains one of the most prevalent chronic conditions in the United States and continues to rise alongside increasing rates of obesity, sedentary behavior, hypertension, and socioeconomic disparities. Key health indicators, including body mass index, blood pressure, cholesterol levels, physical activity, smoking status, income, and education, show consistent differences across population groups and tend to shift gradually over time. These cumulative metabolic and social risk factors shape disease progression. Examining how these variables differ among healthy, prediabetic, and diabetic populations provides important context for identifying early warning signs and prevention opportunities.

Methods: This study analyzes the CDC Diabetes Health Indicators Dataset, a high-dimensional dataset (2000–2014) derived from the U.S. Renal Data System and the Behavioral Risk Factor Surveillance System. The dataset includes 35 demographic, clinical, and lifestyle variables and classifies individuals as diabetic, prediabetic, or healthy. The analysis focuses on identifying observable patterns across variables to understand how gradual changes in health behaviors, physiological measures, and social determinants correspond with worsening disease status. Data were organized and visualized using Python and Excel to calculate summary statistics, compare trends across groups, and highlight consistent risk-related trajectories. The emphasis is on pattern recognition rather than predictive modeling that reflects cumulative risk.

Results: Initial findings show steady increases in body mass index, hypertension, cholesterol abnormalities, and physical inactivity as individuals progress from healthy to prediabetic to diabetic classifications. Higher smoking prevalence and reduced healthcare access also align with worsening metabolic outcomes. Lower income and education levels appear more frequently among diabetic groups, underscoring the influence of social and economic conditions on disease patterns.

Conclusions: This analysis demonstrates how a structured review of variable-level trends can reveal meaningful insights into diabetes risk and progression. Recognizing these gradual shifts may support earlier identification of at-risk individuals and inform targeted prevention strategies.

How Effective are Treatment Courts as an Intervention for Justice Involved Minorities with Substance Use Disorder

Julian Randolph Wiggins

Treatment courts play a vital role in assisting justice involved individuals by offering resources to address substance use disorder and recidivism. But if minorities enrolled in treatment courts are susceptible to failure at disproportionate rates, then this alternative form of sentencing may be doing more harm than good. The goal of this study is to examine the effectiveness of treatment courts as an intervention for justice involved minorities with substance use disorder.

Graphene Quantum Dots: Composites and Derivatives

Aldine Willacey, Emad Badradeen, and Emanuel Wangila

Graphene Quantum Dots have gained significant attention as a promising nanomaterial. This is attributed to their strong photoluminescence, chemical tunability, and electrochemical qualities. In this study, Urea-based GQDs and PVA-GQD composites were synthesized via a two-step process designed to optimize their optical performance and structural properties. In the first step, GQDs were prepared using a bottom-up method to obtain nanosized particles with stable blue-green emission. In the second step, the GQDs were combined with a PVA matrix to form PVA-GQD composites with enhanced photoluminescence

The material was further characterized by way of Dynamic Light Scattering (DLS) and as well as analysis of the Zeta potential. With these findings, we will proceed to electrochemical testing. The method used will be Cyclic Voltammetry and, more importantly, Electrical Impedance Spectroscopy. These readings will provide profound insights into the material's quality, aiding in determining its optimal applications. We expect the results to favor electrical uses with some exceptions in optics.

Strategic Planning and Market Positioning for a Boutique Hotel in a Southern Market: The Development of "The Bon Vivant"

Leonard Williams

This study presents a comprehensive strategic framework for the development and market positioning of The Bon Vivant, a boutique hotel concept designed to embody the essence of Southern hospitality while integrating modern technological innovations and operational efficiencies. As the hospitality industry continues to evolve in response to shifting consumer preferences, boutique hotels have emerged as a competitive alternative to traditional lodging by emphasizing authenticity, personalization and experiential value. This report explores how environmental psychology, servicescape theory and hedonic consumption principles inform the design and operational strategies of boutique properties, particularly in creating emotionally engaging guest experiences that foster loyalty and repeat visitation.

Utilizing a qualitative research methodology that incorporates literature review, industry insights and data-driven analysis, the study identifies key factors influencing boutique hotel success. Central to the findings is an eight-dimensional environmental model, comprising location, facility aesthetics, theme, entertainment, amenities, ambience, spatial layout, and employee service, which collectively explains a significant proportion of guest satisfaction and behavioral intention. Additionally, the integration of artificial intelligence technologies, such as contactless check-in, AI concierge systems, and smart energy management, is examined as a mechanism for enhancing operational efficiency while maintaining human-centered service delivery.

The study further evaluates financial feasibility through detailed development cost projections, capital structuring and incentive strategies, demonstrating the importance of aligning technological investments with measurable performance outcomes. Ultimately, the findings suggest that boutique hotel success is driven by the strategic integration of cultural authenticity, environmental coherence, technological innovation and leadership alignment. This integrated approach positions The Bon Vivant as a sustainable and competitive model within the contemporary hospitality landscape.

Examining Celebrity Coach Influence on Generation Z Consumer Behavior: The Wow Factor

Leonard Williams

This study examines the emerging role of celebrity coaches as influential figures in shaping Generation Z (Gen Z) consumer behavior within the contemporary sport industry. As sport continues to evolve through commercialization, digital media expansion and personality-driven branding, coaches have transitioned from behind-the-scenes strategists to highly visible public figures and cultural leaders. Despite this shift, existing sport marketing research has largely focused on athlete endorsements, leaving a critical gap in understanding how leadership figures influence consumer attitudes, purchase intentions and brand loyalty. This study addresses that gap by developing and empirically testing a comprehensive theoretical model grounded in Source Credibility Theory, Parasocial Interaction Theory, Social Identity Theory, Self-Determination Theory and Signaling Theory.

Using a mixed-methods approach that includes qualitative interviews, a large-scale survey of 512 Gen Z consumers and an experimental comparison between coach and athlete endorsements, the study explores the mechanisms driving consumer response. Findings from structural equation modeling reveal that perceived authenticity serves as the strongest mediator between coach credibility and purchase intention, while parasocial interaction significantly enhances engagement and brand attitude. Additionally, value alignment between the consumer, coach, and brand strengthens loyalty formation, highlighting the importance of shared beliefs and social identity in modern endorsement effectiveness.

The results further indicate that celebrity coaches are perceived as more authentic than athletes among Gen Z consumers, suggesting a shift in endorsement dynamics toward leadership-based influence. This study contributes to sport marketing literature by positioning coaches as a distinct and impactful endorsement category while offering practical insights for sport organizations and brands seeking to engage a values-driven, digitally connected generation.

Audio Feature Representation for Automatic Piano Audio Transcription: A Case for the Constant-Q Transform

Angel Yuzya

Automatic piano transcription is the task of converting raw audio into a structured note representation. It requires a time-frequency input that faithfully captures the acoustic properties of piano music. This work investigates the choice of audio feature representation as a foundational design decision in training models capable of transcribing piano audio. Three candidate representations are considered: the Short-Time Fourier Transform (STFT), the Mel spectrogram, and the Constant-Q Transform (CQT). We argue that the CQT's logarithmically spaced frequency bins, which align precisely with the equal-tempered musical scale, make it uniquely suited to piano transcription tasks. Unlike linear-frequency representations, the CQT assigns a consistent number of bins per semitone across all octaves, preserving the musical structure that the model must learn to recognize in piano audio. We describe an implemented preprocessing pipeline that converts paired audio and MIDI recordings into CQT features and aligned piano roll targets,

producing over 700,000 training samples from the full MAESTRO dataset (Hawthorne et al., 2019). Preliminary visualization confirms that musical structure is clearly captured in the resulting representations, with onset and frame targets properly aligned. Training of an Onsets and Frames neural network on this data is currently underway. This work contributes a replicable, well-validated preprocessing methodology for piano transcription research.

The UAPB's Fish Health Research, Inspections, and Diagnostic Laboratories

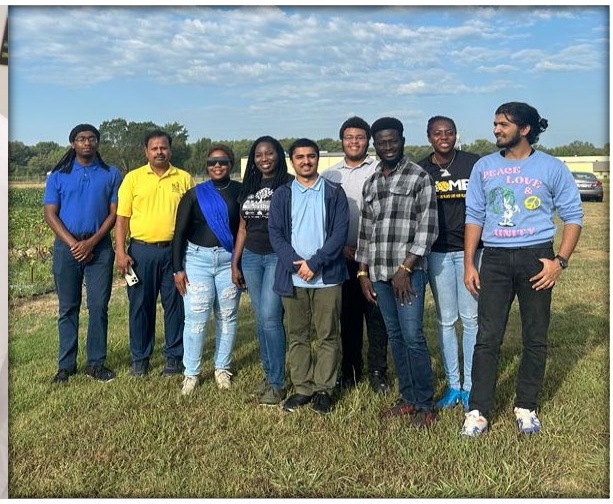
The Fish Health Research, Inspections, and Diagnostics Laboratories at the University of Arkansas at Pine Bluff (UAPB) provide APHIS-certified fish health inspections and diagnostic services to aquaculture producers at the Pine Bluff and Lonoke facilities. The laboratories also conduct advanced molecular, Nano, and microbiological research to develop antibiotic alternatives for the treatment of fish diseases, thereby supporting sustainable aquaculture practices and enhancing food security in Arkansas.

Current Research Projects:

- ***Development of a Novel Probiotic Therapy for Controlling Edwardsiellosis in Arkansas.***
- ***AI-Driven and Innovative Feed Strategies for Enhancing Sustainable Largemouth Bass Production in Arkansas.***
- ***Application of artemia as immunostimulant live and co-live along with micro diets for disease resistance and growth.***
- ***Smart Discovery farming to build Sustainable Agriculture***
- ***Application of a novel zebrafish larvae model to study human norovirus prevention and control.***
- ***Phage endolysins as alternatives to antibiotics for treating systemic infections of Streptococcus iniae in fish.***
- ***Syzygium Chitosan Nanoparticles against A. hydrophila in catfish as alternative to antibiotics.***
- ***Precision Medicine Zebrafish Model for Glioblastoma.***

The Plant Biotechnology and Genomics Laboratory

The Plant Biotechnology and Genomics Laboratory (PBGL) at the University of Arkansas at Pine Bluff (UAPB) combines modern molecular breeding tools to enhance crop productivity and food security in Arkansas, guided by three core principles.



Sweetpotato Production:

Shoot-tip meristem culture in sweetpotato is used to develop virus-free, clean plants. The supply of clean plants enhances the yield and quality of the sweetpotato roots for the market and increases the profitability of sweetpotato production. Currently, 90% of the sweetpotato production area in Arkansas uses clean plants from UAPB.

In addition, PBGL develops new sweetpotato varieties through conventional breeding techniques. Conventional breeding approaches help develop new sweetpotato varieties with higher nutrient content and purple flesh color.

Blast Resistance in Rice:

PBGL aims to identify resistance genes against blast disease in rice using CRISPR/Cas9 gene-editing approaches. The gene-editing approach uniquely identifies the genes controlling the disease. The identified genes will be transferred to cultivated rice, thereby reducing yield loss and pesticide use.

Community gardening:

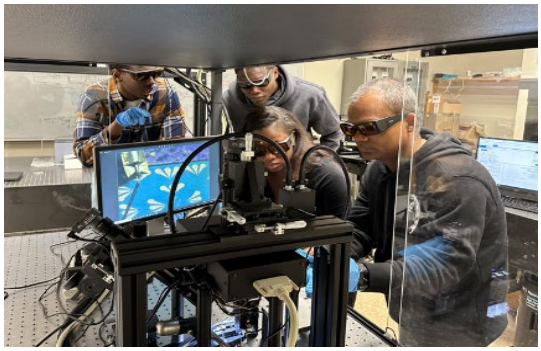
PBGL works with community gardeners, high school gardens, and churches in Pulaski and Jefferson counties to involve individuals in gardening and thereby increase the supply of fresh produce.

Workforce Development:

In all these research areas, PBGL trains both graduate and undergraduate students. The students are trained in all three core principles.

Chemistry and Physics Department Laboratories

The high-class laboratories established at the chemistry and physics department are managed from the research grant funded by agencies like Department of War (DoW), Department of Energy (DoE), National Aeronautics and Space Administration (NASA) and National Science Foundation (NSF). Over $20 million funds were secured in last 5 years for the research and equipment under supervision of Dr. Mansour Mortazavi, Dr. Grant Wangila and Dr. Qinglong Jiang.



Future Directions

- Opto-electronic devices and materials (GeSn/GeSiSn, III-V on sapphire, Transition metal dichalcogenide (TMDs), and Perovskite) fabrication and characterization.
- Opto-electronic devices design using commercial software like Ansys and COMSOL.
- Quantum-materials fabrication using 2D-TMDs to study Moiré Physics.
- Students working with us gets hands on experience in lab and also provided opportunity of paid summer internships at Sandia National Laboratories, Argonne National Laboratory, or collaborating universities. These experiences may lead to professional full-time positions at National Laboratories and industry or pursuing more advanced degrees (Masters and/or Doctoral).

Major Equipment

- Photoluminescence Spectroscopy (4K- 400K)
- Raman Spectroscopy (77K - 400K)
- Probe station-Temperature Dependent
- Probe station-Room Temperature
- Physical Parameter Measurement System (PPMS)
- 2D Transfer System
- Electro-optic Micro Stage
- Atomic Force Microscopy (AFM)
- Electro Chemical Workstation
- Chemical Vapor Deposition (CVD) System
- Lasers (up to 5-micron wavelength)
- Fourier transfer infrared spectroscopy (FTIR)
- Ion Battery Testing System
- Nuclear Magnetic Resonance (NMR)

For more information on Research, Innovation and Economic Development at the University of Arkansas at Pine Bluff, please check the following link:

https://uapb.edu/administration/research-innovation-and-economic-development/