UNIVERSITY OF MARYLAND EASTERN SHORE

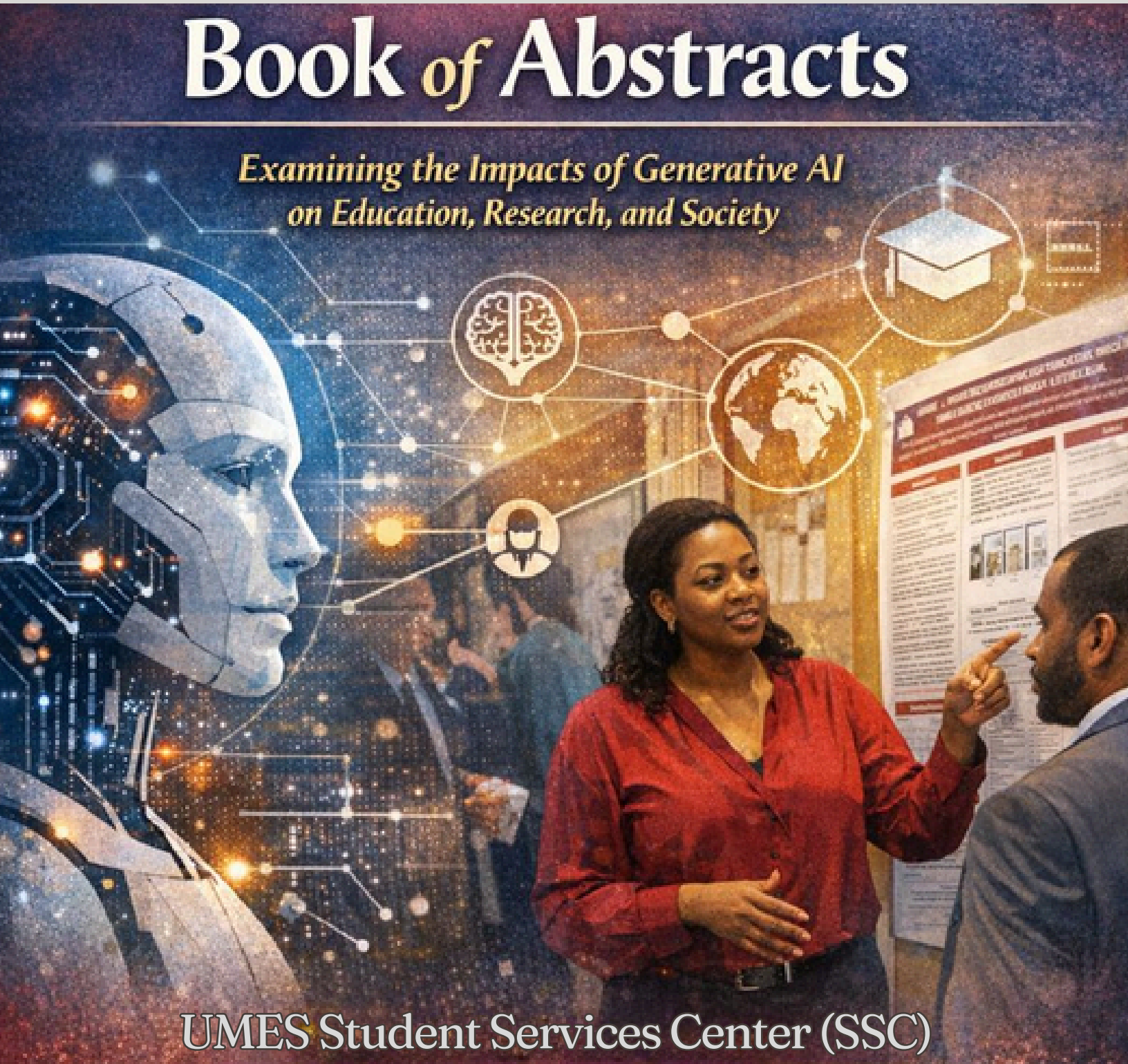
SCHOOL OF GRADUATE STUDIES

15th Annual Research Symposium

10th Graduate Education Week

Book of Abstracts

Examining the Impacts of Generative AI on Education, Research, and Society



UMES Student Services Center (SSC)

April 16, 2026

UMES at ARD

Continued on page 74→

Table of Contents

BioSketch: Dr. Heidi Anderson, President, UMES 2
BioSketch: Dr. Rondall Allen, Provost 3
Welcome Message: Dr. LaKeisha Harris, Dean 4
Message from Symposium Sponsor: The Office of Research 5
Keynote Speaker: Jason Michael Perry, Founder/CEO PerryLabs 6
Call for Abstracts 7
UMES School of Graduate Studies Team 8
Participating Institutions 9
Federal Agencies, International Institutions, Companies, & Vendors 10
Research Symposium Planning Committee 11
Symposium Day Agenda 12
3MT Competition: Rules and Judging Criteria 13
3MT Competition: Judges & Participants 14
3MT Competition: Schedule 15
List of Presenters: Oral Presentations 17
List of Presenters: Poster Presentations 20
Oral Abstracts – Faculty 24
Oral Abstracts - Doctoral 27
Oral Abstracts - Master's 36
Oral Abstracts – Undergraduate 45
Poster Abstracts – Doctoral 48
Poster Abstracts – Master's 57
Poster Abstracts – Undergraduate 66
Judges' Schedule - Oral and Poster Sessions 71
Judges' Schedule - Poster Sessions 72
Moderators' Schedule - All Sessions 73
UMES at the Association of 1890 Research Directors Research Symposium 74
Graduate Programs and Directors 77
Notes 78
Contact Information

BioSketch

Heidi Anderson
UMES President

Heidi M. Anderson, a native of Gary, IN, assumed the presidency of the University of Maryland Eastern Shore on September 1, 2018. She is the 16th leader of the 1890 land-grant institution in Princess Anne that opened its doors on Sept. 13, 1886 as the Delaware Conference Academy initially under the auspices of the Methodist Episcopal Church.

A three-time graduate of Purdue University in her native Indiana, Dr. Anderson came to UMES with nearly two decades of higher education leadership experience. "What I personally value about access, quality and opportunity – the tools that close the achievement gap – are at the core of my leadership," she said.

She was previously chief academic policymaker at Texas A&M University-Kingsville from 2015 to 2017, where she managed a $35 million budget and directed 22 academic departments, 10 centers and institutes. She oversaw creation of new degrees in computer science, engineering and clinical mental health counseling.

Prior to working in Texas, Dr. Anderson was chief academic policymaker at the University of the Sciences in Philadelphia from 2013 to 2015. Between 2006 and 2013, she held a variety of positions at the University of Kentucky, including professor in the Department of Pharmacy Practice and Science, assistant dean for educational innovation, associate provost for faculty affairs and vice president/associate provost for institutional effectiveness.

Her classroom experience includes work as professor and chair of Auburn University's Pharmacy Care System Department and serving an assistant professor in the University of Tennessee's College of Pharmacy. She has served as president and vice president of the Accreditation Council for Pharmacy Education.

Dr. Anderson earned her Ph.D. in pharmacy administration, a Master's in education and a Bachelor of Science degree in pharmacy from Purdue, also a land-grant university.

BioSketch

Rondall Allen, PharmD

Provost & Vice President for Academic Affairs

Dr. Rondall E. Allen joined UMES on July 1, 2015 as Dean of the School of Pharmacy and Health Professions. Prior to coming to UMES, he served as the Associate Dean for Academic Quality at South University School of Pharmacy.

He also served in several administrative roles during his tenure at Xavier University of Louisiana College of Pharmacy to include Director of Experiential Education, Assistant Dean for Program Assessment and Associate Dean for Student Affairs. Currently, he serves as the Provost and Vice President for Academic Affairs.

Dr. Allen has over 33 years of experience in the profession of pharmacy and has spent the last 20 years in academia. He has practiced in a variety of settings to include community pharmacy, acute care, ambulatory care, and the pharmaceutical industry.

As a clinician, he developed and implemented two outpatient anticoagulation clinics in which he managed patients with deep vein thrombosis, pulmonary emboli, atrial fibrillation and other clotting disorders.

Dr. Allen was recently appointed to another four-year term by the Governor to serve on the Board of Trustees for the Maryland Health Benefit Exchange (MHBE). The MHBE is responsible for overseeing the Affordable Care Act for the state of Maryland. He also serves on the Board of Directors for TidalHealth and the Board of Directors for the Maryland Technology Development Corporation. He is a trained site-team evaluator for the Accreditation Council of Pharmacy Education and has served as a consultant for several Schools/Colleges of Pharmacy.

Dr. Allen earned his Bachelor of Science degree in Pharmacy from the Florida Agricultural and Mechanical University College of Pharmacy and Pharmaceutical Sciences and his Doctor of Pharmacy from the Xavier University of Louisiana College of Pharmacy. He completed a post-graduate Pharmacy Practice residency at Baptist Memorial Hospital in Memphis, TN and is a Fellow of the American Association of Colleges of Pharmacy. He also completed Harvard's Graduate School of Education Institute for Management in Leadership Education program.

Welcome Message

LaKeisha Harris, PhD
Dean,
School of Graduate Studies

Dear Students, Faculty, Researchers, and Distinguished Guests,

On behalf of the School of Graduate Studies at the University of Maryland Eastern Shore, it is my distinct pleasure to welcome you to our 15th Annual Graduate Research Symposium, held in conjunction with our 10th Annual Graduate Education Week.

I must pause for a moment to say—I can hardly believe we are celebrating 15 years of this symposium. I remember its early days, not from the podium, but from the perspective of a young researcher—navigating my own questions, presenting my work, and finding my place within the scholarly community. Those moments were foundational for me. They challenged me, stretched me, and ultimately helped shape the scholar and leader I am today.

To now stand before you as Dean, welcoming a new generation of researchers into this same space of discovery and growth, is both humbling and deeply meaningful. This symposium has grown not only in years, but in impact—serving as a cornerstone for graduate scholarship at UMES and a launching point for so many academic and professional journeys.

This year's theme, "Examining the Impacts of Generative AI on Education, Research, and Society," invites us to critically reflect on one of the most transformative forces of our time. Artificial intelligence, particularly generative AI, is no longer a distant innovation; it is embedded in the ways we teach, learn, discover, and engage with the world around us. As a scholarly community, we are called not only to use these technologies, but to interrogate their purpose, their implications, and their long-term impact on humanity. Today's symposium challenges each of us to consider a central question: In what ways have you used AI to benefit society?

This gathering represents the very best of UMES—our commitment to academic excellence, our dedication to advancing research that matters, and our responsibility as an 1890 land-grant institution to serve and uplift our communities. The work showcased today reflects innovation, resilience, and a shared vision for a future shaped by thoughtful inquiry and meaningful discovery.

To our student researchers: your ideas, your persistence, and your courage to explore new frontiers are what drive progress. To our faculty, mentors, and partners: thank you for cultivating an environment where scholarship thrives and where the next generation of leaders is empowered to succeed.

As we engage in today's events, let this symposium not only showcase research, but also spark new ideas, partnerships, and possibilities.

Welcome to the symposium and to a future we are shaping together.

LaKeisha L. Harris

LaKeisha L. Harris, Ph.D.

Message from Symposium Sponsor

Salina Parveen, Ph.D.
Interim Vice President for Research

Professor, Agriculture, Food and Resource Sciences

Dear Students, Faculty, Researchers, and Distinguished Guests,

It is my distinct honor and pleasure to welcome you to the University of Maryland Eastern Shore's (UMES) Research Symposium. This year's theme, "Examining the Impacts of Generative AI on Education, Research, and Society," invites us to engage in thoughtful dialogue at the forefront of one of the most transformative developments of our time.

This symposium highlights the innovative work of our students, faculty, and partners who are contributing to this and many other important conversations. Your research, creativity, and insight embody the spirit of inquiry that defines UMES. I encourage each of you to engage fully—ask thoughtful questions, exchange ideas, and reflect on how your work connects with this significant theme.

I extend my sincere appreciation to the organizers, mentors, and participants whose dedication has made this event possible. Your commitment to excellence continues to strengthen our research enterprise and enrich our academic community.

Thank you for being part of this important occasion. I wish you a productive, inspiring, and rewarding symposium experience.

Sincerely,

Salina Parveen, Ph.D.
Professor, Dept. of Agriculture, Food and Resource Sciences
Interim Associate Vice President of Research
University of Maryland Eastern Shore

BioSketch

Jason Micheal Perry
Founder/CEO
PerryLabs

Jason Michael Perry is the Founder and Chief AI Officer of PerryLabs. Through PerryLabs, the AI research and development studio he founded, Jason leads a team that builds and manages intelligent systems for organizations seeking to apply AI practically in their operations. A seasoned executive and thought leader with over two decades of experience, Jason has led groundbreaking technology initiatives across startups, government agencies, and Fortune 50 companies.

He is the author of The AI Evolution, a new book defining the Chief AI Officer role and offering a bold roadmap for leaders navigating the AI revolution. He also writes Thoughts on Tech & Things, a free weekly newsletter exploring emerging technology, leadership, and innovation. He recently teamed up with WYPR to turn his news letter, Thoughts on Tech & Things, into a podcast. You can listen to episodes on WYPR or subscribe on Apple Podcasts. The show helps make sense of emerging technology and what it means for work, life, and business, cutting through the noise with clarity, curiosity, and a human touch.

Jason serves as Entrepreneur in Residence at the University of Baltimore's Merrick School of Business, Senior Advisor of Corporate Innovation and Technology for the World Trade Center Institute, and sits on the board and marketing committee of the Baltimore Symphony Orchestra.

In 2023, Jason led the award-winning AI in A Minor, a first-of-its-kind event in partnership with AWS, the Greater Baltimore Committee, and the BSO—blending classical music and machine learning to perform AI-generated compositions in the styles of Mozart and Philip Glass.

Keynote Talk: *The AI Evolution*

jasonmperry.com linkedin.com/in/jasonmperry perrylabs.io

Call for Abstracts

UNIVERSITY OF MARYLAND EASTERN SHORE

SOAR ABOVE & BEYOND

DIVISION *of* ACADEMIC AFFAIRS
School of Graduate Studies and Research

Call for Abstracts

Tenth Annual Graduate Education Week
Fifteenth Annual Research Symposium
April 16th, 2026
8:00 AM - 4:00 PM

The School of Graduate Studies at the University of Maryland Eastern Shore is pleased to announce its tenth annual Graduate Education Week and 15th Annual Research Symposium to be held on Thursday, April 16th, 2026. The theme of this year's symposium is:

Examining the Impacts of Generative AI on Education, Research, and Society

The theme of this year's research symposium seeks to examine our use of generative AI. As we are well aware, artificial intelligence is already part of our daily lives, whether we like it or not. We see its pervasiveness in many spheres of our daily lives, from the domestic (smart appliances, home security systems, music and entertainment devices, etc.) to the scholarly and professional (editing software, AI chatbots, transportation and logistics, medical diagnosis/charting, etc.), and even the social (media).

This year's call for proposals asks you to consider not only when you use AI, especially generative AI, but why you use it and to what effect. How does its use (or non-use) benefit you as a student, educator, researcher, or professional? Will the use of generative AI contribute to the development and progress of society, not just now, but on a larger scale as measured across time and the existence of humanity? The primary thematic question is: In what ways have you used AI to benefit society?

We invite researchers from all disciplines to share and celebrate their work at the 2026 research symposium. We look forward to your participation. Register and submit your abstract by March 13th, 2026: RegisterSymposium2026

Need assistance? Contact: Dr. Wele Elangwe: welangwe@umes.edu
Dr. Kelsie Endicott: kjendicott@umes.edu
Ms. Amelia Potter: agpotter@umes.edu

Want to support the symposium as a judge, moderator, or volunteer? Sign up by March 13th, 2026: https://forms.gle/xtb1mgunuRRRok8c6

Respectfully,
LaKeisha L. Harris
LaKeisha L. Harris, Ph.D.

Graduate School Team & Sponsors

Organizing Department

DR. LAKEISHA HARRIS
Dean
Phone: 410-651-6080
Email: llharris@umes.edu

Sponsors

- Office of Research **(Main Sponsor)**
- Division of Academic Affairs
- School of Graduate Studies
- Office of the President
- Office of Title III
- UMES Interdisciplinary Research Center

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MR. PRESTON GROSS
Graduate Admissions Coordinator
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Email: pvgross@umes.edu

MR. TYREE SUKRAM
Sophomore
Aviation Science
Student Intern

Participating Institutions

UMES Schools & Departments

University of Maryland Eastern Shore, Princess, Anne, MD 21853
- School of Agriculture and Natural Sciences
  - Department of Agriculture, Food and Resource Sciences
  - Department of Natural Sciences
  - Dean's Office
  - UMES Extension
- School of Business, Engineering, Applied Sciences, Technology and Tourism Management
  - Department of Aviation Sciences
  - Department of the Built Environment
  - Department of Computer Science and Engineering Technology
  - Department of Engineering
  - Department of Hospitality and Tourism Management
- School of Education, Social Sciences and the Arts
  - Department of Criminal Justice
  - Department of English and Modern Languages
  - Department of Social Sciences
- School of Pharmacy and Health Professions
  - Department of Kinesiology
  - Department of Physician Assistant Studies
  - Department of Pharmaceutical Sciences
  - Department of Pharmacy Practice
  - Department of Physical Therapy
  - Department of Rehabilitation Services

Domestic Universities

- Brigham Young University, 4105 LSB, Provo, UT, 84602, USA
  - Department of Plant and Wildlife Sciences
- Lehman College, New York, NY
- Princeton University, Princeton, NJ, USA.
  - Department of Electrical and Computer Engineering
- Salisbury University, Salisbury, MD 21801
  - School of Health Sciences
    - Department of Exercise Science
    - Department of Rehabilitation Counseling
  - Henson School of Science and Technology
    - Department of Biological Sciences
    - Department of Physics
- University of Maryland, College Park, MD 20742
  - Sea Grant Extension Program
  - Marine and Estuarine Environmental Sciences (MEES)
- University of Maryland Extension, Queenstown, MD 21658
  - Wye Research & Education Center
- University of Maryland Global Campus, Adelphi, MD 20783
- University of Pittsburgh, Pittsburgh, PA 15213, USA
  - Department of Neurobiology
- Wellesley College, Wellesley, MA 02481
  - Department of Environmental Studies/Biological Sciences

Federal Agencies, International Institutions, Companies, & Vendors

Federal Agencies

- National Oceanic and Atmospheric Administration (NOAA), Oxford, MD 21654, USA.
  - National National Centers for Coastal Ocean Science
  - National Ocean Service
- United States Department of Agriculture (USDA),
  - Agricultural Research Services (ARS), Northeast Area (NEA), Beltsville
  - Agricultural Research Center (BARC),
  - Environmental and Microbial Food Safety Laboratory (EMFSL), Beltsville, MD 20705 USA
    - Sustainable Agricultural Systems Lab
- US Food and Drug Administration (FDA), College Park, MD 20742, USA

International Institutions

- Institut National pour l'Etude et la Recherche Agronomiques (INERA), Kinshasa, D.R. Congo.
- National Pedagogical University, Kinshasa, D.R. Congo
  - Directorate of Plant Clinic
- State University of Paraíba, Brazil
  - Department of Physical Education

Participating Companies

- Intralytix, Inc., Columbia, MD
- Melinda Schwarz Consulting Services, Salisbury, MD 21804.

Vendors

- 4Imprint, Inc.
- Crown Trophies
- FedEx Office
- PerryLabs
- Quill
- The Henson – UMES Hotel & Conference Center
- Thompson Hospitality, UMES
- Unique Vibes Entertainment

Research Symposium Planning Committee

Dr. LaKeisha Harris
Convener

Ms. Angela Young
Planner-in-Chief

Mr. Chibunkem Asuzu
Webmaster

Ms. Amelia Potter
Program Co-Chair

Dr. Wele Elangwe
Program Chair &
Book of Abstracts

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Editor
Book of Abstracts

Dr. Patrice Jackson-Ayotunde
Chair of Judges

Ms. Uchenna Nwonye
Co-Chair of Judges
Chair of Moderators

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Logistics

Ms. Corrie Cotton
Program Support

Mr. Preston Gross
Logistics

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Program Support

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Program Support

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Ms. Chinenye Oluoba
Social Media

Ms. Priscilla Kini
Program Support

Ms. Feyisetan Beke
Program Support

Ms. Taiwo Oluyemo
Program Support

Ruba Mohamed Kheir
Technology Support

Joshua Akinola
Tally Master

Albert Ofosu
Tally Master

Sunday Bala
TallyMaster

Tamunoene Bamson
TallyMaster

Mr. Tyree Sukram
Logistics

UMES Annual Research Symposium Day Agenda

Thursday, April 16, 2026

8:00 AM - 1:30 PM	**REGISTRATION** SSC Lobby (Hallway between SSC Theatre and Ballroom)
8:00 AM - 1:30 PM	**JUDGES AND MODERATORS CHECK-IN** Hallway between SSC Theatre and Ballroom
8: 00 AM - 8:45 AM	**BREAKFAST** SSC Multipurpose Room
8:45 AM - 9:00 AM	**WELCOME ADDRESS** *Dr. LaKeisha Harris* Dean, School of Graduate Studies SSC Multi-purpose Room
9:00 AM - 10:30 AM	**ORAL PRESENTATIONS** SSC Theatre, Multipurpose Room, Rooms 2144, 2146, 2147, 2149

10:00 AM - 11:30 AM	**THREE MINUTE THESIS (3MT®) COMPETITION**
	SSC Theatre
	• Welcome and Introduction, *Dr. Wele Elangwe / Ms. Priscilla Kini*
	• Competition Rules and Judging Criteria
	  ◦ Doctoral Category
	  ◦ Master's Category
	  ◦ Undergraduate Category
	  ◦ People's Choice Award

11:30 AM - 12:30 PM	**KEYNOTE TALK:** "The AI Evolution" **Jason Michael Perry** **Fonder/CEO PerryLabs** SSC Theatre
12:30 PM - 1:30 PM	**LUNCH** SSC Ballroom
1:30 PM - 3:00 PM	**POSTER PRESENTATIONS** SSC Ballroom
3:00 PM - 4:00 PM	**RECRUITMENT & NETWORKING HOUR** • Institutional Animal Care & Use Committee (IACUC) Animal Use Protocol Training - **Ms. Amelia Potter** • NOAA Living Marine Resources Cooperative Science Center (LMRCSC) - **Dr. Ligia Da Silva** • Hopkins-Morgan HBCU Consortium (HMHC) NIST Professional Research Experience Program (PREP) **- Dr. Wele Elangwe** • Graduate Student Government (GSG)
3:30 PM - 4:30 PM	**AWARDS CEREMONY** SSC Multipurpose Room

Competition

Competition Rules

1. The presentation must be no longer than 3 minutes in length, or the competitor will be disqualified.
2. The presentation is considered to have begun when the student starts the presentation through movement or speech.
3. Presentations should include a single, static slide (no transitions, movement, or animation in the slide). You don't need to have a slide. Slides are not compulsory.
4. No script or cue cards may be used during the presentation; students must recite their presentation by memory.
5. No additional props are permitted (i.e. costumes, musical instruments, lab equipment).
6. Presentations must be spoken-word (i.e. no poem, rap, song). Note that passages from songs, poems, etc. are acceptable if the presentation requires quoting from such sources, but it is recommended that you limit your use of such quotations.
7. No additional electronic media (sound or video files) are permitted within the presentation.

Judging Criteria

Each competitor's presentation will be assessed according to the criteria listed below. Please note that each criterion is equally weighted.

1. Comprehension:
Did the presentation help the audience understand the research?
2. Engagement
Did the oration make the audience want to know more?
3. Communication
Was the thesis topic and its significance communicated in language appropriate to a non-specialist audience?

Award Categories

Doctoral Category
Winner: $400
Runner-up: $200

Master's Category
Winner: $300
Runner-up: $150

Undergraduate Category
Winner: $200
Runner-Up: $100

People' Choice Award
Winner: $100

3MT® THREE MINUTE THESIS Competition

FOUNDED BY THE UNIVERSITY OF QUEENSLAND

Judges and Participants

Judges

Dr. D. Jamar Simmons
Associate Vice President & Dean of Students, UMES

Ms. Beatrice Nelson
Lecturer, Department of Kinesiology, UMES

Ms. Crystal Brinson
Center for Access & Academic Success (CAAS), UMES

Moderator

Ms. Priscilla Kini
Toxicology

Timekeeper

Mr. Jeffrey Chris-Osisiogu
Sophomore, Aerospace Engineering

Undergraduate Participants

Lena Spiller
Aviation Science

Greyson Tripoli
Aviation Science

Joshua Kovacsics
Aviation Science

Sybille Buezon
Business Administration

Master's Participants

Sandesh Chapagain
Food and Agricultural Sciences (FASC)

Chinenye Oluoba
Rehabilitation Counseling

Anthonia Nwagwu
Food and Agricultural Sciences (FASC)

Beryl Malomo
Applied Computer Science

Doctoral Participants

Joy Enahoro
Marine Estuarine Environmental Sciences

Shuvonkar Bonik
Food and Agricultural Sciences (FASC)

Freweyni Abrha
Food and Agricultural Sciences (FASC)

Shahryar Moradi Falah Langeroodi
Pharmaceutical Sciences

Sakib Rafi
Marine Estuarine Environmental Sciences

Allissa Riley
Food and Agricultural Sciences (FASC)

Feyisetan Beke
Pharmaceutical Sciences

Competition Schedule

Venue: SSC Theatre

10:00 AM - 10:05 AM	**Introduction of Judges, Competition Rules & Judging Criteria.** ***Ms. Priscilla Kini*,** PhD. Student, Toxicology
	Undergraduate Category
10:05 AM - 10:10 AM	**Lena Spiller,** Aviation Science *Runway Configurations in Relation to Flight Delays*
10:10 AM - 10:15 AM	**Greyson Tripoli,** Aviation Science *From Airport Delays: The case for Newark's Liberty Airport*
10:15 AM - 10:20 AM	**Joshua Kovacsis,** Aviation Science *The Role of Modern Technology in Flight Safety*
10:20 AM - 10:25 AM	**Sybille Buezon,** Business Administration *The Leadership Styles of Bagala Managers: Basis for Leadership Training*
	Master's Category
10:25 AM - 10:30 AM	**Sandesh Chapagain,** Food and Agricultural Sciences (FASC) *Salmonella from Chicken: A Food Safety Concern*
10:30 AM - 10:35 AM	**Chinenye Oluoba**, Rehabilitation Counselling *Nutrition & Food Insecurity in Women After Stroke — The Role of Rehabilitation Counseling*
10:35 AM - 10:40 AM	**Anthonia Nwagwu,** Food and Agricultural Sciences (FASC) *AI-Supported Enhancement of Cassava based products*
10:40 AM - 10:45 AM	**Beryl Malomo,** Applied Computer Science *Adaptive AI Educator: A Blue Catfish Case Study*
	Doctoral Category
10:45 AM - 10:50 AM	**Joy Enahoro,** Marine Estuarine Environmental Science (MEES) *Microbial Chronicles of the Bay: The Good, The Bad and The Polluted*
10:50 AM - 10:55 AM	**Shuvonkar Bonik,** Food and Agricultural Sciences *Impact of Multi & Hyperspectral Imaging for Modern Agriculture*
10:55 AM - 11:00 AM	**Freweyni Abrha**, Food and Agricultural Sciences (FASC) *Silent but Strong: How Hemp Plants Defend Themselves Naturally*
11:00 AM - 11:05 AM	**Shahryar Moradi Falah Langeroodi,** Pharmaceutical Sciences *Time Matters: Aging and Tissue Regeneration*
11:05 AM - 11:10 AM	**Sakib Rafi,** Marine Estuarine Environmental Science (MEES) *Wind-Driven Transport of Ammonia Between Pocomoke & Princess Anne*
11:10 AM - 11:15 AM	**Allissa Riley,** Food and Agricultural Sciences *Harmful Vibrio Bacteria in the Chesapeake Bay*
11:15 AM - 11:20 AM	**Feyisetan Beke,** Pharmaceutical Sciences *Silencing the Brain's Electrical Storm: The Power of Dual-Action Therapeutics*
11:20 AM	Questions/Voting of People's Choice Award
11:25 AM	Word from Judge's Representative
11:30 AM	Keynote Talk: The AI Evolution
4:00 PM - 4:30 PM	Announcement of Winners / Awards Ceremony

LIST OF PRESENTERS

Examining the Impacts of Generative AI
on Education, Research, and Society

List of Presenters - ORAL PRESENTATIONS

Faculty Presenters Room: SSC Theatre Time: 9:00 AM - 10:00 AM

9:00 AM OF1 Data-Driven Sea Level Forecasting for Cambridge, Maryland: Leveraging Time Series Models. **Dr. Yeong Nain Chi*.**

9:15 AM OF2 Multi-Country Global Maize Yield Trends and Forecasts: Implications for Trade Policy**.** Catherine Ngo, **Dr. Yeong Nain Chi***, and Dr. Moses T. Kairo

9:30 AM OF3 Organizational Sustainability Through Gender-Equitable Succession Planning in NCAA Women's Coaching. **Dr. Jamila Johnson*,** Dr. Richard Milter, Dr. Robert Schaller, and Dr. Faleh Alshameri.

9:45 AM OF4 Shifting from Passive to Active Learning: Fostering Student Engagement and Achievement in a Graduate Physician Assistant Program. **Dr. Khaled M. Hasan***

Doctoral Presenters Room: SSC 2149 Time: 9:00 AM - 10:45 AM

9:00 Am OD1 AI-Driven Drug Design: Lead Optimization of Fluorinated Enaminone Compounds using Simulations Plus. **Taiwo Oluyemo***, Dr. Rhashanda Haywood, and Dr. Patrice Jackson-Ayotunde.

9:15 AM OD2 An Approach to Stand Counts and Crop Health Using Robotics. **Suseel. K. Yerramsetti1***, L. Ward1, D. V. Singamsetti2, Dr. A. Nagchaudhuri

9:45 AM OD3 Corn Earworm (Helicoverpa zea) Herbivory Induces Cannabinoid, Terpenes Biosynthesis and Defense Gene Expression in Boax and Berry Hemp (Cannabis sativa L.) Varieties. **Freweyni Michael Abrha***, Dr. Tigist Tolosa, and Dr. Simon Zebelo.

10:00 AM OD4 Distribution of Total and Pathogenic Vibrio parahaemolyticus in Farmed and Wild Oysters in the Chesapeake. Bay. **Allissa Riley***, Mary Snow, Kelly Williams, Dr. John Bowers, Leila Silva, Dr. John Jacobs, Dr. Paulinus Chigbu, Ava Ellett, and Dr. Salina Parveen.

10:15 AM OD5 Effect of Seaweed Biostimulants on Growth and Antioxidant Content of Beetroot in an Indoor FarmBot System. **N. Khadka***, Dr. Madhumi Mitra, Dr. Abhijit Naagchaudhury, Dr. Byungrok Min, Dr. Jesuraj Panday, Portia Nkrumah, and Euyeon. Noh.

10:30 AM OD6 Elucidating the Roles of Exosomes Derived from Aging Adipose Stem Cells in Tissue Regeneration. **Shahryar Moradi Falah Langeroodi1***, Pricilla Priscilla Okyere1, Iram Elamin1, Amrit Neupane1, Dr. Subhasis Mandal1, Dr. Tian-Ming Fu2,and Dr. Jiabing Fan1.

10:45 AM OD7 Engineering Enhancer-Driven Adeno-Associated Viral Vectors for Cell Type Specific Neural Circuits and Transgenesis. **Daniel Ogbeh***, Dr. Victor Hsia, Dr. Teddy Chen, Justin Okoh, Brandon Bullock, Dr. Jinglu Ai, Anne Ventrone, Dr. Victor Miriel, Dr. William Stauffer, Dr. Leah Byrne, Dr. Rachel Tittle, and Dr. Megan Fredericks.

List of Presenters - ORAL PRESENTATIONS

Doctoral Presenters Room: SSC MPR Time: 9:00 AM - 11:00 AM

9:00 AM OD8 Engineering Exosome Mimetics with Macrophage Targeting for Osteo-Immunomodulation. **Angela Hatton***, Emmanuella Twumasi, Iram Elamin, Meghna Rao, Dr. Victor Hsia, Dr. Anjan Nan, and Dr. Jiabing Fan.

9:15 AM OD9 Epigenetic Mechanisms Involved in Heat Stress Adaptation in Chenopodium quinoa and their Effect on Crop Performance: Approaches for Establishing Quinoa Cultivation on Maryland's Eastern Shore. **Ithiru John***, Dr. Rick Jellen 2, Dr. Purushothaman Natarajan 1, and Dr. Sadanand Dhekney

9:30 AM OD10 Insect Feeding Damage as a Driver of Aflatoxin Contamination in Maize: Implications for Food Safety and Supply Chains. **Kimberly Okpha***, Dr. Simon Zebelo, Bob-Martin Assani, Dr. Stephan Tubene, Dr. Tigist Tolosa, Daniel D. Munkamba, Lyna F. T. Mukwa, Bornagues Tshakushiya, Florent Adakate, Dr.Sadanand Dhekney, Dr. Caleb Nindo,and Dr. Moses Kairo.

9:45 AM OD11 Isolation and Characterization of Bioactive Natural Products from Actinomycetes. **Amna Farzeen Baig***, Mary Twumasi, Kenneth Kumadey, Matthew Kusche, and Dr. Madan K. Kharel.

10:00 AM OD12 PI3Kδ Splice Isoform (PI3Kδ-S) Drives PI3K/Akt/mTOR Activation and Idelalisib Resistance in Hematologic Malignancies **Alyssa Lucero***, and Dr. Bi-Dar Wang.

10:15 AM OD13 Use of Bacteriophage Against Multi-Drug-Resistant Salmonella in-vitro and in Dry Pet Food Kibbles. **Richard Yaw Otwey*,** Sandesh Chapagain, Dr. Anuradha Punchihewage-Don, Dr. Amit Vikram, Dr. Salina Parveen and Dr. Janak Dhakal.

10:30 AM OD14 Using Generative AI to Conduct a Systematic Meta-Analysis on Leadership Development. Programs for International Graduate Students at HBCUs**.** **Ozioma Okehielem*, Julius Oku*** and Dr. Prince Attoh.

10:45 AM OD15 When "Natural" Isn't Safe: The Real Dangers of Tainted Herbal Supplements. **Mary Twumasi1***, Amna Baig, Jaweria Sheikh, Timothy Gladwell, Victor Hsia, Madan Kharel.

Master's Presenters Room: SSC 2146 Time: 9:00 AM - 10:45 AM

9:00 AM OM1 A Comparative Benchmark of Machine Learning Classification Models for Phishing Detection Using URL-Based Features. **Orson Chi*** and Dr. Yeong Nain Chi.

9:15 AM OM2 Access to Healthcare and Chronic Disease Burden Across Maryland: Expanded Critical Appraisal of Disease-Specific Outcomes. **Clara Campolina PA-S2***; **Nicole Donohue PA-S2*; Nathan FischbeinPA-S2***, Dr Khaled Hasan; and Dr Shae-Hsuan Hsia.

9:30 AM OM3 Adaptive AI Educator: A Multi-Format Learning Platform for Aquatic Invasive Species Education and Outreach—A Blue Catfish Case Study. **Beryl Malomo***, Sagar Patel, Yixiao Ma, Jaden Hanson, Devika Paranjpe, Dr. Chengchu Liu, and Dr. Lizhou Cao

9:45 AM OM4 Data-Driven Yield Forecasting for Corn and Soybean on Maryland's Eastern Shore: Trend Analysis. **Catherine Ngo*** and Ms. Corrie Cotton.

10:00 AM OM5 Determinants of Goat Prices in a Maryland Auction Market: Evidence from Hedonic Price Modeling. **Dharma Katuwal***, Dr. Lila Karki and Dr. Enrique Escobar.

List of Presenters - ORAL PRESENTATIONS

10:15 AM OM6 Effect of Foliar-Applied Seaweed Biostimulant on Biomass and Antioxidant Content of Aeroponically Grown Lettuce Cultivars. **Portia A. Nkrumah***, Dr. Madhumi Mitra, Dr. Abhijit Nagchaudhuri, Dr. Byungrok Min, Euyeon Noh, Brian Butler, and Parker Wilson.

10:30 AM OM7 Enhancing Weather Resilience and Farm Profitability through Alley Cropping Practices among Small-Scale Farmers. **Rumita Sanwa***, and Dr. Lila. Karki

Master's Presenters: Room: SSC 2147 Time: 9:00 AM- 10:45 AM

9:00 AM OM8 Evaluating the Oviposition Behavior of Corn Earworm on Hemp. **Asim Ahmed*,** T. Tolosa, B. Jackson, S. A. Henry, and Dr. Simon Zebelo.

9:15 AM OM9 From the Margins to the Mainframe: How Generative AI Is Being Used to Expand Access, Reduce Barriers, and Support Real People in Real Systems. **Chaun J. Rogers***

9:30 AM OM10 Measuring Soil CO_2 and CH_4 Flux Dynamics in a Fig-Based Alley Cropping System. **Anuj Dhaka*,** Dr. Lila B. Karki

9:45 AM OM11 Modelling Financial Health: Socioeconomic and Behavioral Predictors from the 2024 Financial Health Pulse Survey. **Suraj Singh Thagunna***, Dr. Lila B. Karki and Dr. Enrique N. Escobar

10:00 AM OM12 Socio-Demographic Factors Influencing Learning and Behavioral Outcomes in Heirs' Property Education. **Raksha Khadka***, Dr. Lila Karki Dr. Prem Bhandari, and Nicole Cook

10:15 AM OM13 The Role of Extension Demonstration Sites in the Gradual Adoption of Climate Resilient Alley Cropping. **Mouhamadou Diack*** and Dr. Lila B. Karki

10:30 AM OM14 Assessing the Impact of Climate-Smart Agricultural Practices on Soil Greenhouse Gas Emissions. **Mr. Dipendra Gurung**

Undergraduate Presenters: SSC 2144 Time: 9:00 AM - 10:30 AM

9:00 AM OU1 AI-assisted Single-Cell Analysis for Sickle Cell Disease Diagnosis: **Briggs Pugner*,** Erik Petersson, and Dr. Yuhao Qiang.

9:15 AM OU2 Balancing Human Judgment and Artificial Intelligence in Modern Aviation Safety. **Jeffrey Chris-Osisiogu***, and Dr. Jennifer Keane-Dawes.

9:30 AM OU3 Systems Design of a Mobile Sampler Lab for Planetary Field Geology**. Taylor Donyele***, Gilbert Pinkett III, and Dr. Aaron Persad.

9:45 AM OU4 The Contributions of NASA's Balloon Program Office and the Risks of Defunding. **Sophia Grace Reister*** and Dr. Joseph Howard.

List of Presenters - POSTER PRESENTATIONS

Doctoral Presenters Room: SSC Ballroom Time: 1:30 PM - 3:00 PM

PD 1 A National Survey of Pelvic Health Content in Physical Therapist Assistant Programs – A Follow-Up Study. **Kimia Azari*, Carrie Comfort*, Kirsten Workley*** and Dr. Kimberly Durant.

PD2 Anticancer Activity of Gambogic Acid in Gastrointestinal Stromal Tumor. **Ashraf M. Kheir*, Adewale J Adeleke***, and Dr. Muhammad D. Hussain.

PD3 Bridging Anatomy and Community: Perspectives on Cadaveric Dissection at Minority-Serving Institutions. **Lynee Jacobs*, Naja Clarke*, Josiah Phillips*, Anthony Jones***, and Dr. Molly Selba.

PD4 Effects of Contrasting Drought Regimes on Switchgrass Performance and Plant-Microbe Interactions. **Chealsea Brown***, Jonathan Cumming, and Gordon F. Custer.

PD5 Effects of Weighted Vest Use in Community-Dwelling Older Adults During Supervised Exercise: A Pilot Study. Dr. Stephanie McAllister, **Rashad Brown*, Samantha Malin*, Celina Scott***

PD6 Epigenetic Mechanisms Involved in Heat Stress Adaptation in Chenopodium quinoa and their Effect on Crop Performance: Approaches for Establishing Quinoa Cultivation on Maryland's Eastern Shore. **Ithiru John***, Dr. Rick Jellen , Dr. Purushothaman Natarajan, and Dr. Sadanand Dhekney.

PD7 Fluorinated Enaminone's Biological Evaluation as Sigma-2 Receptor Inhibitors. **Feyisetan Beke***, Dr. Rhashanda D. Haywood, Dr. Patrice L. Jackson-Ayotunde, and Dr. Miguel Martin-Caraballo.

PD8 Growth-Promoting Effects of Endophytic Trichoderma on Corchorus olitorius Cultivated in a Passive Hydroponic System. **Shuvonkar Bonik***, Ms. Corrie Cotton, Dr. Behnam. Khatabi, and Dr. Mozhgan Sepeheri

PD9 Investigating the Effects of Pain Neuroscience Education on Kinesiophobia and Knee-Related Outcomes in Individuals with Knee Osteoarthritis. **Lindsey Mosmiller*, Oluseun Ayoku*, Jacob Breedlove*, Santosh Regmi*, Ami Vodi*,** and Dr. Masoud Moghaddam.

PD10 Management and Prevention of Spinal Cord Injury: An Undergraduate Outreach Initiative. **Jensyn Carr SPT*, Krystina Coyle SPT*, Brian Drummond SPT*, Gregory Gerber Jr SPT*, Nicholas Miller SPT***, and Dr. Dennis Klima.

PD11 Population Biology of Bay Anchovy (Anchoa mitchilli) in Maryland's Coastal Bays. **Victory Akosubo*** and Dr. Paulinus Chigbu

PD12 The Association of Vibrio Species with Macroalgae in the Maryland Coastal Bays. **Joy Enahoro***, Joshua Akinola, Meliza Montoya, Dr. Ligia DaSilva, Dr. Salina Parveen, and Dr. Paulinus Chigbu.

PD 13 The Effect of Lower Extremity Postures on Pelvic Position and Gluteus Medius Activation During Single Leg Stance: An EMG Study. **Dylan Chi*, Ryan Chan*, Jayda Ledford*, Emily Nadler*, Marissa Swamy***, and Dr. Michael Rabel.

PD14 The Impact of the Challenger League on Quality of Life in Athletes, Caregivers, and Volunteers. **James Collins*, Worthy Hollister*, Riley Keener*, Trevor Owens*, Layla Tiberio***, and Dr. Thomas Pellinger.

List of Presenters - POSTER PRESENTATIONS

Master's Presenters Room: SSC Ballroom Time: 1:30 PM - 3:00 PM

PM 1 Advocacy for Deaf and Hard-of-Hearing Students in Postsecondary Education. **Chinenye Oluoba***, Ochoa Diana, Victoria Rausach, Jazmine Thomas, and Gerald Elston.

PM2 Comparing 3-Day TMP-SMX and 5-Day Nitrofurantoin for Acute Uncomplicated Cystitis in Reproductive-Age Women. **Jocelyn Davis, PA-S*; Ayana Moses, PA-S*; Destiny Parker, PA-S***; Dr. Khaled Hasan and Dr. Shao-Hsuan Hsia.

PM3 Comparing Bariatric Surgery and GLP-1 Therapy for Weight and Glycemic Outcomes in Severe Obesity. **Denise Agyeman, PA-S2[1]*; Gabrielle Campbell, PA-S2[1]*; Urenwa Osuamadi, PA-S2[1]***; Dr. Shao-Hsuan Hsia and Dr. Khaled Hasan,

PM4 Cranberry Capsules for Recurrent Urinary Tract Infection Prevention: A Comparative Evidence Review. **Lauren Webb, PA-S*, Queena Williams, PA-S*, Joy Modozie, PA-S***, Dr. Shao-Hsuan Hsia and Dr. Khaled Hasan.

PM5 Impact of Regenerative Agriculture Farming Practices on Soil Health in Delmarva Sandy Loam Soil - Organic Vegetable Cropping Systems. **Keith Bucca***, Dr. Arthur Allen, Eugene. Casey, Dr. Dev Gurung, Dr. Fawzy Hashem, and Dr. Patricia Millner.

PM6 Leveraging Generative AI-Supported Research to Develop Nutrient-Enhanced Cassava (Manihot esculenta Crantz) Composite Flour Products. **Anthonia Nwagwu***, Dr. Caleb Nindo, Dr. Nadine Burton, and Dr. Francis Orech.

PM7 Mind Over Medicine: Coping Strategies and Mental Health Outcomes Among Graduate Health Students During COVID-19. **Laura Nelson***; Brionna Palmer; A'Jenai Thompson; Dr. Shao-Hsuan Hsia; and Dr. Khaled Hasan.

PM8 Multi-Systemic Therapy Effects on Rates of Recidivism in Juvenile Delinquents. **Aida Aazami*; Emily Salada*; Garvan Vines***; Dr. Shao-Hsuan Hsia and Dr. Khaled Hasan.

PM9 Perfluorobutanoic Acid (PFBA) Reprograms Feeding and Development in Fall Armyworm. **Sumantee Baidya**, Fariba Rostami and Dr. Wayne Omagamre.

PM10 Prenatal Medication Exposure and Autism Risk: A Comparative Analysis of Neurodevelopmental Outcomes. **Paige Bleyer, PA-S2*; Brittney Lane, PA-S2*; Kierra Randolph, PA-S*;** Dr. Shao-Hsuan Hsia and Dr. Khaled Hasan

PM11 Prevalence of Foodborne Pathogens in Backyard Chicken Farms on the Eastern Shore of Maryland. **Priyanka Ranaweera***, Dr. Anuradha Punchihewage-Don, Dr. Melinda Schwarz, Dr. Janak Dhakal, Dr. Jennifer Timmons, and Dr. Salina Parveen

PM12 Probiotics for Prevention of Antibiotic-Associated Diarrhea in Pediatric Patients: A Review of Level I Evidence. **Ayesha Babar[1]*, Hajra Chaudry[1]*, Areba Ahmad[1]***, and Dr. Khaled Hasan

PM13 School-Based Drug Prevention in High Schoolers. **Ernest J. Breud*; William Bundi*; Zuhair Irfan***; Dr. Shao-Hsuan Hsia and Dr. Khaled Hasan.

PM14 Socioeconomic Determinants of Household Income and Financial Resilience in the United States: Evidence from the 2024 Financial Health Pulse Survey. **Suraj Singh Thagunna***, Dr. Lila Karki and Dr. Enrique Escobar.

PM15 Understanding Factors Influencing the Adoption of Climate-Resilient Alley Cropping. **Rumita Limbu Sanwa***, and Dr. Lila Karki

List of Presenters - POSTER PRESENTATIONS

Online Master's Presenters Room: SSC Ballroom Time: 1:30 PM - 3:00 PM

PM16 Experiential Learning and Industrial credentialing in HS CTE programs.The kids of Mustang Café. **Renaldo Singleton*** and Dr. Charlene Smith.

PM17 Reexamining Computer Science for All: Equity, Implementation, and Readiness in Maryland's K–12 System. **Sharhonda Whitfield***, and Dr. Charlene Smith.

Undergraduate Presenters Room: SSC Ballroom Time: 1:30 PM - 3:00 PM

PU1 A Preliminary Investigation of Functional Movement Among Student-Athletes and Recreational Athletes at a Historically Black University. **Kaitlyn Eaton*, Jaiden Woodyard***,and Dr. LaShawn Nastvogel.

PU2 Artemis-Ready Exercise: AI-Assisted EMG Analysis of Exercise Loading Under Simulated Reduced Gravity. **Elijah Coates***; James Parana; and Dr. Jia Liu.

PU3 Commercial Essential Oils as Alternative Antimicrobial Agents against Shewanella Species. **Yesika Dunn***, Dr. Tahirah Johnson, Dr. Anuradha Punchihewage-Don, and Dr. Salina Parveen

PU4 Effects of an 11-Week High Functional Resistance Training Program on Indices of Arterial Stiffness. **Dillon G. Otero***, Colin Johnson; Masoud Moghaddam; Brent Fedorko; Jessica Walter; Lisa Marquette; Tim Werner.

PU5 Exercise Motivation Among Undergraduate Students: An Analysis of Behavioral Regulation Types. **Jalen Ridgeway*, Joy Hawkins***, and Dr. LaShawn Nastvogel.

PU6 Impact of Blood Flow Restriction Cuff Design on Upper Body Exercise. **Michael Sergio***, Sean Zupnik, Nicholas Rolnick, Victor de Queiros, Brent Fedorko, Samantha Watson, Campbell Ruffhead, Lucas Kuriawa, Tim Werner.

PU7 Impact of Synthetic Caffeine on Adolescent and Young Adult Cognitive and Neuromotor Function. **Carrington Rashaw***, and Dr. Jennifer Keane-Dawes.

PU8 pacesuit Environmental and Telemetry Heads-Up Display (SENTRY HUD). **Darren Wyant*** and Dr. Aaron H. Persad.

PU9 T-type Calcium Channel Blocker Antiseizure Properties in the Pentylenetetrazol Zebrafish Model. **Jade Reid***, Dr. Tracy Bell, and Dr. Patrice Jackson-Ayotunde.

UNIVERSITY of MARYLAND
EASTERN SHORE

SCHOOL OF GRADUATE STUDIES

2026 ANNUAL RESEARCH SYMPOSIUM

Abstracts

OF1

Data-Driven Sea Level Forecasting for Cambridge, Maryland: Leveraging Time Series Models

Dr. Yeong Nain Chi[1]*,
Department of Agriculture, Food and Resource Sciences, School of Agricultural and Natural Sciences,
University of Maryland Eastern Shore, Princess Anne, MD 21853

The accelerating rise in sea levels poses a significant challenge for coastal communities, necessitating accurate forecasting methods. This study evaluates the efficacy of various time series models in predicting long-term sea level changes, including ARIMA, ETS, NNAR, and their hybrid combinations. Using monthly mean sea level data from Cambridge, Maryland, spanning January 1971 to December 2024, a comparative analysis was conducted. The NNAR(13,7) model emerged as the most accurate, demonstrating the lowest Mean Squared Error (MSE) among all tested models. These findings underscore the potential of neural network-based approaches in sea level forecasting and highlight the importance of integrated modeling techniques as decision-support tools for local mean sea level predictions. Understanding historical sea level trends is crucial for improving future projections, and this study contributes to that knowledge base. Continued research efforts leveraging these data-driven insights can significantly enhance our ability to refine predictions and develop effective strategies to mitigate the impacts of sea level rise.

OF2

Multi-Country Global Maize Yield Trends and Forecasts: Implications for Trade Policy

Catherine Ngo[1], **Dr. Yeong Nain Chi*[1],** and Dr. Moses T. Kairo[2]
[1]*Department of Agriculture, Food and Resource Sciences, School of Agricultural and Natural Sciences,
University of Maryland Eastern Shore, Princess Anne, MD 21853
[2]School of Agricultural and Natural Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853

Maize remains a cornerstone of food systems and agricultural trade across both Sub-Saharan Africa and temperate grain-producing regions. Accurate yield forecasting is essential for anticipating supply fluctuations, informing trade policy decisions, and mitigating food security risks. This study analyzes long-term maize yield data from six countries—Zimbabwe, Malawi, Kenya, Romania, the United States, and South Africa—spanning 1961–2022 to evaluate historical production trends and develop predictive models. Using Bayesian Information Criterion (BIC)–guided model selection, optimal polynomial specifications were identified for each country and evaluated using adjusted R^2, RMSE, and a suite of residual diagnostics, including tests for normality, autocorrelation, and heteroscedasticity. Short-term (2023–2027) and long-term (2023–2042) forecasts were produced with 95% confidence and prediction intervals to quantify uncertainty. The results reveal diverse growth patterns: linear models best describe trends in the United States and Zimbabwe, while quadratic and cubic forms more effectively capture non-linear dynamics in African and Eastern European contexts. Comparative model performance highlights region-specific dynamics, with temperate regions exhibiting stable upward trends trends while African producers face higher interannual volatility. Scenario analysis further illustrates how forecast deviations translate into potential trade imbalances, import dependency, and food-price instability, particularly in low-income countries. The results underscore the need for integrated forecasting frameworks linking agro-climatic trends with trade and food-security planning to enhance resilience in global maize supply chains. Overall, the study emphasizes the need for region-specific modeling strategies to enhance the reliability of yield projections and support policy and investment decisions aimed at climate resilience and sustainable agricultural intensification.
Keywords: Maize yield forecasting; Agricultural production trends, Polynomial regression; Time-series modeling; Trade policy.

OF3

Organizational Sustainability Through Gender-Equitable Succession Planning in NCAA Women's Coaching

Dr. Jamila Johnson[1]*, Dr. Richard Milter[2], Dr. Robert Schaller[2], and Dr. Faleh Alshameri[2]
[1]*Department of Hospitality and Tourism Management, University of Maryland Eastern Shore, Princess Anne, MD 21853
[2]University of Maryland Global Campus, Adelphi, MD 20783

This study examines the persistent decline of women coaches in NCAA Division I collegiate athletics over the past five decades. Employing a sequential exploratory multi-method design combining systematic review, qualitative interviews, and ethnographic observations, this research investigates how organizational practices and cultural expectations shape women coaches' career trajectories. The Coach Advancement and Retention Framework (CARF) was developed as a theoretical tool integrating gender role theory, succession theory, and mentorship theory to guide analysis. A systematic review of 52 peer-reviewed studies from 2003 to 2024 established the empirical foundation for understanding documented barriers and advancement mechanisms. Semi-structured interviews with 11 current and former NCAA Division I women head coaches from diverse sports, career stages, and demographic backgrounds provided contemporary evidence of challenges affecting advancement and retention. Ethnographic observations conducted at three universities documented organizational climates and policy implementation practices. Findings revealed six interconnected themes demonstrating how systematic exclusion operates through network-based succession practices, differential credibility assessments, intersectional barriers, mentorship deficits, organizational culture variation, and adaptive navigation strategies. Collectively, these findings illuminate how gender inequity is structurally reproduced within athletic organizations and offer actionable insight for institutional leaders. While grounded in collegiate athletics, the CARF holds meaningful applicability across industries where gender-based leadership gaps persist, including corporate management, higher education administration, healthcare, hospitality and tourism, and STEM fields. In each of these sectors, women similarly encounter informal succession networks, credibility biases, and organizational cultures that impede career advancement. This presentation will discuss how the CARF can serve as a transferable framework for diagnosing systemic barriers and designing evidence-based interventions that promote gender-equitable leadership pipelines across disciplines and industries.

OF4

Shifting from Passive to Active Learning: Fostering Student Engagement and Achievement in a Graduate Physician Assistant Program

Dr. Khaled Muhsen Hasan*
Department of Physician Assistant, School of Pharmacy and Health Professions, University of Maryland Eastern Shore, Princess Anne, MD 21853

Active learning is defined as “anything that involves students in doing things and thinking about the things they are doing.” This pedagogical approach engages students in higher-order activities requiring analysis, synthesis, and evaluation rather than passive listening. Given the rapid growth of medical knowledge and the high stakes of clinical practice and patient safety, graduate health education must shift from passive lecture environments to collaborative, active learning workshops. This framework utilizes Bloom’s Taxonomy as a hierarchy of learning objectives, emphasizing progression to higher-order thinking. While passive methods often remain limited to the foundational levels of remembering and understanding, active learning strategies serve as a mechanism for progressing toward the critical levels of analyzing, evaluating,

and creating required for clinical practice.

Five core active learning strategies were implemented and evaluated: (1) Retrieval Practice, (2) Spaced Repetition, (3) Case-Based Learning (CBL), (4) Peer Teaching and Collaborative Learning, and (5) Gamification. Retrieval practice, involving the active recall of information from memory, was facilitated through low-stakes pre- and post-lecture quizzes.

Data from the 2027 Cohort across eight pharmacological modules—including Pharmacokinetics/Pharmacodynamics, Autonomic Nervous System, Dermatology, EENT, NSAIDs, Glucocorticoids, Osteoporosis & Gout, and Rheumatoid Arthritis & Osteoarthritis—demonstrated significant improvements in student performance. Statistical analysis of total pre-lecture versus post-lecture quiz scores consistently yielded P values < 0.05, confirming the efficacy of these interventions across all modules.

Case-Based Learning was utilized to provide clinical context, mirroring real-world practice and requiring students to apply, analyze, and evaluate differential diagnoses—directly targeting the upper tiers of Bloom's Taxonomy. Spaced repetition was incorporated to counteract natural forgetting and reinforce long-term retention. Peer teaching and collaborative learning sessions required students to articulate and defend clinical reasoning, deepening understanding through structured discourse. Gamification, including "Jeopardy"-style pharmacology review sessions, increased student engagement and motivation by embedding retrieval practice within a competitive, low-stakes format. The integration of these evidence-based active learning strategies proved superior to passive learning for long-term retention and deep understanding, better preparing healthcare students for high-stakes professional examinations and clinical success.

(Titles in Alphabetical Order)

OD1

AI-Driven Drug Design: Lead Optimization of Fluorinated Enaminone Compounds using Simulations Plus

Taiwo Oluyemo*, Dr. Rhashanda Haywood, and Dr. Patrice Jackson-Ayotunde
Department of Pharmaceutical Sciences, School of Pharmacy and Health Professions, University of Maryland Eastern Shore, Princess Anne, MD 21853

Epilepsy is a chronic neurological disorder characterized by recurrent seizures resulting from abnormal neuronal excitability and affects over 50 million people worldwide. Despite the availability of multiple anti-seizure medications, a significant proportion of patients remain resistant to current therapies, highlighting the need for new treatments targeting novel mechanisms. T-type calcium channels play an important role in neuronal firing and seizure generation and therefore represent a promising target for anti-seizure drug development. Structure activity relationships are essential for developing lead compounds that retain biological efficacy while minimizing toxicity and improving pharmacokinetic properties and solubility. In this study, computational modeling was used to guide structure-activity relationship studies of two fluorinated enaminone analogs to improve their central nervous system (CNS) drug-likeness. Physicochemical and ADMET parameters were evaluated using Simulation Plus ADMET Predictor to assess solubility and toxicity risk. Structural modification of Compound A resulted in an analog with improved intrinsic solubility while maintaining CNS-compatible properties, including logP (2.535), blood-brain barrier filter (93%), zero toxicity risk, and more than double the intrinsic and water solubility at physiological pH. In parallel, optimization of Compound B addressed toxicity concerns associated with the parent compound, producing a new analog with reduced predicted toxicity while preserving physicochemical characteristics consistent with CNS activity. These findings demonstrate the utility of computational ADMET modeling for multi-parameter optimization of drug candidates and support further investigation of these compounds as potential leads for novel anti-seizure therapeutics.

OD2

An Approach to Stand Counts and Crop Health Using Robotics

S. K. Yerramsetti[1*], L. Ward[1], D. V. Singamsetti[2], Dr. A. Nagchaudhuri[3]
[1*]Department of Agriculture Food and Resource Sciences, School of Agricultural and Natural Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853
[2]Department of Engineering, School of Business, Engineering, Airway Science and Technology, University of Maryland Eastern Shore, Princess Anne, MD 21853

Manual methods for stand count and vigor assessments in agriculture are highly time-consuming and error-prone, particularly in large-scale cornfields. This presentation addresses the integration of robotics, computer vision, and artificial intelligence to develop an autonomous and scalable solution for accurate plant detection, counting, and health assessment. Utilizing an AgileX Scout Mini equipped with an Intel Real sense d435i camera, video segments were systematically collected at predefined intervals corresponding to 1/1000th of an acre. OpenCV and YOLOv8 algorithms were employed to ensure precise detection and tracking of individual plants across video frames, addressing challenges such as variable lighting, occlusions, and growth stage variations. Plant health was quantified using a vigor scoring system assessing morphology, stem strength, and color health. Stand count estimates achieved up to 96.67% accuracy when compared against the known seed application rate. The approach demonstrates good potential for practical agricultural applications including crop emergence assessment, early disease detection, growth rate tracking, and yield estimation. Future enhancements aim to integrate drone and satellite imagery for improved detection capabilities, multi-class identification, and expanded analytical functions such as weed and pest detection, disease classification, and cloud-based data processing.

OD3

Corn Earworm (Helicoverpa zea) Herbivory Induces Cannabinoid, Terpenes Biosynthesis and Defense Gene Expression in Boax and Berry Hemp (Cannabis sativa L.) Varieties

Freweyni Abrha*, Dr. Tigist Tolosa, and Dr. Simon Zebelo,
Department of Agriculture, Food and Resource Science, School of Agriculture and Natural Sciences, University of Maryland Eastern Shore, Princess Anne, Maryland 21853.

Following the 2018 Farm Bill, hemp (Cannabis sativa L.) with delta-9-tetrahydrocannabinol (Δ^9-THC) concentrations below 0.3% (dry weight) is classified as an agricultural commodity. Hemp cultivation has expanded due to its diverse uses and therapeutic value, but this growth has faced challenges from increasing insect pressure. Corn earworms (CEW) have become a major pest of cannabidiol (CBD) hemp. A recent report from our lab showed that CEW feeding raised Δ^9-THC above the legal limit, yet its effects on genes involved in cannabinoid biosynthesis remain unclear. This study examined how CEW infestation impacts CBD, Δ^9-THC, terpene levels, and gene expression related to cannabinoid and jasmonic acid biosynthesis in two hemp varieties, Boax and Berry. Plants were grown under controlled conditions, and CEW larvae were introduced at the flowering stage. After 24 hours, samples were analyzed using gas chromatography–mass spectrometry (GC-MS) and real-time qPCR. In Boax, CEW herbivory significantly increased cannabinoid levels, especially CBD and Δ^9-THC, and raised concentrations of major and some minor terpenes. Correspondingly, genes involved in cannabinoid and jasmonic acid biosynthesis were upregulated. RNA sequencing identified 266 differentially expressed genes (DEGs), with 116 upregulated and 150 downregulated. Upregulated DEGs were enriched in stress response and jasmonic acid signaling pathways. Similarly, Berry plants showed higher levels of CBD, THC, and terpenes, along with activation of the same genes following CEW damage. These findings reveal how hemp responds at molecular and biochemical levels to insect stress and lay the groundwork for breeding pest-resistant hemp varieties with stable cannabinoid and terpene profiles.
Keywords: Cannabis sativa, Corn Earworm, Cannabinoid biosynthesis, jasmonic acid.

OD4

Distribution of Total and Pathogenic Vibrio parahaemolyticus in Farmed and Wild Oysters in the Chesapeake Bay

Allissa Riley[1*], Mary Snow[1], Kelly Williams[1], Dr. John Bowers[2], Leila Silva[3], Dr. John Jacobs[4], Dr. Paulinus Chigbu[1], Ava Ellett[4], and Dr. Salina Parveen[1]
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[2]US Food and Drug Administration, College Park, MD 20742, USA.
[3]Wellesley College, Wellesley, MA 02481, USA.
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Vibrio parahaemolyticus (Vp) is a naturally occurring marine bacterium and a leading cause of seafood-associated gastroenteritis in humans, often linked to the consumption of raw or undercooked oysters. Because oysters are filter feeders, they can accumulate Vp from the surrounding water, and environmental conditions such as temperature, salinity, and aquaculture practices may influence its presence and abundance. However, limited information is available on the occurrence of pathogenic Vp in oysters produced under different oyster production systems in the Chesapeake Bay. To address this gap, oysters

and water samples were collected monthly from April through October 2024 at three locations in the Chesapeake Bay, representing farmed and wild oyster production systems. At each site, ten oysters and one liter of water were collected and analyzed for total (tlh+) and pathogenic (tdh+ and trh+) V. parahaemolyticus using the MPN-qPCR method. Environmental parameters, such as temperature, salinity, and turbidity, were recorded concurrently. The tlh+ gene was detected in 87% of oyster samples (log MPN/g or mL: –0.45 to 5.41) and 94% of water samples (–2.44 to 2.36). Pathogenic genes were more frequently detected in water than in oysters, with tdh+ and trh+ observed in 43% and 59% of water samples compared with 33% and 48% of oyster samples. In farmed oysters, detection frequencies of tlh+, tdh+, and trh+ were 86%, 31%, and 43%, respectively, while corresponding water samples showed 92.5%, 45%, and 62%. Wild oysters exhibited slightly higher detection rates (tlh+: 90%; tdh+: 33%; trh+: 48%), with water samples showing 95%, 38%, and 52% for the respective genes. No significant differences were observed between aquaculture practices; however, temperature and salinity showed strong correlations with Vp levels. Overall, these findings improve our understanding of the distribution of pathogenic Vibrio parahaemolyticus in the Chesapeake Bay and contribute to ongoing efforts to support seafood safety and public health.

OD5

Effect of Seaweed Biostimulants on Growth and Antioxidant Content of Beetroot in an Indoor FarmBot System

N. Khadka[1]*, Dr. Madhumi Mitra[2], Dr. Abhijit Naagchaudhury[3] Dr. Byungrok Min[1], Dr. Jesuraj Panday[3], Portia Nkrumah[1], and Euyeon. Noh[1]

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Seaweed-derived biostimulants have emerged as promising tools in controlled-environment agriculture (CEA) to enhance plant growth, stress tolerance, and nutritional quality.This study investigated the effects of different concentrations of seaweed-based biostimulants on growth parameters and antioxidant-related phytochemicals in beetroot (Beta vulgaris L.) grown in an automated indoor FarmBot system.A completely randomized design was employed with three treatments: control (T0), high concentration (T1, 1/8 dilution), and low concentration (T2, 1/16 dilution), each replicated six times. Foliar sprays were applied three times per week. Growth parameters including leaf area index (LAI), shoot biomass, root biomass, and total biomass were measured. In addition, biochemical analyses were conducted to determine total phenolic content (TPC) and total flavonoid content (TFC) in both roots and leaves. The low concentration treatment (T2, 1/16) significantly increased LAI ($p < 0.05$), indicating enhanced leaf expansion and canopy development, whereas the high concentration treatment (T1, 1/8) produced the highest shoot biomass. Root and total biomass were not significantly affected by treatments. In beet leaves, TPC and TFC were highest under T2 (1/16 dilution) (13.20 mg GAE g^{-1} DW and 11.01 mg CE g^{-1} DW, respectively), while biochemical responses in roots remained relatively similar across treatments. These results indicate a concentration-dependent response, suggesting that lower doses of seaweed biostimulants may stimulate leaf expansion and secondary metabolite accumulation without significantly altering root biomass.Overall, seaweed biostimulants demonstrate potential to improve crop growth and antioxidant-related phytochemicals in automated indoor farming systems, highlighting their value for sustainable production in controlled-environment agriculture.

OD6

Elucidating the Roles of Exosomes Derived from Aging Adipose Stem Cells in Tissue Regeneration

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Aging is an irreversible biological process that significantly impairs tissue repair and regenerative capacity. Adipose-derived stem cells (ASCs) are abundant, easily accessible through minimally invasive procedures, and possess multilineage differentiation potential, making them an attractive source for regenerative therapies. Increasing evidence suggests that the therapeutic effects of mesenchymal stem cells (MSCs), including ASCs, are largely mediated through paracrine mechanisms rather than direct differentiation into regenerated tissues. In particular, MSC-derived exosomes have emerged as key mediators of intercellular communication and exhibit promising therapeutic potential in skeletal tissue regeneration. Compared with direct stem cell transplantation, exosome-based therapies offer several advantages, including intrinsic homing capability, high stability in circulation, low immunogenicity, and efficient molecular signaling. However, the regenerative functions of exosomes derived from aging ASCs remain poorly understood, limiting the development of effective exosome-based strategies for age-related tissue repair. In this study, we investigated the biological roles of exosomes derived from aging ASCs in tissue regeneration. ASCs were isolated from aging (90-week-old) C57BL/6 mice, and exosomes were harvested from the conditioned media of ASCs using ultracentrifugation. The isolated exosomes were characterized for size distribution and morphology using nanoparticle tracking analysis and transmission electron microscopy. Their osteogenic effects were evaluated through gene expression analysis, alkaline phosphatase (ALP) activity, and Alizarin Red staining. In addition, inflammatory responses induced by aging ASC-derived exosomes were assessed using real-time PCR. Exosomes derived from young ASCs were used as a control. Our results demonstrated successful isolation of exosomes from aging ASCs with an average diameter of approximately 100 nm and characteristic cup-shaped morphology. Functional analyses revealed that treatment with aging exosomes significantly reduced osteogenic differentiation in aging ASCs compared with exosomes derived from young ASCs, as evidenced by decreased osteogenic gene expression, reduced ALP activity, and diminished mineral deposition. Furthermore, aging ASC-derived exosomes promoted the expression of pro-inflammatory genes, whereas exosomes from young ASCs showed no significant effect on inflammatory gene expression. Collectively, these findings suggest that aging ASC-derived exosomes have minimal effect on osteogenic differentiation in aging-associated stem cells and promote inflammatory responses, which may contribute to limited tissue regeneration during aging. This study provides important insights into the functional impact of aging-derived exosomes and establishes a foundation for future development of engineered exosome-based strategies to enhance tissue regeneration in aging populations.

OD7

Engineering Enhancer-Driven Adeno-Associated Viral Vectors for Cell Type Specific Neural Circuits and Transgenesis

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Understanding neural circuits at the level of specific cell types is highly important in deciphering the complex functions of the brain. Better knowledge of this can provide researchers with better understanding of how these circuits contribute to behavior and function. Discovery of cell type specific enhancers is also challenging. In this study, we aim to use AAV (Adeno-associated Virus) and Machine Learning Assisted Enhancers which we have discovered as a tool in understanding these brain functions. AAVs are small, non-pathogenic, replication defective viruses with a single stranded DNA genome. AAVs also establish long term gene expression which makes them a useful tool for gene therapy. Enhancers for three cell types were identified and they are striosome, cortex layer 5, and layer 3 neurons. The different enhancers were packaged into our AAV vectors to generate a versatile library, which was then injected into wild-type mice followed by brain tissue processing. The results demonstrated labeled neurons in the cortex, along with some off-target expression in the lateral habenula using enhancer-driven AAVs These findings suggest that enhancer-driven AAVs can target specific cortical neurons; however, it remains unclear whether the expression is restricted to layer 2, layer 3 or layer 5. Future directions include testing and validating additional enhancer-driven AAVs, performing spatial transcriptomics to confirm gene expression profiles, and conducting further optogenetic experiments to more comprehensively validate the vectors.

OD8

Engineering Exosome Mimetics with Macrophage Targeting for Osteo-Immunomodulation

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Non-union bone fractures caused by trauma, infection, or accidents remain a significant clinical challenge. Although various therapeutic approaches have been developed, the molecular and cellular mechanisms underlying bone healing are not fully understood, limiting the development of effective treatments. Increasing evidence suggests that the acute inflammatory phase plays a critical role in bone repair and requires precise coordination between immune cells, particularly macrophages, and bone marrow mesenchymal stem cells (MSCs). In this study, we found that MSCs exposed to acute inflammatory conditions exhibit enhanced osteogenic differentiation and anti-inflammatory properties. Based on these findings, we hypothesized that engineered exosome mimetics derived from preconditioned MSCs could exert osteo-immunomodulatory effects to promote bone healing. To test this hypothesis, modified exosome mimetics (mEMs) were generated from mouse MSCs treated with inflammatory cytokines using a membrane extrusion approach. The resulting mEMs were characterized and evaluated for their osteo-immunomodulatory functions using molecular and cellular assays. Transmission electron microscopy (TEM) demonstrated that mEMs exhibit morphology similar to that of native exosomes, while nanoparticle tracking analysis (NTA) showed an average particle size of approximately 100 nm. ELISA analysis revealed increased levels of anti-inflammatory proteins in mEMs. Treatment with mEMs significantly enhanced osteogenesis, as evidenced by the upregulation of osteogenic gene and protein markers, as well as increased alkaline phosphatase (ALP) activity and Alizarin Red staining. Furthermore, mEMs inhibited the polarization of M0 macrophages toward the pro-inflammatory M1 phenotype and promoted the transition of M1 macrophages to the anti-inflammatory M2 phenotype. In addition, mEMs were engineered for specific macrophage targeting through EDC/NHS activation of leukadherin-1, which was bioconjugated to amines on the exosome surface, as confirmed by a fluorescamine assay. The engineered mEMs demonstrated macrophage-targeting capability. Overall, these findings demonstrate that engineered exosome mimetics derived from preconditioned MSCs, combined with macrophage-targeting functionality, represent a promising osteo-immunomodulatory strategy for enhancing bone healing.
Grant support: The project was supported by National Science Foundation (Award number: 2401861), Princeton PACRI Grant, and Maryland Stem Cell Research Fund.

OD9

Epigenetic Mechanisms Involved in Heat Stress Adaptation in Chenopodium quinoa and their Effect on Crop Performance: Approaches for Establishing Quinoa Cultivation on Maryland's Eastern Shore.

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Among the numerous strategies employed to meet food demand, the reintroduction of genetic diversity into fully domesticated crops enhances variability in genes responsible for environmental adaptability, phenotypic plasticity, and resilience—traits still possessed by their wild ancestors. The expansion of Chenopodium quinoa cultivation beyond its native range continues to accelerate due to its exceptional nutritional profile and ability to thrive across diverse climatic conditions. Traditionally cultivated in temperate regions of South America, quinoa is now grown in over 120 countries worldwide. This study focused on the phenotypic characterization of nine quinoa genotypes for adaptability, description, and the selection of promising lines under varying cultivation conditions in the lowland region of Maryland's Eastern Shore, considering that temperatures exceeding 32°C hinder growth by disrupting flowering and seed development. The effects of heat stress on the growth and development of nine quinoa genotypes cultivated across four growing seasons were examined, as were strategies for cultivation and genetic improvement. Analysis of Variance (ANOVA) was employed to evaluate both qualitative and quantitative traits, with mean separation conducted using Tukey's HSD test ($\alpha = 0.05$). Multivariate analyses, including Pearson correlation, Principal Component Analysis (PCA), and Hierarchical Clustering Analysis, were performed. Total RNA was extracted from quinoa plants exposed to heat stress during flowering, and RNA sequencing was conducted to identify differentially expressed genes (DEGs) responsive to abiotic stress. Indirect organogenesis was executed using Murashige and Skoog (MS) media supplemented with varying concentrations of growth regulators. Significant differences were observed among genotypes and planting seasons, with heat stress exerting a profound influence on vegetative and flowering traits, resulting in considerable yield variation across seasons. RNA sequencing revealed 3,340 upregulated and 2,752 downregulated genes in response to heat stress; key genes included heat shock proteins, jasmonate-induced proteins, bHLH transcription factors, PHD finger MALE STERILITY 1, AGAMOUS-like MADS-box genes, and aspartic proteases—all crucial for heat tolerance and essential for flower and seed development. Regeneration was successfully achieved from true leaf explants of two genotypes using MS medium supplemented with 0.1 mg/l 24-D and 3 mg/l BAP. This research underscores the significance of key transcription factors and regulatory genes in quinoa's response to heat stress and their potential as targets for breeding heat-tolerant varieties. Additionally, it identifies optimal planting seasons and promising lines for commercial cultivation and provides a regeneration protocol essential for genetic improvement and propagation.

OD10

Insect Feeding Damage as a Driver of Aflatoxin Contamination in Maize: Implications for Food Safety and Supply Chains

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Insect pests are a natural part of agricultural systems, and maize (Zea mays L.) is exposed to various insect species throughout its growing season. Insect feeding causes physical damage to kernels, creating entry points for colonization by mycotoxigenic fungi such as Aspergillus spp. These fungi produce aflatoxins, highly toxic, naturally occurring secondary metabolites that are genotoxic and hepatocarcinogenic. Exposure to aflatoxins can cause acute toxicity and chronic health effects, including liver damage, growth impairment,

and immune suppression. This study aimed to evaluate how insect feeding damage promotes mycotoxin buildup in maize and to explore how insects process ingested mycotoxins. Under controlled laboratory conditions, insects fed on maize cobs treated with three different mycotoxin concentrations. The extent of feeding damage and its relationship to fungal growth and toxin levels were assessed, along with an initial analysis of how insects digest contaminated material. To place these findings in a broader food safety context, aflatoxin contamination was also examined in maize and peanuts entering urban markets in Kinshasa, Democratic Republic of the Congo (DRC), where warm, humid conditions promote fungal growth. A total of 36 lots (18 maize, 18 peanuts) were sampled from farms and open markets, milled, and analyzed in triplicate using Reveal Q + immunoassays. Aflatoxin levels were right- skewed, with a median of 3. 3.1 µg/kg and a maximum of 147. 2 µg/kg. Overall, 36. 1% of samples exceeded the European Union (EU) maximum level (4 µg/kg), while 13. 9% exceeded the United States (US) action level (20 µg/kg). Maize showed higher contamination than peanuts, with 61. 1% and 27. 8% of maize samples surpassing EU and US limits, respectively. Additionally, farm- level samples had significantly higher contamination than market samples. These findings emphasize the important role of insect damage in enabling mycotoxin contamination in maize and highlight the need for integrated pest and postharvest management strategies. Reducing insect injury in the field, along with better drying, storage, and sorting practices, could greatly reduce aflatoxin risks across agricultural systems and supply chains.

OD11

Isolation and Characterization of Bioactive Natural Products from Actinomycetes

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Natural products remain a cornerstone of drug discovery, providing structurally diverse molecules that have led to the development of numerous antibiotics, anticancer agents, and immunomodulatory drugs. Among microbial sources, Actinomycetes are particularly significant, contributing to more than 80% of clinically used antibiotics. This study explores environmental actinomycete strains as potential producers of novel bioactive secondary metabolites. Soil samples collected from the Harpers Ferry hiking trail in the Appalachian Mountains were subjected to selective isolation techniques, yielding more than 302 actinomycete strains. Crude extracts from cultured strains were analyzed using Ultra Performance Liquid Chromatography - mass spectrometry, and metabolite profiles were compared with entries in the AntiBase database to facilitate early dereplication and identify unique chemical signatures. Preliminary biological screening demonstrated broad-spectrum antimicrobial activity in several extracts. Multiple strains exhibited metabolite profiles that were not consistent with known compounds, suggesting the production of potentially novel secondary metabolites. Culture extracts of 80% of the isolates exhibited antifungal/antibacterial activity in a medium-throughput screening. Select strains were subjected to scale-up fermentation and solvent extraction for isolation and structure elucidation of active metabolites. We will share a snapshot of our progress on the discovery of bioactive molecules from actinobacterial isolates at UMES.

OD12

PI3Kδ Splice Isoform (PI3Kδ-S) Drives PI3K/Akt/mTOR Activation and Idelalisib Resistance in Hematologic Malignancies

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The PI3K/Akt/mTOR signaling pathway is frequently hyperactivated in cancer and is associated with poor prognosis and therapeutic resistance. PI3Kδ-S, a novel splice isoform of PI3Kδ, has previously been linked to tumor aggressiveness and drug resistance in African American prostate cancer and solid tumors. However, its

role in hematologic malignancies remains unclear. Because lymphoma and leukemia account for approximately 10% of annual cancer diagnoses and 40% of childhood and adolescent cancers in the United States, this study investigated the expression and functional significance of PI3Kδ-S in these diseases. We propose that increased PI3Kδ-S expression correlates with drug resistance in lymphoma and leukemia cells. PI3Kδ-S and full-length PI3Kδ-L expression were quantified in lymphoma and leukemia cell lines (Raji, JeKo-1, Ramos, SU-DHL-5, and Hs 505.T) using RT-PCR and immunofluorescence, while drug sensitivity was evaluated using MTT and pathway activation was assessed by Western blotting. Patient-derived lymphoma tissues were analyzed by RNAscope. PI3Kδ-S expression was significantly elevated in Hs 505.T and Ramos cells compared to JeKo-1 and SU-DHL-5, correlating with increased PI3K/Akt/mTOR activation and resistance to the PI3Kδ inhibitor idelalisib. Immunofluorescence revealed nuclear localization of PI3Kδ-S in high-expressing cell lines, and RNAscope analysis showed significantly higher PI3Kδ-S levels in patient tumor samples compared to normal tissue. Long-term idelalisib exposure further increased the PIK3CD-S/PIK3CD-L expression ratio in resistant cell lines relative to parental cells. Collectively, these findings indicate that PI3Kδ-S is enriched in drug-resistant lymphoma and leukemia models and patient samples, and that an increased PIK3CD-S/PIK3CD-L ratio is associated with enhanced PI3K/Akt/mTOR signaling and idelalisib resistance, supporting PI3Kδ-S as a potential biomarker and therapeutic target in hematologic malignancies.

OD13

Use of Bacteriophage Against Multi-Drug-Resistant Salmonella in-vitro and in Dry Pet Food Kibbles

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Pet food is an emerging vector for foodborne non-typhoidal Salmonella in humans. Close and frequent association between pets, pet foods, and pet owners increases this risk. Dry pet food kibbles comprise a major portion (~61%) of pet food consumed. Recent multistate outbreaks linked to dry pet foods have involved multidrug-resistant (MDR) Salmonella. The study aimed to evaluate the efficacy of commercially available bacteriophage SalmoFresh™ in reducing MDR Salmonella serovars in-vitro and in kibbles. Standardized 5 log CFU/mL (in-vitro) and 5 log CFU/g (in kibble) of Salmonella Infantis-4, Kentucky-24, and Typhimurium-92 inoculated matrices were treated with SalmoFresh™ at multiplicities of infection (MOI) of 0, 100, 1000, and 10000. Positive and negative controls were included in the study. The in-vitro samples were stored at 4 °C and were analyzed at 0, 2, 6, 12, 24, and 48 h. Whereas, treated kibbles were stored at 25 °C and analyzed at 0, 6, 12, 24, 48, and 72 h post-treatment. The samples were plated on TSA plates, followed by 24 h of incubation before counting. A total of three replications were completed for each study. Mean reductions were compared across MOIs and time points using a three-way ANOVA ($\alpha = 0.05$). Under in-vitro conditions, lower MOIs (0, 100, 1000) resulted in marginal reductions of 0.4-1.5log CFU/mL, whereas 10,000 MOI resulted in up to ~4 log CFU/mL by 48 h. S. Kentucky was the least susceptible under in-vitro conditions compared to the other two. In kibbles, time, MOI and serovars all had a significant impact on the outcome as significant reductions ($p < 0.05$) were recorded as time increased, even in control and up to ~4 log reduction in S. Kentucky by 72 h. S. infanti-4 was the least susceptible ($p < 0.05$) compared to the other two serovars in Kibbles. These findings indicate that bacteriophage application is a promising biological intervention for reducing Salmonella contamination in dry pet food kibbles and associated exposure risks.

OD14

Using Generative AI to Conduct a Systematic Meta-Analysis on Leadership Development Programs for International Graduate Students at HBCUs

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Leadership development programs (LDPs) are critical for preparing graduate students for professional and civic engagement. Yet limited research exists on LDPs for international graduate students at Historically Black Colleges

and Universities (HBCUs). This internship conducted a systematic meta-analysis to identify key elements for designing an evidence-based LDP for this population. Generative AI was instrumental as a guide and idea catalyst at salient points of the research, supporting the development of a structured meta-analysis protocol including Boolean search strings, database selection, inclusion and exclusion criteria, PRISMA diagram guidance, OSF registration, and data extraction spreadsheet structure. AI tools also facilitated thematic analysis and coding across 25 peer-reviewed and gray literature sources encompassing qualitative, quantitative, mixed-methods, and conceptual studies (2000–2025). Databases searched included ERIC, JSTOR, Google Scholar, and UMES FDL Databases Collection. Following PRISMA guidelines, studies were independently screened by both researchers. Thematic synthesis employed three-stage coding aligned with three subsidiary research questions examining program content (what competencies to teach), delivery methods (how to structure programs), and intended outcomes (what to achieve). Twelve essential elements emerged, organized by these subsidiary questions: Five content elements including cultural self-awareness and identity development, intercultural communication and sensitivity, emotional intelligence and relational skills, leadership ethics and systems thinking, and institutional navigation and career development; four delivery elements including experiential and reflective learning, culturally responsive learning environments, mentorship and coaching structures, and social capital building through peer engagement; and three outcome elements including leadership self-efficacy and personal growth, resilience and psychological adjustment, and professional identity and leadership transfer. These elements informed a seven-module LDP curriculum framework aligned with the lived experiences of international graduate students at HBCUs. Generative AI enhanced the rigor and efficiency of this research, demonstrating its value in graduate-level scholarly inquiry. Findings advance inclusive leadership development literature and offer actionable guidance for HBCUs supporting international graduate student success.

OD15

When "Natural" Isn't Safe: The Real Dangers of Tainted Herbal Supplements

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The National Diabetes Statistics Report 2021 from the Centers for Disease Control and Prevention estimates that 11.6 % of the US population has diabetes. Adulteration of over-the-counter (OTC) medications, including herbal supplements, is a common problem worldwide. Clinical observation of the excellent antihyperglycemic effect of herbal supplements in a patient fueled our curiosity to investigate the active ingredients. The patient voluntarily provided three groups of supplements (pink, brown, and green tablets) for analysis. The samples were analyzed for both their physical characteristics and chemical constituents. A significant variation in weight among tablets was observed across all groups, with standard deviations of 25.6%, 8.5%, and 7.4% for green, pink, and brown tablets, respectively. To our surprise, UPLC-MS analysis revealed that a green tablet contained a mixture of metformin (290±113.8 mg) and glibenclamide (0.33± 0.07 mg). Similarly, a pink tablet contained 165± 69.0 mg of metformin and 0.29± 0.09 mg of glibenclamide. Although the extract from the brown tablets revealed a mixture of many compounds, a typical hallmark of crude herbal products, metformin and glibenclamide were not detected. In summary, we identified commonly used drugs, metformin and glibenclamide, in the herbal supplements, revealing their adulteration with conventional pharmaceutical products. Therapeutically significant concentrations of these drugs are found in the tablets, and tablet-to-tablet variations highlight poor manufacturing standards that pose serious safety risks. We strongly urge both clinicians and the public to be aware of such hidden risks associated with herbal remedies.

OM1

A Comparative Benchmark of Machine Learning Classification Models for Phishing Detection Using URL-Based Features

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Phishing remains a pervasive cybersecurity threat, demanding accurate, scalable, and automated detection systems that go beyond user vigilance and static blacklists. This study presents a deployment-oriented evaluation of seven supervised machine learning classifiers—Random Forest, Gradient Boosting, Neural Network (MLP), Decision Tree, K-Nearest Neighbors, Support Vector Machine, and Logistic Regression—using Zieni phishing website detection dataset, a balanced benchmark of phishing and legitimate URLs enriched with lexical and host-based features. Models are assessed using accuracy, precision, recall, F1-score, and ROC-AUC to characterize performance in cost-sensitive settings where false negatives are critical. Ensemble tree-based methods outperform linear models, highlighting the non-linear nature of phishing indicators, with Random Forest achieving the highest performance (accuracy 90.3%, ROC-AUC 0.96) and remaining the most practical choice after hyperparameter tuning, where it and Gradient Boosting converge at 90.55% accuracy. Feature importance analysis shows predictive power concentrated in length-based and structural URL characteristics, with the top features explaining most of the variance, supporting dimensionality reduction for real-time inference. By linking model performance to operational concerns such as latency, scalability, and privacy-preserving deployment, this work bridges laboratory benchmarking and real-world implementation and motivates future research on adversarial robustness, temporal drift adaptation, and multi-modal integration for resilient phishing detection.
Keywords: Phishing Detection, URL-based Features, Cybersecurity, Machine Learning, Random Forest, Gradient Boosting, Neural Network, Hyperparameter Tuning.

OM2

Access to Healthcare and Chronic Disease Burden Across Maryland: Expanded Critical Appraisal of Disease-Specific Outcomes

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Prior analyses demonstrate that healthcare access varies significantly across Maryland and correlates with chronic disease prevalence. However, the original evaluation primarily assessed overall hypertension and diabetes trends without deeper exploration of disease-specific mechanisms, disparities in diagnosis versus true prevalence, and implications for population health interventions. To critically appraise the relationship between healthcare access and chronic disease burden in Maryland by expanding analysis to disease-specific outcomes, including hypertension control, diabetes complications, and preventable hospital utilization. This appraisal synthesizes statewide observational data sources including Maryland Department of Health datasets, BRFSS surveillance briefs, County Health Rankings, and MDPCP program evaluations. Evidence was reviewed using a PICO-guided framework to evaluate methodological quality, potential confounding, and interpretation of regional differences. Additional focus was placed on disease-level outcomes such as glycemic control metrics, hypertension screening rates, and access-sensitive hospitalizations. Evidence consistently demonstrates that counties with greater primary care density and MDPCP participation show improved chronic disease management outcomes, including lower preventable hospitalizations and better hypertension control rates.

However, disparities persist in rural counties where reduced screening capacity likely contributes to underdiagnosis, masking the true burden of disease. Expanded analysis suggests that access influences not only prevalence estimates but also disease severity at presentation and complication rates, particularly for diabetes-related hospitalizations. The relationship between access and chronic disease is multifactorial, influenced by provider availability, socioeconomic status, insurance coverage, and care coordination infrastructure. Apparent differences in prevalence across counties likely reflect both true variation and detection bias. Evaluating disease-specific outcomes provides a more accurate understanding of health inequities and highlights the importance of screening intensity and continuity of care. Improving access to primary care in underserved Maryland regions is associated with better chronic disease detection and management but remains insufficient to eliminate disparities. Future initiatives should prioritize targeted screening programs, expansion of care coordination models, and evaluation of disease-specific quality metrics to more effectively reduce chronic disease burden and advance health equity statewide.

OM3

Adaptive AI Educator: A Multi-Format Learning Platform for Aquatic Invasive Species Education and Outreach—A Blue Catfish Case Study

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Invasive species such as Blue Catfish (Ictalurus furcatus) pose significant ecological threats to the Chesapeake Bay watershed. Native to the Mississippi, Missouri, and Ohio River basins, blue catfish were introduced into Virginia rivers for recreational fisheries; unchecked population growth has since spread the species across multiple Bay tributaries, disrupting native fish communities. Effective management depends not only on scientific research and regulatory action but also on sustained public education and engagement. Traditional single-format outreach materials include brochures, fact sheets, and static websites offer limited interactivity and may not reach audiences with diverse backgrounds and learning preferences. This work presents the Adaptive AI Educator, an AI-supported, multi-format learning framework delivering expert-reviewed blue catfish education across varied outreach contexts. Rather than replacing educator authority, the system uses artificial intelligence (AI) as a delivery support layer organizing extension-approved content through four learning formats: (1) Podcast: narrative or interview-style audio for informal engagement; (2) Conversational AI Tutor: voice-interactive, question-driven inquiry at the learner's pace; (3) Structured Lecture: slide-based presentations for classrooms and workshops; and (4) Interactive Game: scenario-based gameplay in which users make fishing and harvesting decisions to explore blue catfish ecology and management. All formats draw from the same curated, extension-reviewed content sourced from Maryland Department of Natural Resources materials, ensuring scientific accuracy across delivery modes. The platform is lightweight and web-based, requiring no specialized installation. AI services are modular while content authority remains with domain experts. Key design insights include the need for explicit AI guidance to prevent outputs from exceeding approved source material, the importance of expert tone review when adapting content for different audiences, and the value of multiple formats as complementary pathways to the same knowledge. Expert feedback confirmed that multi-format delivery broadens outreach reach without adding workload for Extension professionals. Future work will prioritize user-centered evaluation, real-world pilot deployment, and expansion to additional invasive species and agricultural topics.

OM4

Data-Driven Yield Forecasting for Corn and Soybean on Maryland's Eastern Shore: Trend Analysis

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Accurate crop yield prediction is critical for sustainable agricultural planning and resource allocation. This study introduces an AI-driven analytical framework for forecasting corn and soybean yields at the county level using synthetic-augmented field data from Maryland's Eastern Shore (2015–2024). Polynomial regression models are employed to capture nonlinear yield dynamics and generate projections through 2030, with model selection guided by the Akaike Information Criterion (AIC) and evaluated using RMSE, MAE, and MAPE. Residual diagnostics, including QQ plots, ensure model validity and fit quality. Results are presented through an interactive dashboard that enables users to select counties, visualize historical trends, forecast intervals, and diagnostic plots for both crops. This platform supports rapid comparison of yield performance and model reliability across spatial units, empowering agronomists, extension agents, and policymakers with data-driven insights. Its modular design allows scalable integration of additional crops, weather variables, and management practices. Findings underscore the value of combining interpretable statistical modeling with interactive visualization to enhance transparency, reproducibility, and actionable decision-making in agricultural analytics.
Keywords: crop yield forecasting, polynomial regression, corn, soybean, county-level analysis, Maryland Eastern Shore.

OM5

Determinants of Goat Prices in a Maryland Auction Market: Evidence from Hedonic Price Modeling

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Goat production in the United States has expanded in recent years as demand for goat meat continues to increase among various ethnic and cultural communities. According to the USDA Census of Agriculture (2022), the U.S. goat inventory reached approximately 2.62 million head, showing steady growth compared to earlier decades, while the number of farms raising goats exceeded 145,000. Much of the demand is driven by immigrant and ethnic populations that traditionally consume goat meat, especially during religious and cultural festivals. Despite this growth, the U.S. goat sector remains relatively small compared to other livestock industries, and market information is limited, particularly regarding how animal traits influence prices in livestock auction markets, where most goats are traded. Understanding price formation helps producers and traders make better marketing decisions. This study analyzes price determinants in the Four States goat auction market using a hedonic pricing model based on 137 goat lots totaling 1,138 goats. The average auction price was $233 per head, with prices ranging from $62 to $585, and the average price per pound was $2.80 (range $1.09–$5.27/lb). The average goat weight was 88.8 lbs (range 40–198 lbs). Kids made up 42.3% of lots, followed by nanny goats (31.4%), billy goats (13.9%), and wethers (11.7%), while Selection-1 goats represented 63.5% of the observations. Three hedonic regression models were estimated

to identify the key determinants of price. Results show that weight has a positive and significant impact on prices ($\beta = 0.0096$, $p < 0.01$), while the negative coefficient on weight squared ($\beta = -0.000019$) indicates that price gains decrease for heavier goats. Compared to nanny goats, kids receive about 23.9% higher price ($\beta = 0.239$), billy goats about 34.0% ($\beta = 0.340$) higher, and wethers about 35.9% higher ($\beta = 0.359$). Quality also influences prices, with Selection-2 goats earning a significant discount of about 63.3% ($\beta = -0.633$, $p < 0.05$) compared to Selection-3 goats. Demand during festivals shows smaller effects. The Ramadan period increases prices by around 9.4% ($\beta = 0.094$), though this estimate is only marginally significant. Overall, the models explain 71–79% of the variation in goat prices, indicating that animal traits, such as weight, goat type, and quality, are the main drivers of price formation in this auction market. These findings provide useful guidance for producers on the types and traits of goats that tend to fetch higher prices and enhance understanding of price formation in U.S. goat auction markets.

OM6

Effect of Foliar-Applied Seaweed Biostimulant on Biomass and Antioxidant Content of Aeroponically Grown Lettuce Cultivars

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Seaweed-derived biostimulants are increasingly used in controlled environment agriculture (CEA) to enhance plant growth and improve nutritional quality. This study investigated the effect of a foliar-applied, seaweed-based biostimulant on the biomass and antioxidant content of aeroponically grown lettuce (Lactuca sativa) using a tower garden system. For each cultivar, 12 plants received biostimulant treatments, and 6 plants served as untreated controls (n=36). The biostimulant (Raw Kelp Marine, USA) was applied as a foliar spray three times a week, starting 9 days after sowing at concentrations of 0.62 g L^{-1} and 0.31 g L^{-1}. Both treatments resulted in greater biomass for treated plants compared to controls. Antioxidant activity was evaluated through total phenolic content (TPC), total flavonoid content (TFC), and DPPH radical scavenging capacity. Bibb lettuce plants showed higher antioxidant activity under both treatments compared to the control. In contrast, the Gourmet lettuce showed no significant differences in antioxidant activity between treated and controlled plants. The findings highlight the potential of seaweed biostimulants to improve crop quality in soilless vertical farming and controlled-environment agriculture systems.

OM7

Enhancing Weather Resilience and Farm Profitability through Alley Cropping Practices among Small-Scale Farmers

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Alley cropping, an agroforestry practice that combines trees with crops, has the potential to improve farm productivity and resilience to weather variability. However, adoption remains limited because factors influencing

farmers' willingness to adopt, environmental performance, and economic outcomes are not fullyunderstood. Therefore, this study aimed to: (i) identify factors influencing willingness to adopt alley cropping, (ii) measure the change in soil gas fluxes (CO_2, CH_4, and N_2O) in a pecan-based alley cropping system, and (iii) assess the economic viability of the system. Accordingly, an on-farm demonstration site was established in Westover, Maryland, where pecan trees were integrated with vegetable crops (squash, bell pepper, cantaloupe, eggplant). To examine adoption behavior, a semi-structured survey was administered to participants attending field-day events. Willingness to adopt was initially measured on a five-point Likert scale and later recoded into a binary variable for logistic regression analysis. Results showed that participants' satisfaction with the information provided during the field day events, such as training on alley cropping design, environmental benefits, and economic potential, significantly increased the likelihood of adoption. Participants reporting higher satisfaction were more than six times more likely to adopt alley cropping (bivariate odds ratio = 6.33, $p < 0.01$; multivariate odds ratio = 6.07, $p < 0.05$). Socio-demographic factors, including age, gender, race, education, and occupation, did not significantly influence adoption decisions. To assess the environmental performance, soil gas fluxes were measured using the LI-COR smart chamber system with LI-7810 and LI-7820 trace gas analyzers, before and after establishing the pecan-based alley cropping system. A Wilcoxon signed-rank test indicated a significant reduction in CH_4 flux ($Z = 2.34$, $p = 0.019$). This suggests that the pecan-based alley cropping system functioned as a methane (CH_4) sink. In contrast, CO_2 ($Z = 1.43$, $p = 0.154$) and N_2O fluxes ($Z = -1.274$, $p = 0.221$) did not show significant changes during the first year. Moreover, economic analysis revealed that among the vegetables grown, squash generated the highest financial return, with a gross margin of $2,577.55 and a benefit-cost ratio of 1.98. Its break-even price ($0.99/lb.) was well below the market price ($1.82-$2.00/lb.), indicating profitability. These findings suggest that integrating squash into a pecan-based alley cropping system can diversify farm income in the first year of establishment, while providing environmental benefits and contributing to weather-resilient farming practices among small-scale farmers.

OM8

Evaluating the Oviposition Behavior of Corn Earworm on Hemp

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Finding and choosing a good oviposition site is a challenging task for females of herbivorous insects. Her decision has far-reaching and profound consequences for the life history of her offspring. This study evaluated the oviposition preference of corn earworm (CEW), Helicoverpa zea, between hemp varieties and corn. A two-choice oviposition test was conducted to evaluate the oviposition behavior of CEW. An oviposition preference bioassay was conducted by presenting a pair of treatments (hemp varieties versus non-BT sweet corn) to mated female CEW moths in black cloth cages. The four hemp varieties used in this experiment were Trump, Mountain mango, Berry, and Boax. Female CEW moths preferred to lay significantly more eggs on the two hemp varieties (Trump and Mountain Mango) than on the non-Bt sweet corn plant. Our laboratory study provided insight into CEW's choice of hemp varieties for oviposition. Plant chemical and physical characters may act as recognition cues for ovipositing female insects. To substantiate the obtained result, we will collect headspace volatiles and study their role in attracting or repelling female CEWs.

OM9

From the Margins to the Mainframe How Generative AI Is Being Used to Expand Access, Reduce Barriers, and Support Real People in Real Systems

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Generative artificial intelligence is often talked about as a future technology, but for many communities facing structural inequality, AI is already being used right now as a practical tool for survival, access, and understanding. This project explores how generative AI has been used to benefit society by helping people make sense of complex systems, communicate more effectively, and navigate institutions that were not

designed with them in mind. Grounded in my background as a criminal justice alumnus and current work in conflict analysis and dispute resolution, this presentation focuses on real world applications of AI rather than abstract theory. Specifically, generative AI has been used to translate legal, academic, and bureaucratic language into clear, accessible terms for students, community members, and individuals trying to advocate for themselves. In many cases, the barrier is not a lack of intelligence, but a lack of access to understandable information. AI helps close that gap. At the same time, this work does not ignore the risks. Generative AI can reproduce bias, reinforce existing power structures, and create new forms of exclusion if it is used uncritically. This presentation treats AI as a dual use tool. When controlled by institutions without accountability, it can deepen inequality. When used intentionally and ethically, it can function as a cognitive equalizer, helping people organize their thoughts, prepare for difficult conversations, and participate more confidently in academic, civic, and professional spaces. Ultimately, this project argues that the social impact of generative AI depends less on the technology itself and more on how and why it is used. By approaching AI as a community facing tool rather than an elite resource, this work highlights its potential to support education, reduce conflict, and expand meaningful participation across society over time.

OM10

Measuring Soil CO_2 and CH_4 Flux Dynamics in a Fig-Based Alley Cropping System

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Alley cropping is an extreme weather-resilient agroforestry practice that enhances land use efficiency while reducing environmental impacts. However, field-based evidence on anthropogenic gas dynamics in fig tree-based alley cropping systems remains limited. Specifically, there is a lack of research on how soil methane (CH_4) and carbon dioxide (CO_2) fluxes change throughout the production cycle in such systems, creating a gap in understanding the environmental performance when vegetables are integrated. This study was conducted to evaluate temporal changes in soil CH_4 and CO_2 fluxes over time in a fig-based alley cropping field to assess whether these gas emissions differ significantly between May 2025 (before plantation) and December 2025 (after harvesting of seasonal vegetables). Anthropogenic gas fluxes were measured at 10 sampling points within a one-acre fig-based alley cropping system, and paired statistical analyses were performed. Descriptive statistics, Shapiro-Wilk normality tests, paired t-tests, Wilcoxon signed-rank tests, effect size estimation, correlation analysis, and permutation tests were used to assess temporal changes. Results showed that mean CH_4 flux decreased from 1.157 $nmolm^{-2}s^{-1}$ in May to -0.035 $nmolm^{-2}s^{-1}$ in December, with a mean paired difference of -1.193 $nmolm^{-2}s^{-1}$. This reduction was significant according to the paired t-test ($p = 0.0136$) and the permutation test ($p = 0.0321$), although the Wilcoxon signed rank test was marginally non-significant ($p = 0.0840$). Similarly, mean CO_2 flux declined more sharply from 7.108 $nmolm^{-2}s^{-1}$ in May to 0.016 $nmolm^{-2}s^{-1}$ in December, with a mean paired difference of -7.092 $nmolm^{-2}s^{-1}$. This decrease was highly significant in the paired t-test ($p = 5.27 \times 10^{-5}$), Wilcoxon signed-rank test ($p = 0.001953$), and permutation test ($p = 0.0008$). CH_4 and CO_2 were strongly positively correlated in May but not in December, indicating that the gases were jointly influenced during the active growing season but became decoupled after harvest. Overall, the findings suggest that anthropogenic gas behavior in the fig-based alley cropping system changed significantly over time, with markedly lower emissions by December. These results emphasize the importance of conducting repeated seasonal measurements to evaluate anthropogenic gas dynamics in fig-based vegetable systems and provide preliminary evidence that fig-based alley cropping may contribute to environmentally favorable production conditions throughout the cropping cycle.

OM11

Modelling Financial Health: Socioeconomic and Behavioral Predictors from the 2024 Financial Health Pulse Survey

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This study analyses the distribution and determinants of financial health using the 2024 Financial Health Pulse Survey. It categorizes adults' financial health into three ordered tiers—Vulnerable, Coping, and Healthy—based on a composite score reflecting spending, saving, borrowing, and financial resilience, using data from the nationally representative Understanding America Study panel. Household income and savings behaviours are divided into 16 and 3 categories, respectively. Consistent with broader Pulse findings that financial health varies across socioeconomic groups, Spearman rank correlations reveal a positive link between financial health and household income ($\rho \approx 0.435$), age ($\rho \approx 0.270$), and education ($\rho \approx 0.294$). This suggests that older, higher-income, and more educated individuals tend to report better financial health. Chi-square tests show significant differences in financial health categories across income groups ($\chi^2 = 1467.5$, $p < 0.001$), saving behaviours ($\chi^2 = 65.08$, $p < 0.001$), and education levels ($\chi^2 = 660.39$, $p < 0.001$), indicating strong associations. An ordinal logistic regression, controlling for age, gender, race, and education, finds that higher household income (with significant linear and quadratic trends, $p < 0.01$) and more proactive saving behaviours (also with significant trends, $p < 0.01$) increase the odds of a better financial health category. Older age and male gender are positively associated with financial health ($p < 0.001$). Conversely, Black respondents and American Indian/Alaska Native respondents have lower odds compared to White respondents ($p < 0.01$). Overall, these findings highlight that economic resources and financial behaviors are key predictors of financial well-being, yet racial disparities in financial health remain even after accounting for income, education, age, gender, and saving behavior.

OM12

Socio-Demographic Factors Influencing Learning and Behavioral Outcomes in Heirs' Property Education

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Heirs' property refers to land inherited without a will and jointly owned by multiple heirs as tenants in common. This type of ownership often leads to clouded titles, limited access to credit and government programs, vulnerability to partition sales and tax foreclosures, and a higher risk of intergenerational land loss. Educational outreach programs have become a key strategy to raise awareness about heirs' property issues and promote estate planning and land tenure security. This study assesses the socio-demographic factors influencing participation, learning outcomes, and behavioral intentions related to heirs' property education workshops delivered by the University of Maryland Eastern Shore (UMES) Extension across nine counties in Maryland. The analysis uses post-workshop survey data from 123 participants from diverse socio-demographic backgrounds, including farmers (17%), students (26%), faculty and staff (15%), and other community members (35%). Among participants, 51% identified as Black or African American, followed by Asian (29%) and White (11%). Nearly half of the participants were female (47%), and 37% held graduate degrees. Two quantitative methods were used: binary logistic regression to assess socio-demographic correlates of heirs' property experience, reported land loss, and willingness to have or create a will; and ordinal logistic regression to analyze self-reported learning outcomes and behavioral intentions after the workshops Results show high levels of learning about heirs' property identification (59%), understanding its impacts (63%), risks related to taxes and partition sale (53%), and estate planning strategies (46%). The

ordinal logistic regression results show that younger participants (18–64) were less likely to report higher learning about heirs' property identification compared to older respondents, with an Odds Ratio (OR) of 0.42 at $p < 0.05$. Similarly, participants with graduate education had lower odds of learning about heirs' property impacts (OR = 0.38, $p < 0.05$). Over 81% of respondents reported that they intend to use workshop information to assist their families, including discussing heirs' property with family members (46%), seeking professional advice (40%), and ensuring a will to prevent future heirs' property issues (45%). Binary logistic regression results show that female respondents (Odds Ratio = 0.29, $p < 0.05$) and participants with graduate education (OR = 0.33, $p < 0.05$) had significantly lower odds of willingness to have a will compared to others. Overall, the findings suggest that extension-led heirs' property education raises awareness among diverse audiences, but socio-demographic factors influence how individuals turn knowledge into intended actions.

OM13

The Role of Extension Demonstration Sites in the Gradual Adoption of Climate-Resilient Alley Cropping

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Smallholder farmers on the Eastern Shore continue to face rising production costs and increasing climate variability, pressures that influence how producers evaluate new practices and often lead to slow, observation-based adoption of emerging technologies. In response, UMES Extension has emphasized establishing on-farm and community demonstration sites for alley cropping, a practice that combines rows of fruit trees with annual vegetables grown in the alleys. The objective of this initiative is to strengthen farmers' understanding of the system and support gradual, evidence-driven adoption among producers who prefer to "see first, adopt later." To achieve this, UMES Extension supported seven farmers in establishing micro demonstration plots, each with fewer than 20 fruit trees. These plots are spread across the Eastern Shore, with five in Somerset County and two in Wicomico County, arranged in simple alley configurations. The micro plots serve as practical learning environments where farmers can observe tree growth, seasonal management, and crop–tree interactions at a manageable scale. Through guided visits, hands-on demonstrations, and ongoing engagement, Extension educators introduce key techniques such as mulching, composting, water conservation, and low-tillage soil care. The demonstrations help participants visualize how alley cropping performs under local soil, climate, and limited-irrigation, mulch, and compost conditions, which are crucial factors that strongly influence adoption decisions. The impact of these micro-demonstration plots is reflected in farmers' a clearer understanding of management steps, reduced uncertainty about long-term investments, and stronger confidence in starting small plots that that promote peer-to-peer learning. By aligning scientific advice with farmers' natural learning rhythms, Extension-led demonstration sites have become an effective tool for encouraging the gradual adoption of climate-resilient alley cropping and strengthening community resilience.

OM14

Thermal Manipulation and Thermotolerance to Acute Heat Stress in Broilers Raised on Pasture

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Heat stress (HS) adversely affects the growth performance, physiology, reproduction, health, and immune status of broiler chickens. Broilers raised on pasture are more vulnerable because they are exposed fluctuating ambient temperatures. It is crucial to explore mitigation strategies like early-age thermal conditioning (TC) to reduce the negative impacts of heat stress. Although this strategy has been shown to be

performance, dressing yield, and weight of immune organs in pasture-raised broilers subjected to acute HS. A randomized complete block design with a factorial arrangement of treatments (2 x 2) was used. Three hundred and thirty-six day-of-hatch male Ross 308 broilers were randomly assigned to four treatment groups with 7 replicates and 12 birds per replicate: (1) non-TC on day 5 and non-HS on days 28 and 41; (2) non-TC on day 5 and HS on days 28 and 41; (3) TC on day 5 and non-HS on days 28 and 41; and (4) TC on day 5 and HS on days 28 and 41. On day 5, the broilers were either TC at 37°C or non-TC at 31°C for 24 hours. On day 21, broilers were placed outdoors on pasture in movable cages. They were either HS (36°C on day 28, 34°C on day 41) or maintained at non-HS temperatures (30°C on day 28, 28°C on day 41) under controlled environmental conditions for 6 hours. Body weight gain, feed conversion ratio, mortality, feed intake during acute HS, dressing yield, and weights of spleen and bursa of Fabricius were recorded. The data were analyzed using ANOVA, and the differences were considered statistically significant at $P \leqslant 0.05$. No significant interaction between the TC and acute HS were observed ($P > 0.05$) on any of the measured dependent variables. For main effects, only feed intake of broilers exposed to acute HS for 6 hours on days 28 and 41 was significantly reduced ($P \leqslant 0.05$) in HS groups compared to non-HS groups on both days 28 and 41. Under the conditions of this study, TC at five days of age did not induce thermotolerance to acute HS of pasture-raised broilers later in life. Additional studies are needed to further evaluate this strategy to mitigate HS of broilers raised on pasture.

OU1

AI-assisted Single-Cell Analysis for SickleCell Disease Diagnosis

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Sickle cell disease (SCD) is a life-limiting inherited blood disorder that affects millions worldwide and exhibits substantial variability in clinical presentation and disease progression. Early and accuratediagnosis is essential; however, many conventional laboratory methods rely onpopulation-averaged measurements thatoverlook important differences in individual cell behavior. To address this limitation, we are developing an automated single-cell analysis platform that integrates microfluidics with artificial intelligence (AI)- enabled imaging to study red blood cell dynamics in SCD. The system uses microfluidic channelsto isolate and positionindividual blood cellsunder a microscope, while a computer-controlled syringepump provides precise flow regulation. Real-time image sequences are analyzed using deep-learning models trained to classify blood cells, distinguish red blood cells from white blood cells, and detect sickled cells under low- oxygen conditions. By tracking individual cells over time, the platform captures dynamic changes in cell shape, motion, and deformation during transient deoxygenation. This approach enables time-resolved, quantitative characterization of single-cell responses that are often missed by traditional bulk assays. The platform establishes a foundation for future automated diagnostic tools and may also be adapted to investigate other hemolytic disorders and cellular responses to therapeutic interventions.

OU2

Anticancer Activity of Gambogic Acid in Gastrointestinal Stromal Tumor

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Gastrointestinal stromal tumors (GISTs) are the most common mesenchymal tumors of the gastrointestinal tract and are primarily driven by activating mutations in the KIT or PDGFRA receptor tyrosine kinases. Targeted therapy with tyrosine kinase inhibitors (TKIs), particularly imatinib, has significantly improved patient outcomes. However, a major clinical challenge remains with the development of acquired resistance to TKIs, which often arises from secondary mutations in KIT or the activation of alternative survival pathways. Therefore, there is a critical need to identify novel therapeutic strategies to overcome TKI resistance. Gambogic acid, a naturally derived xanthonoid isolated from the resin of Garcinia hanburyi, has demonstrated potent anticancer activity across multiple tumor types through mechanisms that include the induction of apoptosis, inhibition of cell proliferation, and disruption of oncogenic signaling pathways. Despite its broad therapeutic potential, the activity of gambogic acid in GIST has remained unexplored. Our in vitro data demonstrate that gambogic acid exhibits strong cytotoxicity against GIST-T1 cells, with potency comparable to that of imatinib. These findings suggest that gambogic acid may represent a promising alternative or complementary therapeutic agent for GIST, particularly in the setting of drug resistance. Despite its potent anticancer activity, the clinical translation of gambogic acid is constrained by poor aqueous solubility, limited bioavailability, and insufficient tumor selectivity, which may result in off-target toxicity and suboptimal therapeutic efficacy. To overcome these limitations, we propose the development of an antibody-directed delivery system in which gambogic acid is conjugated to monoclonal antibodies targeting GIST-associated antigens, such as KIT (CD117), enabling selective delivery to GIST tumor cells while minimizing systemic toxicity and improving therapeutic precision.The next phase of this research will involve developing gambogic acid–antibody conjugates for targeted therapy and determining whether antibody-guided delivery can enhance tumor specificity and overcome resistance mechanisms.

OU3

Balancing Human Judgment And Artificial Intelligence In Modern Aviation Safety

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Artificial intelligence (AI) is increasingly integrated into modern aviation systems and is influencing aircraft operations, navigation, safety monitoring, and decision-making processes. Although aviation has traditionally relied on pilot expertise and human judgment, human error remains one of the most common contributing factors in aviation incidents and accidents. As aviation technology advances, artificial intelligence is being explored as a tool to assist pilots, reduce operational mistakes, and improve safety and efficiency in commercial aeronautics. This study examines the relationship between human error and AI-assisted systems in aviation, focusing on how artificial intelligence can both reduce and introduce risks within commercial flight operations. Common sources of human error include fatigue, misinterpretation of cockpit information, delayed responses during high-stress situations, and communication breakdowns between pilots and air traffic control. To address these challenges, modern aircraft increasingly rely on automated technologies such as advanced autopilot systems used in Airbus aircraft, flight management systems that assist with navigation and fuel optimization, predictive maintenance programs that analyze aircraft data to detect mechanical issues before failure, and automated safety alert systems designed to warn pilots of potential hazards. However, greater reliance on automation also raises concerns regarding automation dependency, system reliability, and reduced pilot situational awareness. Incidents involving automated flight systems, including issues associated with Boeing's Maneuvering Characteristics Augmentation System (MCAS), demonstrate how complex automation can contribute to critical situations when pilots are not fully aware of system behavior or limitations. Instead of replacing pilots or engineers, this study contends that human competence and artificial intelligence working together will be the most successful approach for aviation in the future. The aviation sector can improve safety, efficiency, and reliability while maintaining essential human control over critical flight operations by combining human judgment with AI's ability to analyze large amounts of flight data.

OU4

Systems Design of a Mobile Sampler Lab for Planetary Field Geology

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Astronauts will return to the Moon as part of NASA's Artemis program, where they will collect and analyze lunar rocks and regolith (lunar dust) in search of accessible sources of H_2O in solid or adsorbed phases. Rapid field characterization of lunar materials will be critical for identifying potential in-situ resources that can support sustained human exploration and the development of future lunar infrastructure. To assist astronauts in this task, a Mobile Sampler Lab (MSL) is being developed to enable rapid, in-situ analysis of collected samples during planetary field geology operations. The MSL is designed to measure several key physical and chemical properties of lunar samples, including mass, volume, particle size distribution, hyperspectral signature, and volatile off-gassing as a function of temperature. The system leverages commercial off-the-shelf (COTS) microelectronic, microelectromechanical (MEMS), and optical components to minimize size, mass, power consumption, and overall system complexity while maintaining robust measurement capability. The current MSL prototype has achieved Technology Readiness Level (TRL) 3 through laboratory validation conducted under a prior NASA Artemis research grant. Work is now underway to advance the system to TRL-4 through integration of COTS components into an improved engineering prototype suitable for testing in relevant field environments. Evaluation of the TRL-3 prototype identified several operational challenges, including difficulty opening and closing the sample lid and the requirement for astronauts to bend and use their hands for most

operations, potentially leading to fatigue during extended fieldwork. In this study, the student engineering team develops and evaluates refined mechanical subsystem designs for the MSL, including an articulating handle and an improved lid opening and closing mechanism. Candidate concepts are modeled and simulated using SolidWorks, and a weighted trade study evaluates ergonomics, reliability, mass, and mechanical complexity to identify the most promising design for prototype development and future planetary field testing.

OU5

The Contributions of NASA's Balloon Program Office and the Risks of Defunding

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This research reviews the contributions, technological advancements, and recent funding discrepancies associated with NASA's Balloon Program Office (BPO) and the practice of scientific ballooning in the United States. Historically, scientific ballooning has served as a sub-orbital, near-space research platform enabling recoverable experimentation in astrophysics and imaging, atmospheric science, and high-energy particle physics. Due to its recoverability, extended flight durations, and comparatively low operational risk, scientific ballooning has consistently provided a cost-effective and reliable alternative to many orbital missions while contributing significantly to spaceflight technology research and development.
Considering recent budgetary and administrative fluctuations affecting sub-orbital programs, this research provides evidence for the argument that the sustained and stable funding of the BPO, and similar initiatives is essential to supporting career pathways for emerging scientists, facilitating safe space technology development, strengthening international scientific collaboration, and advancing space discovery. The analysis integrates quantitative comparisons of cost, mission risk, and technology development outcomes between balloon missions and comparable sub-orbital and orbital platforms. Additionally, it includes a historical review of scientific contributions over the past five decades, as well as qualitative insights drawn from interviews with experienced scientists and aerospace professionals. Personal observations from the author's internship with the BPO further support these findings. Together, these quantitative and qualitative approaches establish a comprehensive evaluation of the value of scientific ballooning and provides publicly accessible information to understand its continued role in the future of American space and scientific research.

PD1

A National Survey of Pelvic Health Content in Physical Therapist Assistant Programs – A Follow-Up Study

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The purpose of this qualitative study was to gain further insight into pelvic health content in Physical Therapist Assistant (PTA) programs across all regions of the United States. Building on the previous survey structure from 2024 that surveyed PTA program directors about pelvic health content, specific questions were asked about curriculum, potential barriers, resources, extracurriculars, faculty, and clinical education. Eight PTA program directors participated in individualized, virtual follow-up interviews. Invitations for virtual follow-up interviews were sent to the 77 program directors, who originally responded to the previous survey from 2024. A two-month response period was allotted. At least one subject responded from each of the main regions of the United States including Northeast, Midwest, South, and West. Six follow-up questions were created to target the key areas from the original survey: curriculum presentation, barriers, resources, extracurriculars, faculty, and clinical education. The virtual interview was conducted and recorded using the Zoom platform, and subsequently transcribed. Each participant was then emailed their respective transcript for review and approval. Their responses were analyzed using ATLAS to identify recurring codes, categories, and themes. Analysis of follow-up interviews with eight program directors yielded 60 codes, which were organized into eight categories. Through iterative thematic analysis, three themes were identified: curriculum structure and resource barriers, professional development, and student engagement. Key barriers identified included limited time and resources, variability in available materials, and differences in faculty experience and professional development. However, another theme that emerged was strong student interest and engagement in pelvic health. This qualitative study served as a follow-up to the original survey conducted in 2024, aiming to gain deeper insight into the barriers and opportunities surrounding pelvic health content within PTA programs. These findings highlight the need for enhanced resource availability and the need to standardize pelvic health content across PTA programs nationwide. One potential strategy for achieving this standardization includes the formation of a Special Interest Group (SIG) within either the Education or Pelvic Health sections, providing a platform for pelvic health educators to collaborate, exchange resources, and advance curricular development. Another strategy would be creating formal recommendations for integrating pelvic health content into PTA curriculum, similar to the approach previously implemented in Physical Therapist curricula. The second phase of this study demonstrates the need to establish a standardized pelvic health curriculum across PTA programs nationwide to improve the quality of care for individuals with pelvic floor dysfunction.

PD2

Anticancer Activity of Gambogic Acid in Gastrointestinal Stromal Tumor

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Gastrointestinal stromal tumors (GISTs) are the most common mesenchymal tumors of the gastrointestinal tract and are primarily driven by activating mutations in the KIT or PDGFRA receptor tyrosine kinases. Targeted therapy with tyrosine kinase inhibitors (TKIs), particularly imatinib, has significantly improved patient outcomes. However, a major clinical challenge remains with the development of acquired resistance to TKIs, which often arises from secondary mutations in KIT or the activation of alternative survival pathways. Therefore, there is a critical need to identify novel therapeutic strategies to overcome TKI resistance. Gambogic acid, a naturally derived xanthonoid isolated from the resin of Garcinia hanburyi, has demonstrated potent anticancer activity across multiple tumor types through mechanisms that include the induction of apoptosis, inhibition of cell proliferation, and disruption of oncogenic signaling pathways. Despite its broad therapeutic potential, the activity of gambogic acid in GIST has remained unexplored. Our

in vitro data demonstrate that gambogic acid exhibits strong cytotoxicity against GIST-T1 cells, with potency comparable to that of imatinib. These findings suggest that gambogic acid may represent a promising alternative or complementary therapeutic agent for GIST, particularly in the setting of drug resistance. Despite its potent anticancer activity, the clinical translation of gambogic acid is constrained by poor aqueous solubility, limited bioavailability, and insufficient tumor selectivity, which may result in off-target toxicity and suboptimal therapeutic efficacy. To overcome these limitations, we propose the development of an antibody-directed delivery system in which gambogic acid is conjugated to monoclonal antibodies targeting GIST-associated antigens, such as KIT (CD117), enabling selective delivery to GIST tumor cells while minimizing systemic toxicity and improving therapeutic precision. The next phase of this research will involve developing gambogic acid–antibody conjugates for targeted therapy and determining whether antibody-guided delivery can enhance tumor specificity and overcome resistance mechanisms.

PD3

Bridging Anatomy and Community: Perspectives on Cadaveric Dissection at Minority-Serving Institutions

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Understanding perspectives on cadaveric dissection is important for improving anatomy education, supporting professional identity formation, and shaping how future clinicians relate to patients. Cadaveric dissection has long been considered a foundational component of anatomy education in many health science programs, yet students bring diverse cultural, religious, historical, and personal experiences into the lab that influence how they interpret this practice. However, research exploring how students at Historically Black Colleges & Universities (HBCUs) negotiate the emotional, ethical, cultural, and representational meanings of cadaveric dissection is limited, in relation to the training and development of historically underrepresented healthcare practitioners. This qualitative study explores how members of an HBCU community understand and experience cadaveric dissection, focusing on their thoughts, feelings, and perspectives on whole-body donation and donor diversity. It examines whether and how beliefs about cadaveric dissection vary across key groups. Participants consisted of volunteers affiliated with UMES undergraduate and graduate programs, as well as university staff and faculty. No volunteers were excluded based on sex, ethnicity, religion, socioeconomic status, or other demographic or personal characteristics. The participants signed up for a semi- structured interview by contacting the principal investigator, and interviews were conducted on the UMES campus or via Zoom. Interviews lasted approximately 30 minutes, and all audio recordings and transcripts were de-identified to preserve anonymity. A six-phase framework for thematic analysis by Braun and Clarke was used to analyze the themes and patterns exemplified in the patient interview transcripts. After completing the analysis, three major themes emerged regarding participants' perceptions of cadaveric dissection: (1) cadaveric dissection contributes to professional formation and a sense of collective responsibility in healthcare; (2) body donation is viewed as an altruistic legacy, accompanied by reverence and celebration of donors; and (3) participants navigate complex emotional and cultural meanings associated with dissection. These findings suggest the participants largely perceive cadaveric dissection as an educationally valuable practice, while recognizing the ethical importance of honoring body donors and navigating the cultural, emotional, and historical considerations. Interview responses indicated that perceptions of cadaveric dissection vary across roles and backgrounds, with students emphasizing its educational value, and faculty framing it as a foundational component of medical training grounded in respect for donors. Understanding these perspectives can help educators develop anatomy curricula that recognize the ethical, cultural, and emotional dimensions of cadaveric dissection while maintaining educational effectiveness and promoting respectful engagement with body donors.

PD4

Effects of Contrasting Drought Regimes on Switchgrass Performance and Plant-Microbe Interactions

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Drought significantly affects global agricultural and sustainable bioenergy crop systems, limiting productivity, altering biogeochemical cycles, and affecting belowground carbon storage. Switchgrass (Panicum virgatum L.) – a perennial bioenergy feedstock and conservation species grown on marginal lands – represents an important crop for sustainable energy production and soil regeneration. However, we still lack a basic understanding of how varying drought regimes affect switchgrass performance, switchgrass-associated soil microbiota, and biogeochemical cycles in bioenergy feedstock production systems. This project seeks to address these knowledge gaps through a systems-based approach that integrates the aspects of microbial ecology, biogeochemistry, and plant physiology. Our approach will utilize field experiments with rainout shelters to simulate distinct drought regimes and determine their impacts on switchgrass production, soil function, and ecosystem resilience. Through this project, we seek to elucidate the effects of contrasting drought regimes on i) switchgrass physiology, ii) root-associated and bulk soil microbiomes, iii) root decomposition, and iv) soil biogeochemical cycles. We anticipate that drought will result in decreased aboveground biomass, increased belowground biomass, more lignified root tissues, and distinct changes in root-associated and soil microbiota. Findings from this research will inform management decisions in bioenergy systems under dynamic precipitation regimes.

PD5

Effects of Weighted Vest Use in Community-Dwelling Older Adults During Supervised Exercise: A Pilot Study

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The use of weighted vests during physical activity and the potential effects on body composition, bone density, strength, and balance has been researched in a variety of populations. There remains a paucity of research exploring the feasibility of weighted-vest use during supervised group exercise and the potential impact on balance efficacy and quality of life (QOL) in older adults. The purpose of this pilot study was to examine the effects of weighted vest use during community-based exercise on key physical performance measures of strength, balance, functional mobility, falls efficacy and QOL. A secondary aim was to establish a minimal effective dose of percent body weight dosing in older adults. We hypothesized that there would be improvements in physical performance measures and self-reported health and quality of life. Intra-rater and inter-rater reliability were established (ICC$\geqslant$0.99) for timed outcomes. A convenience sample was recruited for this quasi-experimental study. Participants performed a structured circuit of self-selected gait velocity (SSGV), fast gait velocity (FGV), 30 second Chair Stand Test (30CST), grip strength, bilateral and unilateral timed static balance tasks, and self-reported measures including the Falls Efficacy Scale-International (FES-I) and Older People's Quality of Life Questionnaire (OPQOL) at baseline, 6 weeks, and 12 weeks. At baseline, subjects self-allocated to the intervention group or control group. Treatment group participants were fitted with a vest and gradually provided weight in the vest up to 8% body weight. Statistical analyses included descriptive statistics, Shapiro-Wilk for normality, repeated-measures ANOVA, and non-parametric tests. Significance was established at $p<0.05$. Eighteen participants, mean age 76.6(6.3) and 83.3% female, participated in baseline testing, and 16 were included in the final data analysis. There were no significant differences within-groups and between-groups at baseline, 6 weeks, and 12-weeks for SSGV, FGV, 30CST, grip strength, balance measures, the FES-I, and the OPQOL. Both the intervention and

control groups significantly improved in the 30CST from baseline to 12-weeks. Findings of this pilot study suggest weighted vests worn during community-based group exercise progressively dosed to 8% body weight is feasible in an older adult population. While there were no significant improvements over this 12-week pilot study between groups, there were positive trends demonstrated in the treatment group compared to the control group. Future research should incorporate studies with larger sample sizes and longer durations to further evaluate the efficacy of weighted-vests dosed to 8% body weight during community-based exercise programs.

PD6

Epigenetic Mechanisms Involved in Heat Stress Adaptation in Chenopodium quinoa and their Effect on Crop Performance: Approaches for Establishing Quinoa Cultivation on Maryland's Eastern Shore

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Among the numerous strategies employed to meet food demand, the reintroduction of genetic diversity into fully domesticated crops enhances variability in genes responsible for environmental adaptability, phenotypic plasticity, and resilience—traits still possessed by their wild ancestors. The expansion of Chenopodium quinoa cultivation beyond its native range continues to accelerate due to its exceptional nutritional profile and ability to thrive across diverse climatic conditions. Traditionally cultivated in temperate regions of South America, quinoa is now grown in over 120 countries worldwide. This study focused on the phenotypic characterization of nine quinoa genotypes for adaptability, description, and the selection of promising lines under varying cultivation conditions in the lowland region of Maryland's Eastern Shore, considering that temperatures exceeding 32°C hinder growth by disrupting flowering and seed development. The effects of heat stress on the growth and development of nine quinoa genotypes cultivated across four growing seasons were examined, as were strategies for cultivation and genetic improvement. Analysis of Variance (ANOVA) was employed to evaluate both qualitative and quantitative traits, with mean separation conducted using Tukey's HSD test ($\alpha = 0.05$). Multivariate analyses, including Pearson correlation, Principal Component Analysis (PCA), and Hierarchical Clustering Analysis, were performed. Total RNA was extracted from quinoa plants exposed to heat stress during flowering, and RNA sequencing was conducted to identify differentially expressed genes (DEGs) responsive to abiotic stress. Indirect organogenesis was executed using Murashige and Skoog (MS) media supplemented with varying concentrations of growth regulators. Significant differences were observed among genotypes and planting seasons, with heat stress exerting a profound influence on vegetative and flowering traits, resulting in considerable yield variation across seasons. RNA sequencing revealed 3,340 upregulated and 2,752 downregulated genes in response to heat stress; key genes included heat shock proteins, jasmonate-induced proteins, bHLH transcription factors, PHD finger MALE STERILITY 1, AGAMOUS-like MADS-box genes, and aspartic proteases—all crucial for heat tolerance and essential for flower and seed development. Regeneration was successfully achieved from true leaf explants of two genotypes using MS medium supplemented with 0.1 mg/l 24-D and 3 mg/l BAP. This research underscores the significance of key transcription factors and regulatory genes in quinoa's response to heat stress and their potential as targets for breeding heat-tolerant varieties. Additionally, it identifies optimal planting seasons and promising lines for commercial cultivation and provides a regeneration protocol essential for genetic improvement and propagation.

PD7

Fluorinated Enaminone's Biological Evaluation as Sigma-2 Receptor Inhibitors

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Epilepsy is a neurological disorder characterized by regular unprovoked seizures that constitute a major public health problem as it affects approximately 65 million people worldwide, specifically about 3 million in the United States. In the U.S., the lifetime risk of a diagnosis is estimated as 1 in 26. While treatment options exist, approximately 30-40% of patients with epilepsy have drug resistance, highlighting the need for novel therapeutic strategies. In accordance with the NIH National Institute of Neurological Disorders and Stroke's Epilepsy Benchmarks, which were established in 2014 for the advancement of anti-seizure therapeutics, our laboratory is dedicated to the early-stage discovery of novel, small-molecule anti-seizure compounds for the treatment of drug-resistant epilepsy (DRE). Based on previous research into anticonvulsant enaminones, we designed and synthesized new derivatives featuring a conjugated system scaffold. These compounds were evaluated for their ability to block T-type calcium channels and inhibit seizures. Since T-type channels are key to the onset of seizures, they have been considered attractive candidates for novel therapy strategies. Based on preliminary findings, these enaminones may act on T-type calcium channels, but they can also block binding to a second intracellular receptor, Sigma-2. In our work, we have identified a strong blocker of T-type voltage-gated calcium channels (T-VGCC) as RHB-111, which also inhibits binding to Sigma-2 receptors within the cell. This study will explore whether Sigma-2 receptors influence seizure activity and examine any possible connections between T-type calcium channels and Sigma-2 receptors, ultimately providing deeper insights into the cellular mechanisms underlying epilepsy and potentially refining molecule development aimed at reducing seizures through these pathways. The primary goals of this research initiative are: 1) to evaluate the binding characteristics of enaminone analogs to the Sigma-2 receptor; 2) to analyze the impact of enaminone analogs on Sigma-2 receptor functionality using functional assays; 3) to investigate any relationship between T-type calcium channels and Sigma-2 receptors. By accomplishing these objectives, we aim to gain a better understanding of neuronal mechanisms that lead to seizures associated with drug-resistant epilepsy. We plan to leverage this knowledge to create small molecules that are effective, highly potent, and exhibit minimal or no toxic effects in treating drug-resistant epilepsy.

PD8

Growth-Promoting Effects of Endophytic Trichoderma on Corchorus olitorius Cultivated in a Passive Hydroponic System.

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Hydroponic cultivation offers a sustainable and resource-efficient alternative to conventional soil-based agriculture, addressing the challenges of population growth and limited arable land. However, optimizing crop yields in hydroponic systems remains challenging due to the absence of soil microbiomes, which necessitates precise nutrient management, salinity control, and effective disease management. Introducing endophytic microorganisms presents a biologically driven strategy to enhance plant growth, as these microbes naturally colonize root tissues without causing disease, improving nutrient uptake, root

development, and overall system productivity. Among endophytes, the genus Trichoderma is widely recognized for its dual role as a biofertilizer and biocontrol agent, promoting crop growth and quality through antagonistic and growth-stimulating traits. This study evaluated the growth-promoting potential of Trichoderma for jute (Corchorus olitorius) in a passive hydroponic system through a three-phase experimental design. In the preliminary phase, eleven strains isolated from diverse soil sources were morphologically and molecularly identified and tested on jute and barley (Hordeum vulgare), with PGPF 20 and PGPF 29 showing the most pronounced growth enhancement. The second phase, conducted in a controlled growth chamber using the Kratky method, assessed the effects of these two strains on plant performance and the influence of seedling age on fungal colonization, revealing significant improvements in plant height, root growth, biomass, and chlorophyll content, particularly in 21-day-old seedlings. In the final phase, high tunnel trials under reduced nutrient conditions demonstrated that Trichoderma-treated plants maintained superior growth, yield, and resilience, with enhanced phenolic and flavonoid content, highlighting their potential to support sustainable hydroponic production under uncontrolled conditions. These results indicate that these Trichoderma strains provide critical biological support
absent in hydroponic systems, enhancing nutrient assimilation, stress resilience, and overall plant productivity.

PD9

Investigating the Effects of Pain Neuroscience Education on Kinesiophobia and Knee-Related Outcomes in Individuals with Knee Osteoarthritis

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Osteoarthritis (OA) is a leading cause of pain, disability, and reduced quality of life, with the knee joint most affected. Chronic knee OA pain often contributes to kinesiophobia, or fear of movement, leading to reduced physical activity, muscle weakness, and further functional decline. This study investigated the effects of a pain neuroscience education (PNE) program on reducing kinesiophobia and improving pain and functional outcomes in individuals with knee OA. Twenty-seven adults aged 58.1 ± 12.5 years, diagnosed with or symptomatic for knee OA, participated in this randomized controlled trial. The intervention group completed five weekly PNE modules addressing pain neurophysiology, pain and movement relationships, exercise benefits, pain management strategies, and long-term self-management. Participants wore activity trackers throughout the intervention period. The Tampa Scale of Kinesiophobia (TSK), Knee Injury and Osteoarthritis Outcome Score (KOOS), and 12-Item Short Form Survey (SF-12) were administered pre- and post-intervention. Two-way mixed factorial ANOVAs were conducted. A significant main effect of time was observed for TSK ($p<0.05$), with a greater reduction in the PNE group (-6.9%) than in the control group (-3.1%). For KOOS Pain, significant main effects of time ($p<0.05$) and a time × group interaction ($p<0.05$) were observed, with PNE demonstrating significant improvement (29.0%) compared to the control group (1.5%). Significant main effects of time were also observed for KOOS Symptoms ($p<0.05$) and KOOS Activities of Daily Living ($p<0.05$), with larger improvements in PNE (23.9% and 17.0%) relative to control (7.1% and 6.8%). No significant changes were observed for other KOOS domains or SF-12 physical and mental scores ($p>0.05$). Pearson correlation showed that higher kinesiophobia was associated with worse knee symptoms ($r = -0.39$, $p<0.05$), reduced daily function ($r = -0.53$, $p<0.05$), and poorer knee-related quality of life ($r = -0.57$, $p<0.05$). Improved knee pain scores were associated with better physical health status ($r = 0.55$, $p<0.05$). PNE intervention significantly reduced fear

of movement and improved knee pain and functional outcomes. These findings suggest that addressing kinesiophobia through structured pain education may enhance symptom perception and daily function in individuals with knee OA. Integrating PNE into conservative OA management may represent a feasible strategy to improve patient engagement and clinical outcomes.

PD10

Management and Prevention of Spinal Cord Injury: An Undergraduate Outreach Initiative

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Spinal cord injuries are one of the leading causes of disability in the U.S. and worldwide. Persons with spinal cord injury (SCI) are living in the community with injuries sustained from trauma, falls, warfare, and other select medical conditions. Among students preparing for health careers, there is a lack of awareness of the impact of an SCI, subsequent management strategies in rehabilitation, and adapted sports opportunities. The purpose of this mixed methods study was to explore undergraduate students' perceptions of persons with spinal cord injury through an interactive educational simulation program. Five second-year DPT students created a 90-minute interactive educational program related to SCI demographic perspectives, mobility management, and adapted sports activities. Participants performed wheelchair propulsion, wheelies, and adapted sport simulations. Students completed the pre/post Interaction with Disabled Persons (IDP) Scale and a follow-up reflection survey. Quantitative analyses included descriptive statistics and Wilcoxon Signed Rank tests, moreover, qualitative review encompassed thematic coding, Kappa reliability, and an audit trail. Participants included undergraduates (total n=38) enrolled in a variety of majors at a rural Northeast HBCU. Ninety-two percent of participants rated the program as excellent with exceptional learning opportunities. Major learning activities included wheelchair mobility skills and adapted sports, including wheelchair volleyball and basketball activities. Follow up on the IDP survey demonstrated an increased knowledge base about persons with disability (75.9% to 84%). Significant change was noted in communication and eye contact skills when interacting with persons with a disability among the participants ($p = .009$). An educational program related to persons with SCI can have a positive impact on undergraduate student perspectives on disability. Students learn about prevention, rehabilitation, and adapted sports opportunities for persons with this neurologic diagnosis, as well as strategize communication approaches for effective interaction. The program can also serve as a catalyst for advocacy among persons exploring health careers.

PD11

Population Biology of Bay Anchovy (Anchoa mitchilli) in Maryland's Coastal Bays

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Bay Anchovy (Anchoa mitchilli) is an important forage fish in coastal waters of the northeast United States, but little information is available on its population biology in polyhaline coastal lagoons of Maryland. We used data collected from 1990 to 2018 to estimate anchovy population parameters, assess seasonal and interannual variations in size and abundance, and the influence of environmental factors on their abundance. Bay anchovy entered the bays in April from the coastal ocean, and a peak in its abundan-

ce occurred in August/September when YoY fish were recruited into the population. By October, the abundance began to decline due to the movement of the fish into adjacent deeper coastal waters to overwinter. Catch per unit effort (CPUE) of bay anchovy was lowest in 2005 and highest in 1993, but no significant increasing and decreasing trend was observed. A von Bertalanffy growth model fitted to length-frequency data using FISAT-II provided asymptotic total length ($L\infty$) estimates ranging from 86.63 mm in 2010 to 139.13 mm in 2015 (mean: 101.12+3.14 SE), and growth coefficient (K) values between 0.24 and 1.4 (mean: 0.73+0.10 SE), which is comparable to or lower than the values reported in the bay anchovy populations in the Chesapeake Bay ($L\infty$ = 118mm, K = 0.21), and Florida Bay ($L\infty$ = 110 mm, K = 0.6. Natural mortality (Z) values varied between years ranging from 0.4 to 1.47 (mean: 0.90+0.09SE), which is lower than the values reported in Florida bay (Z =1.33) and Chesapeake Bay (Z = 2.19).

PD12

The Association of Vibrio Species with Macroalgae in the Maryland Coastal Bays

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Macroalgae serve as nutrient sinks and habitats for aquatic organisms and microorganisms, including Vibrio spp. In Maryland Coastal Bays (MCBs), macroalgae abundance has risen due to nutrient enrichment, however, little is known about Vibrio spp. prevalence on these algae. While Vibrio species occur naturally in marine environments, some taxa are pathogenic to aquatic life and humans. In this study, we examined the prevalence of Vibrio spp. in green, brown, and red macroalgae, as well as in macroinvertebrates associated with the algae in MCBs. Samples collected in summer and fall 2025 were plated on CHROMAgar for colony counts. Green algae showed consistently higher Vibrio CFU compared to brown and red algae. Vibrio abundance peaked in the summer, with July having 5.50 logCFU/g and November having 1.90 logCFU/g, reflecting seasonal variation, which is likely linked to elevated temperature in the summer. Macroinvertebrates on green macroalgae also had higher Vibrio counts than those on the other macroalgae, suggesting bacteria transfer via surface contact. V. alginolyticus was predominant across all algal and macroinvertebrate samples. The presence of Vibrio spp. in macroalgae and macroinvertebrates in the MCBs is of ecological and public health significance; hence further studies are needed to determine seasonal changes in the abundance of, and further characterize, the Vibrio species.

PD13

The Effect of Lower Extremity Postures on Pelvic Position and Gluteus Medius Activation During Single Leg Stance: An EMG Study

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The gluteus medius (GM) plays a critical role in maintaining pelvic stability during functional activities such as walking, running, and single-leg tasks. Impaired strength or activation of this muscle may lead to compensatory movements, including hip drop, knee valgus, and an increased risk of injury. Footwear may influence GM activation by altering foot mechanics and ground reaction forces, with more supportive or restrictive shoes potentially reducing muscle engagement. The purpose of this study was to examine the influence of hip position on GM activation and pelvic alignment during single-limb stance (SLS) under different footwear conditions. Twenty healthy, active individuals (age: 24.6 ± 1.5 years; 11 males, 9 females)

participated in a single testing session. Each participant performed SLS under two different footwear conditions. Twenty healthy, active individuals (age: 24.6 ± 1.5 years; 11 males, 9 females) participated in a single testing session. Each participant performed SLS under two conditions: (1) non-stance hip at 0° flexion and (2) non-stance hip at 90° flexion. All tasks were completed both with and without shoes. Surface electromyography (EMG) was used to assess GM activation of the dominant stance limb, while inclinometers were used to measured hip and pelvic positioning. Maximal voluntary isometric contraction (MVIC) values were obtained to normalize EMG data. A two-way repeated-measures analysis of variance (ANOVA) was conducted to assess the effects of hip position and footwear, along with Pearson correlations to evaluate relationships between variables. GM activation during SLS was significantly greater at 90° compared to 0° of non-stance hip flexion ($p < 0.001$) in both footwear conditions. Additionally, GM activation was significantly greater in the no-shoe condition compared to the shoe condition at 0° of hip flexion ($p = 0.018$), with no significant difference observed between footwear conditions at 90° of hip flexion. Significant positive correlations were found between GM activation in the no-shoe condition and lateral pelvic tilt at both 0° ($r = 0.65$, $p = 0.002$) and 90° ($r = 0.47$, $p = 0.037$) of hip flexion. These findings suggest that GM activation during SLS is greater when the non-stance hip is flexed to 90° and when performed without shoes. Clinicians should consider the influence of hip position and footwear during rehabilitation exercises designed to target the GM. Although SLS is commonly used to improve strength and functional mobility, performing it without shoes may provide greater benefits.

PD14

The Impact of the Challenger League on Quality of Life in Athletes, Caregivers, and Volunteers

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The Little League Challenger Division is Little League's nonprofit adaptive baseball program for individuals with physical and/or intellectual challenges, that provides these differently abled athletes support and motivation to play baseball or softball. The aim of this research project was to assess the effect of participating in the Maryland District 8 Challenger League (CL) program on the quality of life of its athletes, caregivers, and volunteers. Individuals who were eligible to participate in the study were sent invitation letters, which included instructions, links to online surveys, and the principal investigator's contact information. Investigators utilized the online platform, Qualtrics, to obtain participant informed consent/assent and collect survey data. Participants completed a CL quality of life survey and the PERMA-15 questionnaire, which is a validated tool that assesses positive emotion, engagement, relationships, meaning, and accomplishments. Both the CL survey and the PERMA-15 questionnaire utilized a Likert scale to assess participants' quality of life. In addition, the CL survey included two open-ended questions, to allow participants to elaborate on their experience with CL. Thus far, 20 caregivers (7 male, 13 female) have completed the surveys. Findings from the CL caregiver survey indicate that 95% agreed (50% strongly agreed) their athlete had improved confidence, and 90% agreed (50% strongly agreed) their athlete had an improved sense of belonging as a result of participating in CL. Furthermore, 90% of caregivers agreed (50% strongly agreed) they were more involved in the community, and 85% agreed (45% strongly agreed) they had a positive change in mood. Thus far, 13 volunteers (8 males, 5 females) have completed the surveys. Findings from the CL volunteer survey indicate that 91.7% of volunteers agreed (41.7% strongly agreed) to being more involved in the community and 91.6% agreed (58.3% strongly agreed) to feeling more comfortable spending time with people different than them as a result in participating in CL. An overarching theme of responses to the open-ended questions was that participating in CL was a rewarding experience for everyone involved, as it provided a fun and supportive atmosphere for athletes, caregivers, and volunteers to participate in a team sport. In conclusion, our findings indicate that participation in CL had a positive impact on the quality of life of its athletes, caregivers, and volunteers.

PM1

Advocacy for Deaf and Hard-of-Hearing Students in Postsecondary Education

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Deaf and hard-of-hearing students in higher education face a systemic crisis of access that extends well beyond the absence of physical accommodations. Despite federal protections established under Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act of 1990, and the Individuals with Disabilities Education Act of 2004, postsecondary institutions continue to fall short in providing timely, adequate, and dignified support services for this population. This paper examines the multidimensional barriers confronting deaf college students, including interpreter shortages, inadequate real-time captioning, faculty attitudinal barriers rooted in audism, administrative delays, and chronic underfunding of disability services offices. Drawing on a case-based framework of a 20-year-old student with severe hearing impairment, the authors analyze how these barriers intersect with stigma, internalized oppression, and sociocultural identity to produce significant academic, psychological, and socioeconomic consequences, including graduation rates of only 30% among deaf students compared to 70% among hearing peers. The paper further explores the cultural complexities of Deaf identity, the diversity of communication preferences within the Deaf community, and the role of rehabilitation counselors in advancing both individualized student support and systemic institutional reform. Evidence-based advocacy strategies are proposed to address policy enforcement gaps, improve accommodation quality, and foster affirming campus environments that honor Deaf linguistic and cultural identity.

PM2

Comparing 3-Day TMP-SMX and 5-Day Nitrofurantoin for Acute Uncomplicated Cystitis in Reproductive-Age Women Jocelyn Davis,PA-S*; Ayana Moses,PA-S*; Destiny Parker,PA-S*;

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Acute uncomplicated cystitis is one of the most commonbacterial infections in reproductive-age women,most often caused by Escherichia coli. Both 3-day trimethoprim-sulfamethoxazole (TMP-SMX) and 5-day nitrofurantoin are guideline-endorsed treatments; however, rising TMP-SMX resistance may reduce cure rates and increase recurrence. To comparesymptom resolution at 30 days and recurrence at 7 and 30 days between 3-day TMP-SMX and 5-day nitrofurantoin in non-pregnant, reproductive-age women with acute uncomplicated cystitis. A targeted literature review of studies published from 2007 to 2023 was performed using PubMed. Included studies evaluated non-pregnant adult women with uncomplicated cystitis and compared TMP-SMX with nitrofurantoin. Outcomes extracted included clinical cure,sustained cure at 30 days,recurrence at 7 and 30 days, antimicrobial resistance, and reported p-values when available. Across six studies, nitrofurantoin demonstrated equal or higher clinical cure rates compared with TMP-SMX. Nitrofurantoin also showed higher 30-day sustained cure in studies reporting this outcome. TMP-SMX resistance rates were consistently higher than nitrofurantoin resistance rates, and several studiesnoted reduced TMP-SMXcure when localresistance exceeded approximately 20%. Overall, nitrofurantoin maintained more consistent effectiveness across settings, while TMP-SMX outcomes were more strongly impacted by resistance patterns. Evidence supports nitrofurantoin as the more reliable empiric option for acute uncomplicated cystitis in reproductive-age women,particularly in regionswith elevated TMP-SMXresistance. These findingsalign with currentguideline recommendations and reinforce stewardship-informed selection of short-course therapy based on local susceptibility trends.

PM3

Comparing Bariatric Surgery and GLP-1 Therapy for Weight and Glycemic Outcomes in Severe Obesity

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Severe obesity (BMI ⩾35 kg/m²) is a chronic disease strongly associated with type 2 diabetes mellitus (T2D), cardiovascular risk, and long-term metabolic complications. While lifestyle modification remains foundational, many patients require advanced interventions to achieve meaningful and sustained weight loss. Both metabolic bariatric surgery (MBS) and glucagon-like peptide-1 (GLP-1) receptor agonists have demonstrated significant improvements in weight and glycemic control. However, differences in magnitude and durability of outcomes remain clinically relevant.This review aimed to compare bariatric surgery (sleeve gastrectomy or Roux-en-Y gastric bypass) with weekly GLP-1 therapy (semaglutide or tirzepatide) in adults aged 40–65 with severe obesity and T2D, focusing on weight loss and HbA1c reduction over a minimum two-year period. Databases searched included PubMed, the University of Maryland Eastern Shore Frederick Douglass Library, and the New England Journal of Medicine. Randomized controlled trials and systematic reviews/meta-analyses were prioritized, followed by comparative cohort studies. Across reviewed studies, bariatric surgery consistently produced the greatest total body weight loss, averaging 22–30%, nearly double the reduction achieved with GLP-1 therapy (approximately 10–15%). Newer agents such as tirzepatide demonstrated higher reductions (15–21%), yet still did not reach the magnitude observed with surgical intervention. Both modalities improved glycemic control; however, surgery showed higher rates of diabetes remission and long-term metabolic durability. Bariatric surgery remains the most effective intervention for sustained weight reduction and glycemic improvement in adults with severe obesity and T2D. Nonetheless, weekly GLP-1 therapy provides a clinically meaningful, less invasive alternative with favorable safety profiles. Treatment selection should be individualized, incorporating patient preference, comorbidity burden, surgical risk, and long-term adherence considerations. Future research should explore combination strategies, including pharmacotherapy as an adjunct or bridge to surgery, to optimize durability of metabolic outcomes.

PM4

Cranberry Capsules for Recurrent Urinary Tract Infection Prevention: A Comparative Evidence Review

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Recurrent urinary tract infections (rUTIs), defined as ⩾2 infections in 6 months or ⩾3 in 12 months, are common among adult women and contribute to reduced quality of life and increased antibiotic exposure. Growing antimicrobial resistance has prompted investigation into non-antibiotic preventive strategies. Cranberry products containing proanthocyanidins (PACs) inhibit Escherichia coli adhesion to the urothelium and may reduce recurrence rates. This review evaluates the effectiveness of daily cranberry capsules standardized to ⩾36 mg PAC compared to placebo in reducing symptomatic, culture-confirmed UTIs. A literature search of peer-reviewed randomized controlled trials and systematic reviews published between 2002 and 2025 identified six relevant studies. Meta-analyses demonstrated relative risk reductions ranging from 18–38% in UTI recurrence among women using cranberry products. A multicenter randomized, double-blind, placebo-controlled trial reported a 52% reduction in culture-confirmed UTIs (RR 0.48, p=0.01) and delayed time to first recurrence with daily cranberry supplementation. Evidence suggests improved outcomes with PAC doses ⩾36 mg daily. Limitations across studies include short follow-up durations and variability in product standardization. Overall, standardized cranberry PAC capsules appear to be a safe and clinically meaningful adjunct for preventing recurrent UTIs in adult women and may support antimicrobial stewardship efforts.

PM5

Impact of Regenerative Agriculture Farming Practices on Soil Health in Delmarva Sandy Loam Soil - Organic Vegetable Cropping Systems

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The benefits of coupling regenerative agriculture practices (such as conservation tillage, applying porous landscape fabric, cover cropping, poultry litter, and compost amendment) to improve soil health in sandy loam soils are unclear. The Delmarva Peninsula's native sandy loam soil typically has low organic matter and nutrient levels, which creates a production challenge for vegetable farmers. This project examines the benefits of a combined practices approach, including cover cropping, tarping with landscape fabric, compost, and pelletized organic fertilizer amendment, which can meet the need for plant-available nitrogen (N) for the growth of organically produced vegetable crops, in this case, Swiss chard. To address this scenario, a completely randomized experiment was launched in the fall of 2023 at the University of Maryland Eastern Shore on a well-established certified National Organic Program (NOP) field. Four treatments with four replications per treatment were included: A control (T1: no organic amendments or cover crops); T-2: winter rye and hairy vetch cover crop mixture (CCM), no amendments; T-3: CCM, and organically-compliant compost; and T-4: CCM and organically-produced poultry litter pellets, were used to quantify the effects on organic vegetable production. Factors used to assess soil health included: pH, electrical conductivity, organic matter, soil texture, respiration, active carbon, bulk density, wet aggregate stability, total carbon, total nitrogen, soil organic carbon, soil enzymes, macronutrients, and micronutrients. Cover crop (hairy vetch) impacts on nitrogen use efficiency calculated for different management practices were compared to determine which practices improved soil health and N levels in a sandy soil experiment conducted with Swiss chard. This study will be of interest to farmers considering options for improving NOP cropping systems on sandy soils by combining regenerative agricultural farming practices, to enhance soil health and crop production sustainably.

PM6

Leveraging Generative AI-Supported Research to Develop Nutrient-Enhanced Cassava (Manihot esculenta Crantz) Composite Flour Products

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Food plays a vital role in supplying essential macronutrients and micronutrients required for growth, immune function, and overall well-being. However, inadequate access to nutritious food remains a persistent global challenge affecting both developing and developed nations. Staple crops such as cassava provide substantial caloric energy but often lack sufficient protein, vitamins, and essential minerals, thus contributing to malnutrition and related health concerns. This study explores the nutritional enhancement of cassava-based products through the incorporation of finger millet and quinoa composite flours to improve the nutritional profile and sensory quality of cassava-based foods. In addition, generative artificial intelligence (AI) tools are utilized as supportive research resources for literature synthesis, formulation planning, and knowledge integration during the development of the composite flour blends. Cassava (Manihot esculenta) is widely cultivated and valued for its high carbohydrate content and resilience to severe conditions, yet it is limited in protein quality and micronutrient density. Finger millet (Eleusine coracana) is a gluten-free cereal rich in calcium, edible fiber, antioxidants, and bioactive compounds associated with improved blood sugar control and gut health. Quinoa (Chenopodium quinoa) is a nutrient-dense pseudo-cereal, that provides high-quality protein, essential amino acids, edible fiber, and essential minerals. The complementary nutritional profiles of these crops offer an opportunity to enhance the quality of cassava-based food products.

Composite flour formulations consisting of cassava, finger millet, and quinoa were developed and applied in the production of bread and muffin products. Preliminary sensory acceptability and nutritional evaluations indicate improved food variety and promising consumer acceptance of the composite formulations. Further functional and physicochemical analyses are ongoing to evaluate the performance of the composite flours in product development. This work demonstrates how emerging digital tools such as generative AI may complement traditional food science research by supporting knowledge synthesis and enhancing the development of nutrient-enhanced food products aimed at improving food sufficiency and nutritional quality.

PM7

Mind Over Medicine: Coping Strategies and Mental Health Outcomes Among Graduate Health Students During COVID-19

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The COVID-19 pandemic disrupted graduate health education and heightened stress, anxiety, depression, and burnout among students. Remote learning diminished clinical exposure, increased social isolation, and academic uncertainty imposed substantial psychological strain. Evidence suggests that resilience, effective coping strategies, and healthy lifestyle behaviors protect against adverse mental health outcomes. This review examined whether graduate health profession students possessing more developed stress-management competencies demonstrated lower levels of anxiety and depression during the COVID-19 pandemic relative to peers with more limited coping resources. A structured literature review and critical appraisal of six peer-reviewed studies were conducted using a PICO framework: Population (P) included graduate health profession students; Interest (I) focused on resilience and coping strategies; Context (Co) was the COVID-19 pandemic. Study designs included cross-sectional, cohort, mixed-methods, and conceptual analyses. Researchers used the Connor-Davidson Resilience Scale (CD-RISC-10) and validated surveys measuring burnout, fatigue, anxiety, and depression. Analysis methods included descriptive statistics, logistic regression, odds ratios, and qualitative thematic coding. Most studies were observational (Level VI), precluding causal inferences but consistently demonstrating resilience as a protective factor. Across multiple studies, a consistent pattern emerged: students in early didactic phases reported higher anxiety, depression, and fatigue than those in clinical phases, with over 70% experiencing burnout and isolation during peak pandemic periods. The research identified several key protective factors: regular physical activity, balanced nutrition, adequate sleep, fewer days of poor mental health and reduced psychological distress. However, the opposite held true for risk factors. Sleep deprivation, heavy academic workload, financial strain, and limited coping resources were linked to increased anxiety and depressive symptoms. First-generation and underrepresented minority students were disproportionately affected, reporting higher family, financial, and overall stress. Resilience and structured coping strategies consistently improved psychological well-being and reduced burnout. These findings underscore the need to integrate resilience training, peer mentorship, wellness education, and accessible counseling into graduate health curricula. Strengthening these institutional support systems is essential for equipping students to navigate future public health crises and rigorous academic demands while fostering long-term professional well-being.

PM8

Multi-Systemic Therapy Effects on Rates of Recidivism in Juvenile Delinquents

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Juvenile delinquency continues to be a major public health concern in the United States, where there have been over 400,000 arrests of people under the age of 18 reported in 2020, with a higher rate being associated with youth of color. When it comes to the incarceration of youth, there is an association with long-term effects, including reduced health, educational boundaries, lower employment opportunities, and

re-offenses. Current literature emphasizes the importance of early interventions and the role of the family in targeting juvenile delinquency. Delinquent behavior in youth contributes to factors such as family dysfunction, neglect, and poor community environments. Compared to the standard punishment of juvenile detention, an emerging strategy called Multi-Systemic Therapy (MST) is more effective in reducing rates of recidivism in these children by targeting the root problem and involving a family and community-based intervention. This study's goal was to evaluate the rates of recidivism within 12 months of juvenile offenders under age 18 who underwent MST compared to those who received juvenile detention or probation. This was done by conducting a systematic review of five peer-reviewed studies published between 2015 and 2024 that include systematic reviews, longitudinal qualitative studies, meta-analyses, and follow-up analyses. MST was shown to be significantly effective in reducing rates of recidivism compared to standard detention and probation. There were stronger outcomes in patients associated with improved family functioning, including reduced family conflict and improved community support systems. There was consistency in these studies showing lower rates of repeat offences in the patients who received this MST therapy. Sample size variability and methodologies were noted, which revealed the need for larger and more standardized studies. MST is an effective alternative to probation and detention and has evidence to support the outcome of decreased rate of repeat offenses. These findings support the idea of addressing family and community problems and utilizing them as a rehabilitation program for the delinquents as opposed to putting them in detention.

PM9

Perfluorobutanoic Acid (PFBA) Reprograms Feeding and Development in Fall Armyworm

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Perfluorobutanoic Acid (PFBA) is a short-chain per and polyfluoroalkyl substance (PFAS) characterized by high water solubility and weak soil sorption, properties that facilitate its rapid uptake and translocation into plant aerial tissues. Several studies have reported that PFBA preferentially accumulates in leaves and other above-ground plant tissues that are directly consumed by herbivorous insects. This creates a potential exposure pathway at the plant–herbivore interface even when soil concentrations remain relatively low. Despite this pathway, the physiological and ecological consequences of PFBA exposure to herbivorous insects remain poorly understood. In a previous study, we observed PFBA-associated weight stimulation in beet armyworm (Spodoptera exigua) under a single exposure dose relative to controls. This study was designed to evaluate whether PFBA concentrations comparable to those detected in aerial plant tissues can stimulate growth in a closely related species, the fall armyworm (Spodoptera frugiperda). Third-instar larvae were exposed to six PFBA concentrations (0, 0.001, 0.01, 0.1, 1, and 10 $\mu g g^{-1}$ w/w diet), with 12 larvae per treatment group. Larvae were monitored through pupation and adult emergence. Larval mass and diet consumption were recorded across five days of feeding. Results showed that low PFBA exposures produced consistent growth stimulation. Specifically, larvae exposed to 0.001 and 0.01 µg/g PFBA exhibited sustained increases in body mass relative to controls from days 1-4, indicating a clear stimulation window at environmentally relevant concentrations. PFBA exposure also increased initial diet consumption relative to the control group, although cumulative consumption across the full observation period did not differ significantly among treatments. Developmental timing analyses indicated that low-dose PFBA exposure accelerated transitions through key life stages. The median time to pupation in 0.001 µg/g group reduced from 7.50 days in control to 6.67 days. Similarly, adult emergence occurred earlier in the exposed groups, with faster transition observed at 1 µg/g (mean time: 16.55 days vs 17.09 in controls). Collectively, these findings demonstrate that PFBA can enhance growth and accelerate development in fall armyworm at environmentally relevant concentrations, suggesting that PFBA contamination may unintentionally increase herbivore performance in agricultural systems.

PM10

Prenatal Medication Exposure and Autism Risk: A Comparative Analysis of Neurodevelopmental Outcomes

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Autism spectrum disorder (ASD) is a complex neurodevelopmental condition characterized by impaired social communication and restricted, repetitive behaviors. Rising global prevalence has prompted investigation into modifiable prenatal risk factors, including maternal medication exposure. Many pregnant patients require pharmacologic treatment for psychiatric illness, infection, pain, or epilepsy, creating clinical uncertainty regarding fetal neurodevelopmental safety. The objective was to evaluate whether prenatal exposure to selected medication classes is associated with increased risk of ASD in offspring compared with no exposure. A comparative review of six large population-based cohort studies (2013–2024) from international registries in Sweden, Denmark, Israel, Canada, and other Nordic populations was performed. Studies assessed prenatal exposure to antidepressants/selective serotonin reuptake inhibitors (SSRIs), antiseizure medications (ASMs), antibiotics, acetaminophen, and other neurotransmitter-modulating drugs. Outcomes measured included incidence of ASD using hazard ratios or risk ratios with adjusted analyses controlling for maternal, familial, and genetic confounders. Results showed most commonly used medications, including SSRIs, acetaminophen, necessary antibiotics, lamotrigine, and levetiracetam, were not associated with increased ASD risk after adjustment for confounding variables. Sibling-comparison designs demonstrated that many previously reported associations were attributable to shared familial or genetic factors rather than medication exposure. In contrast, valproate and topiramate showed consistent associations with increased ASD risk across multiple countries and study designs, suggesting a medication-specific neurodevelopmental effect rather than a class-wide phenomenon. Findings highlight the importance of distinguishing medication effects from underlying maternal illness, as untreated medical conditions during pregnancy may themselves adversely affect fetal development. Variability in ASD diagnostic practices and reliance on prescription data rather than confirmed ingestion were noted limitations; however, consistent international findings strengthen overall conclusions. Prenatal medication exposure is not uniformly associated with ASD risk. Evidence supports continued use of most clinically indicated medications during pregnancy with individualized risk–benefit counseling. Valproate and topiramate warrant particular caution, and pre-pregnancy planning should guide safer therapeutic alternatives when possible.

PM11

Prevalence of Foodborne Pathogens in Backyard Chicken Farms on the Eastern Shore of Maryland

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In recent years, keeping backyard chickens has become more popular in the United States, mainly for eggs, meat, and as pets. Chickens are known reservoirs of foodborne zoonotic pathogens, including Salmonella, Escherichia coli (E. coli), including Shiga Toxin-producing E. coli (STEC), and Campylobacter. Therefore, not only consumers, but also chicken handlers, including children, are at risk due to the prevalence of these zoonotic bacteria. This study assessed the prevalence of Salmonella, E. coli, including STEC, and Campylobacter in backyard chicken farms on the Eastern Shore of Maryland. A total of nine backyard chicken farms were selected for sample collection from Somerset, Wicomico, and Worcester counties (three per county). Samples were collected, including cloacal swabs (n = 10), egg swabs (n = 6), glove

swabs (n = 2), boot swabs (n = 2), feed samples from the feed source (25 g; n = 3), soiled litter samples (25 g; n = 3), and water samples from the water source (1 L; n = 3). Additionally, farm metadata was collected through a questionnaire. All samples were transported to the UMES Food Microbiology and Safety Laboratory and analyzed for bacterial pathogens within two hours of collection using standard culture methods. Overall, 59.2%, 20.7%, 17.4%, and 2.7% of samples were positive for E. coli, STEC, Campylobacter, and Salmonella, respectively. The prevalence of Salmonella was lower than that of the other pathogens. Salmonella was detected in cloacal swabs (2.2%), egg swabs (1.9%), boot swabs (5.6%), the soiled litter samples (11.1%), and the feed (11.1%). Regardless of sample type, E. coli dominated all sample types, followed by STEC. Soiled litter, boot, and feed samples had higher pathogen prevalence. Higher Campylobacter prevalence was detected in the boot and feed samples. Alarmingly, glove swabs contained E. coli (77.8%), STEC (5.6%), and Campylobacter (11.1%), indicating that chicken handlers are at high risk without proper hygienic practices. Contaminated feed and water sources were identified as potential routes for the introduction and dissemination of these pathogens within the farm environment. Most farmers (88.9%) allowed their children to pet the chickens, and three farmers reported not using gloves when handling chickens. These findings suggest a high risk of foodborne zoonotic disease for consumers and backyard chicken handlers, including children, due to the high prevalence of zoonotic foodborne bacterial pathogens. Research involving a larger number of samples is underway to confirm this finding.

PM12

Probiotics for Prevention of Antibiotic-Associated Diarrhea in Pediatric Patients: A Review of Level I Evidence

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Antibiotic-associated diarrhea (AAD) is extremely common in pediatric patients receiving antibiotics for various conditions, affecting about 19% of children, which is due to disruption of the gut microbiome. AAD can cause early termination of treatment, which causes a prolonged sickness period in patients, which can be fatal. Using high-quality Level I evidence, it has been determined that probiotic use, specifically Lactobacillus species and Saccharomyces boulardii, has been shown to reduce AAD occurrence among pediatric populations. Randomized controlled trials and meta-analyses were used to determine the effectiveness of these probiotics in children across a broad range of ages, starting from 1 month old to 18 years old. Inclusion criteria were used to only include research that showed measurable AAD outcomes and probiotic strain, dose, and duration. Exclusion criteria were then used to rule out studies lacking antibiotic exposure, measurable probiotic outcomes, and results seen in adult populations. Across all studies, the use of probiotics was shown to improve AAD rates in comparison to controlled groups, where probiotics were not used at all. The rate of AAD in control groups was 16-20% while the probiotic group reported rates of 2-10%, showing an absolute risk reduction. The Cochrane review by Guo et al (2019) specifically showed a decrease of AAD from 19% to 8% with probiotic use. Another analysis showed relative risk reduction of 45-50% with pooled risk ratios from 0.40-0.55 ($p < 0.001$). The most successful results were seen from Lactobacillus rhamnosus GG and Saccharomyces boulardii. Overall, probiotics were well-tolerated but should be used with caution in immunocompromised patients. All the research indicates consistent and reproducible benefits among multiple systematic reviews and randomized trials. To summarize, probiotic use should be highly considered as an adjunct therapy when prescribing antibiotics to children to reduce AAD occurrence, which would in turn increase medication adherence and lower complications.

PM13

School-Based Drug Prevention in High Schoolers

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Adolescent substance abuse often begins during the middle and high school years, underscoring the need for timely prevention efforts. Across the United States,school-based drug prevention programs are widely implemented, though their effectiveness can vary based on program design and student demographics. This study investigated whether participation in formal school-based prevention education is associated with lower rates of substanceinitiation and misuse among high school students,compared to those who receivedno such programming. Data were drawn from five sources: two meta-analyses/systematic reviews focusing on comprehensive curricula and geographic differences; two cluster randomized controlled trials—Life Skills Training (LST) and Project Towards No Drug Abuse (TND); and one national cross-sectional study exploring trends in prevention exposure. Results across all five studies indicated that school-based prevention programs were linked to small but statistically meaningful reductions in adolescent substance experimentation. The most consistent and substantial effects were found for marijuana and non-prescribed drug use. Programs grounded in skills development and cognitive-behavioral approaches, such as LST and TND, yielded the most reliable outcomes, particularly among students who had not yet tried substances. Curricula that combined academic content with health education also demonstrated beneficial effects. Study limitations included a reliance on self-reported measures and limitedfollow-up durations, which constrained conclusions about long-term impact. Nonetheless, the evidence supportscontinued implementation of structured, skill-oriented prevention programs in school settings.

PM14

Socioeconomic Determinants of Household Income and Financial Resilience in the United States: Evidence from the 2024 Financial Health Pulse Survey

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This study uses data from the 2024 Financial Health Pulse Survey (N = 7,245) to analyze the socioeconomic factors influencing household income and financial resilience among U.S. households. Household income is measured on 16 categorical levels, coded from 1 to 16, where 1 denotes an income less than $5,000 per year, and 16 denotes $150,000 or more per year. Regression results reveal a statistically significant inverse relationship between the stress coping index and household income. Households with higher income levels tend to report lower coping index scores, indicating less reliance on financial coping strategies such as borrowing from friends, payday loans, or selling assets ($\beta = -0.64$, $p < 0.001$). Financial stress is also inversely related to income, with higher-income households experiencing lower levels of financial stress. Respondents with no financial stress report significantly higher income levels, averaging 2.92 income categories above those experiencing high financial stress ($p < 0.001$). Education is strongly associated with higher income ($\beta = 0.60$, $p < 0.001$). In contrast, households with part-time or unemployed members report significantly lower income levels, averaging 2.24 income categories below those of households with full-time employed members ($p < 0.001$). Larger households tend to earn slightly more, with income increasing by 0.41 income categories for

each additional household member ($p < 0.001$), indicating that household size influences financial capacity. Gender and marital status are also significant predictors: men report 0.55 higher income categories than women ($p < 0.001$), while divorced, widowed, or never-married individuals report 1.31–2.83 lower income categories than married individuals living with a spouse. Overall, the findings highlight employment type, education, household size, gender, and marital status as key determinants of household income and financial resilience. Policies that promote full-time employment, expand educational opportunities, support income growth, and encourage sound financial planning behaviors may improve financial well-being and reduce financial stress among U.S. households.

PM16

Understanding Factors Influencing the Adoption of Climate-Resilient Alley Cropping

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Alley cropping is an agroforestry practice that combines trees with crops, providing ecological and economic benefits. However, its adoption depends on farmers' perception and their confidence in implementing the practice. Understanding these factors is essential for promoting wider adoption. To examine farmers' perceptions and adoption behavior, four field days on "alley cropping for extreme weather variability and higher profitability" were conducted in August and September 2025 to provide farmers with hands-on experience and encourage farmer-to-farmer learning. A self-administered questionnaire was used to collect information on participants' demographics, perceptions, knowledge gains, and willingness to adopt or expand alley cropping on their farms. The survey included closed-ended, five-point Likert-scale questions. Only complete responses (N=54) were analyzed using logistic regression to ensure accuracy and avoid biases from missing data, while descriptive statistics included all respondents (N=93). Participants came from diverse backgrounds: 53.76% were female and 46.24% male. Racially, respondents identified as White (30.11%), Black or African American (27.96%), and Asian (41.94%). Most (59.14%) reported high satisfaction with the field day. Bivariate logistic regression found no significant effect of socio-demographic factors (age, gender, race, education, or occupation) on willingness. Satisfaction with the event was the only factor that showed a meaningful impact. Participants who were highly satisfied were more than six times as likely to adopt or expand alley cropping (Odds Ratio = 6.33, $p < 0.01$). In the fully adjusted (multivariate) model, satisfaction with the event was the only factor significantly influencing willingness. Highly satisfied participants were approximately six times (OR = 6.07, $p < 0.05$) more inclined to consider adopting or expanding alley cropping without financial support. However, the overall model was not statistically significant ($\chi^2 = 11.01$, df = 7, $p = 0.239$; McFadden pseudo-$R^2 = 0.157$). Despite the weak overall model fit, satisfaction remained a statistically significant and strong predictor in both the bivariate and multivariate models, indicating that adoption behavior was primarily driven by participants' satisfaction with the event content presented during the extension events rather than by demographics or short-term knowledge gains. This is consistent with behavioral adoption research, which shows that motivational and experiential factors often outweigh demographic differences. These results underscore the importance of well-designed, engaging extension programs in motivating farmers to adopt climate-resilient practices.

PU1

A Preliminary Investigation of Functional Movement Among Student-Athletes and Recreational Athletes at a Historically Black University

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Both student-athletes and recreational athletes regularly engage in physical activities that require an acceptable range of mobility and postural control to perform movement tasks efficiently. In this context, mobility refers to joint range of motion and muscle flexibility, while postural control relates to the ability to maintain stable start and end positions of a movement without verbal or visual cues.Correlations exist between functional movement scores and injury risk; however, a lower composite score does not necessarily indicate reduced performance. Because student-athletes (SAs) and recreational athletes (RAs) aim to enhance performance, identifying musculoskeletal deficits may help reduce their risk of injury. The purpose of this study was to describe the functional movement status of SAs and RAs at a historically Black university using the Functional Movement Screen (FMS™). Descriptive statistics summarized FMS™ components and total scores, and a MANOVA tested differences by athlete type. Findings indicated that athlete type significantly influenced overall functional movement scores ($p = .001$). A preliminary functional movement profile for SAs and RAs was established.FMS™ components were then grouped based on the movement: functional patterning (inline lunge, hurdle step, deep squat), stability (rotary stability, trunk stability push-up), and mobility (active straight-leg raise, shoulder mobility, ankle mobility). When these groups were analyzed, no significant differences emerged in functional patterning or stability; however, mobility differed significantly between SAs and RAs ($p = .0087$). Additional subgroup analyses could not be completed due to inadequate representation between males ($n=14$) and females ($n=38$).These findings provide a foundational profile that may inform targeted preventative programming for student-athletes and recreational athletes. These findings may also contribute to a larger longitudinal study to examine the effects of resistance training and competition to better understand how to monitor and detect movement-related issues.

PU2

Artemis-Ready Exercise: AI-Assisted EMG Analysis of Exercise Loading Under Simulated Reduced Gravity

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Reduced-gravity environments diminish musculoskeletal loading and highlight the need for effective, lightweight exercise countermeasures for future lunar missions. We developed and pilot-tested an approach that integrates surface electromyography (EMG) with artificial intelligence (AI) to assess muscle activation during exercise under simulated reduced-gravity conditions. EMG data collected during squatting showed that reduced gravity decreased rectus femoris activation relative to normal gravity, whereas the addition of an elastic resistance countermeasure restored activation toward normal-gravity levels. To enable automated analysis, we also evaluated a supervised four-class AI pipeline for classifying EMG patterns across gravity and countermeasure conditions. The results indicate that these exercise conditions can be reliably distinguished despite subject-to-subject variability. Together, these findings support the feasibility of AI-assisted EMG analysis for detecting reduced-gravity under-loading and evaluating countermeasure effectiveness. Ongoing work is applying this framework to experimentally collected data

from additional lower-body exercises, with the goal of establishing an Artemis-relevant workflow for wearable biosignal monitoring, exercise optimization, and undergraduate training in biomechanics and machine learning.

PU3

Commercial Essential Oils as Alternative Antimicrobial Agents against Shewanella Species

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Shewanella are emerging seafood pathogens with rising multidrug resistance (MDR). The study aimed to evaluate the antimicrobial activity of five commercial EOs —black pepper, clove, cinnamon, oregano, and thyme —against Shewanella collected from oysters and seawater at four sampling sites in the Mid-Atlantic region. Isolates were exposed to five dilutions of each EO and compared to three control antibiotics: ciprofloxacin, gentamicin, and imipenem. Oregano and thyme had the largest Mean Inhibition Zone (MIZ); 32.5 mm and 30.7 mm, respectively, often matching or exceeding the effects of gentamicin and imipenem. Based on MIZ values at 100% concentration, oregano (32.5 mm), thyme (30.7 mm), clove (24.6 mm), cinnamon (24 mm), and black pepper (13.6 mm), indicating a clear ranking in antimicrobial efficacy against Shewanella isolates. No significant susceptibility difference was found between oyster and seawater isolates. Hemolysin group significantly influenced MIZ, with β-hemolytic isolates showing greater susceptibility to certain essential oils, depending on oil type, while dilution had no significant effect. S. khirikhana was more susceptible than S. algae to black pepper oil at all dilutions and to thyme oil at the fourth dilution. S. marisflavi and S. litorisediminis were susceptible to undiluted thyme oil. These results support the potential of phenolic-rich EOs as natural antimicrobial agents to control MDR Shewanella in seafood, an emerging public health concern.

PU4

Effects of an 11-Week High Functional Resistance Training Program on Indices of Arterial Stiffness

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[1] Department of Exercise Science, School of Health Sciences, Salisbury University, Salisbury, MD.,
[2] Department of Physical Therapy, School of Pharmacy and Health Professions, University of Maryland, Eastern Shore, Princess Anne, MD 21853

Arterial stiffness is a systemic loss of elastic properties that significantly augment cardiovascular disease risk in adults. Investigations into specific behaviors and practices that influence arterial stiffness has been a priority in the past few years. Chronic aerobic and anaerobic exercise activity has consistently shown to attenuate or not influence markers of arterial stiffness in adults with chronic disease and otherwise healthy adults. Chronic high functional resistance training's effect on vascular compliance is less understood. The purpose of this study was to determine the effects of a chronic high functional resistance training program on pulse wave velocity and beta-stiffness index. Participants (18-40 years old) were placed in a non-randomized fashion into a high functional resistance training (HFRT) group (n = 9; >6 months of CrossFit experience; 4 female), or control (CON) group (n = 8; < 6 months of exercise experience; 6 female). Participants in the HFRT group trained at the same local facility 4 -5 days a week, utilizing the same training program. The CON group refrained from exercise during the study period. Body composition, 1,000 meter rowing test, deadlift 1 repetition maximum (1 RM), hemodynamic assessments and vascular compliance was assessed at baseline and follow-up. Repeated measures analysis of variance was used to examine within and between interactions on indices of arterial stiffness.

Results indicated there were baseline differences between groups in deadlift 1 RM (72.3±18.2 kg mean difference (MD), $p < 0.01$), rowing time (143.8±35.7 sec MD, $p < 0.01$), and rowing average watts (153.8±34.6 watts MD, $p < 0.01$).Following the intervention, seated diastolic blood pressure (DBP) increased only in the CON group (3±4 mmHg MD, $p = 0.04$). No significant within and between group interactions were found in arterial stiffness variables. In conclusion, the findings indicate indices of arterial stiffness are not influenced by participation in chronic high functional resistance training.

PU5

Exercise Motivation Among Undergraduate Students: An Analysis of Behavioral Regulation Types

Jalen Ridgeway*, Joy Hawkins, Dr. LaShawn Nastvogel
Department of Kinesiology, School of Pharmacy and Health Professions, University of Maryland, Eastern Shore, Princess Anne, MD 21853

Physical activity levels among college students have become an important area of study, as this population often experiences changes in lifestyle, health behaviors, and exercise participation. Identifying the psychological profiles that may help explain why some students remain active while others have trouble doing so. This study explored the distribution and prevalence of motivational types among undergraduate students to profile patterns of exercise motivation within a small academic population. A cross-sectional descriptive research design was employed to assess students' motivation along the continuum of intrinsic and extrinsic motivation using the Behavioral Regulation in Exercise Questionnaire-3 (BREQ-3). Six forms of motivation towards physical activity were measured: amotivation, external regulation, introjected regulation, identified regulation, integrated regulation, and intrinsic motivation. A sample (N=105) of undergraduate students from a minority-serving institution was asked to complete the questionnaire. Descriptive statistics, including means and standard deviations, were used to summarize and rank the primary regulatory styles represented in the sample. Independent samples t-tests were used to identify differences in motivational regulation between genders. Results showed that identified regulation, intrinsic motivation, and integrated regulation emerged as the predominant self-determined motivational types. Two sample t-tests demonstrated significant gender differences across several motivational constructs, including amotivation ($p = .04$), external regulation ($p < .001$), introjected regulation ($p = .002$), integrated regulation ($p < .001$), and intrinsic motivation ($p = .009$). However, the Relative Autonomy Index (RAI), which summarizes the degree of self-determined motivation, revealed the majority of the sample possessed self-determined (autonomous) motivation towards physical activity. These findings suggest the potential for increased recreational programming designed to support sustained engagement of undergraduate students to continue being physically active. While this study is limited by a lack of representation from each major at the institution, it may still inform the development of activities for multiple types of motivation.

PU6

Impact of Blood Flow Restriction Cuff Design on Upper Body Exercise

Michael Sergio[1]*, Sean Zupnik[1], Nicholas Rolnick[2], Victor de Queiros[3], Brent Fedorko[1], Samantha Watson[1], Campbell Ruffhead[1], Lucas Kuriawa[1],and Tim Werner[1], FACSM
[1] Department of Exercise Science, School of Health Sciences, Salisbury University, Salisbury, MD.,
[2]Lehman College, New York, NY.,
[3] Department of Physical Education, State University of Paraíba, Brazil

Differences in cuff blood flow restriction (BFR) bladder design (single-chambered [SC-BFR] and multi-chambered [MC-BFR] systems) may influence exercise performance, perceptual responses, and cardiovascular outcomes. The purpose of this study was to compare SC-BFR versus MC-BFR cuff design on

acute performance, perceptual, and cardiovascular outcome measures during four sets of upper body bilateral biceps curl exercise to volitional failure using recommended application BFR guidelines. In a randomized cross-over design, twenty-six healthy physically active individuals (22.6±5.5 years old, 10 females; 25 reported engaging in resistance-exercise consistently) performed four sets of bilateral biceps curls to volitional failure using 20% of the 1-repetition maximum under three conditions: SC-BFR, MC-BFR, and a non-BFR control, post-exercise perceptual responses, and cardiovascular measures pre- and post-exercise. The results indicated SC-BFR significantly reduced total repetitions compared to MC-BFR (Δ = -19.5; $p = 0.002$; 95% CI = -34.9 to -3.9) and N-BFR (Δ = -48.7; $p < 0.001$; 95% CI = -74.7 to -22.8).MC-BFR and N-BFR conditions demonstrated comparable performance in later sets. RPD was significantly higher in SC-BFR compared to MC-BFR and N-BFR ($p < 0.001$), while MC-BFR elicited lower RPE than SC-BFR ($p = 0.025$). Both SC-BFR and N-BFR conditions significantly reduced post-exercise diastolic blood pressure and mean arterial pressure, whereas MC-BFR did not. SC-BFR blunted post-exercise increases in carotid-femoral pulse wave velocity ($p = 0.328$), whereas the other conditions showed elevations ($p < 0.05$). In conclusion, SC-BFR induces greater repetition reduction and perceptual discomfort than MC-BFR, while MC-BFR demonstrates similar performance and comfort to N-BFR in later sets. This study is significant because findings suggest cuff design plays a role in acute performance and perception-related responses, but not cardiovascular responses.

PU7

Impact of Synthetic Caffeine on Adolescent and Young Adult Cognitive and Neuromotor Function

Carrington D. Rashaw*, and J. Keane Dawes, PhD
Department of Kinesiology, School of Pharmacy and Health Professions, University of Maryland Eastern Shore, Princess Anne, MD 21853

In America, there is a growing trend of consuming synthetically caffeinated drinks amongst adolescents and young adults. While there are some benefits to these beverages, the constant intake of these products can cause irreversible damage to the mind and body, especially at young ages. As a college student, needing a small energy boost throughout the day is nothing new. Synthetically caffeinated drinks are the most convenient option, due to the multiple vending machines located in academic buildings and residence halls. On average, at the University of Maryland Eastern Shore (UMES), one vending machine contains 13 products that include synthetic caffeine in their ingredients. Popular choices such as Monster and Bang are provided to students, but it's seldom that students analyze the effects these products might have on their learning abilities and overall health. The National Institutes of Health recommends that young adults ages 18-21 consume 100 to 175 milligrams of caffeine per day; however, drinks that are provided to students via vending machine contain 200 to 270 milligrams of caffeine which exceeds the recommended amount by at least 71%. A study conducted in 2021 (Soós 2021), determined that regular synthetic caffeine intake can induce sensory integration difficulties, encourage unnecessary sympathetic nervous system activation (involuntary muscle contractions), and generate hardships with fine motor control. The same study also evaluated cognitive functions and tasks that may become inhibited due to routine synthetic caffeine intake like selective attention skills, basic problem-solving, and deductive versus inductive reasoning abilities. To truly evaluate the negative effects of synthetic caffeine on young adults, this study proposes that UMES students (ages 18-21) are surveyed on their caffeine consumption per week and the direct impact it has on their abilities to learn information, retain information, and maintain typical motor function. This research highlights the importance of education surrounding nutrition and prevention of future health implications for college students and young adults.

PU8

Spacesuit Environmental and Telemetry Heads-Up Display (SENTRY HUD)

Darren Wyant [1]* and Dr. Aaron H. Persad[1]
[1]Engineering Department, University of Maryland Eastern Shore, Princess Anne, MD 21853

This project presents the conceptual design of a heads-up display (HUD) system for a spacesuit intended to improve astronaut situational awareness and safety during extravehicular activities (EVA). The HUD is designed to continuously display life-support and mission information while minimizing visual clutter and preserving the astronaut's field of view. Key parameters monitored by the system include oxygen level, suit pressure, carbon dioxide concentration, internal suit temperature, humidity, and battery level. These values are displayed in a compact and easily readable format to allow astronauts to quickly assess the status of their life-support systems. A major focus of the design is the implementation of an emergency alert system that prioritizes potentially life-threatening conditions. Alerts are triggered when monitored values exceed predefined thresholds or when rapid changes indicate system failure. The emergency display uses a hierarchical structure to prioritize the most critical alerts, ensuring that astronauts can quickly identify the most urgent issues. In addition to color-based alerts, the design incorporates redundant visual cues such as flashing patterns, geometric shapes, size changes, and text formatting to ensure alerts remain recognizable under high-stress conditions or in situations where color perception may be limited. Accessibility and usability are also key considerations in the design. The HUD includes customizable display settings that allow astronauts to adjust colors to accommodate different types of color vision deficiency. Additional interface variations explored in this project include text-only displays, task displays, animation-based indicators for changing values, and alternative methods for conveying emergency information without relying solely on color. Optional navigation features, such as a compass and map overlay, were also considered for future integration. Overall, the proposed HUD system aims to enhance astronaut safety by providing clear, reliable, and adaptable visual feedback in extreme environments.

PU9

T-type Calcium Channel Blocker Antiseizure Properties in the Pentylenetetrazol Zebrafish Model

Jade Reid[1*], Dr. Tracy Bell[1], and Dr. Patrice Jackson-Ayotunde[2]
[1]Department of Natural Sciences, School of Agricultural and Natural Sciences, University of Maryland, Eastern Shore, Princess Anne, MD 21853
[2] Department of Pharmaceutical Sciences, School of Pharmacy and Health Professions, University of Maryland, Eastern Shore, Princess Anne, MD 21853

Epilepsy is one of the most common chronic neurological conditions. A typical symptom of this disorder is uncontrolled seizures caused by temporary abnormal neuronal activity. This condition affects 70 million people globally. While there are antiseizure medications that exist, approximately 20-40% of patients do not have control of their seizures. Research efforts in our lab engage in early drug design and discovery of novel antiseizure analogs as potential agents for the treatment of generalized and refractory epilepsy. T-type calcium channels contribute to neuronal excitability during epileptic seizures, making them a viable drug target. In this study, the novel compound Drug-A, known for its T-type calcium channel inhibitory properties, was tested in the pentylenetetrazol zebrafish model. To observe the effects of Drug-A, adult zebrafish were anesthetized in an ice bath and received an injection of 50 mg/kg of Drug-A. After a fifteen-minute recovery period, the zebrafish were injected with 170 mg/kg of pentylenetetrazol to induce seizure-like symptoms. Behaviors were manually observed and tracked using EthoVision for fifteen minutes. Results measured the zebrafish's specific behavioral scores and swimming patterns, indicating Drug-A's impact. Initial data revealed that Drug-A promoted calm swimming patterns and pausing in the zebrafish. Further studies are needed to understand how Drug-A works to prevent seizure activity and ensure its effectiveness in drug-resistant epilepsy.

JUDGES' COMMITTEE

Dr. Jackson-Ayotunde (Chair) and Ms. Uchenna Nwonye (Co-Chair)
Ms. Feyisetan Beke and Ms. Taiwo Oluyemo

	NAME	SESSION	TIME	LOCATION	TYPE
		ORAL SESSIONS			
1	Dr. Ibibia Dabipi	OF1-OF4	9:00 AM - 10:00 AM	Theater	Faculty
2	Dr. Salina Parveen	OF1-OF4	9:00 AM - 10:00 AM	Theater	Faculty
3	Dr. Mark Williams	OF1-OF4	9:00 AM - 10:00 AM	Theater	Faculty
4	Dr. Justine Whitaker	OD1-OD4	9:00 AM - 10:45 AM	2149	Doctoral
5	Dr. Caleb Nindo	OD1-OD4	9:00 AM - 10:45 AM	2149	Doctoral
6	Dr. Nazia Arbab	OD1-OD4	9:00 AM - 10:45 AM	2149	Doctoral
7	Dr. Wayne Omagamre	0D5-OD7	9:00 AM - 10:45 AM	2149	Doctoral
8	Dr. Omotayo Abiodun	0D5-OD7	9:00 AM - 10:45 AM	2149	Doctoral
9	Dr. Subhasis Mandel	0D5-OD7	9:00 AM - 10:45 AM	2149	Doctoral
10	Dr. Micheal Sewornoo	OD8-OD12	9:00 AM - 11:00 AM	MPR	Doctoral
11	Dr. Shalini Saini	OD8-OD12	9:00 AM - 11:00 AM	MPR	Doctoral
12	Dr. Papaiah Sardaru	OD8-OD12	9:00 AM - 11:00 AM	MPR	Doctoral
13	Dr. Tracy Bell	OD13-OD15	9:00 AM - 11:00 AM	MPR	Doctoral
14	Dr. Naveen Dixit	OD13-OD15	9:00 AM - 11:00 AM	MPR	Doctoral
15	Dr. Kamil Alzayady	OD13-OD15	9:00 AM - 11:00 AM	MPR	Doctoral
16	Dr. Aaron Persad	OM1-OM5	9:00 AM - 10:45 AM	2146	Master's
17	Dr. David Die	OM1-OM5	9:00 AM - 10:45 AM	2146	Master's
18	Ms. Mercy Amofa	OM1-OM5	9:00 AM - 10:45 AM	2146	Master's
19	Dr. Zeenat Afroze	OM6-OM7 OM8-OM9	9:00 AM - 10:45 AM	2146/ 2147	Master's
20	Dr. Purushothaman Natarajan	OM6-OM7 OM8-OM9	9:00 AM - 10:45 AM	2146/ 2147	Master's
21	Dr. Iram Elamin	OM6-OM7 OM8-OM9	9:00 AM - 10:45 AM	2146/ 2147	Master's
22	Dr. Xavier Henry	OM10-OM14	9:00 AM - 10:45 AM	2147	Master's
23	Dr. Matthew Balish	OM10-OM14	9:00 AM - 10:45 AM	2147	Master's
24	Dr. Emmanuella Twumasi	OM10-OM14	9:00 AM - 10:45 AM	2147	Master's
25	Mr. Chibunkem Asuzu	OU1-OU4	9:00 AM - 10:00 AM	2144	Undergraduate
26	Ms. Daijah Johnson	OU1-OU4	9:00 AM - 10:00 AM	2144	Undergraduate
27	Ms. Charlett Cheeks	OU1-OU4	9:00 AM - 10:00 AM	2144	Undergraduate

JUDGES' SCHEDULE - POSTER SESSIONS

JUDGES' COMMITTEE

Dr. Jackson-Ayotunde (Chair) and Ms. Uchenna Nwonye (Co-Chair)
Ms. Feyisetan Beke and Ms. Taiwo Oluyemo

	NAME	SESSION	TIME	LOCATION	ALTERNATES
		POSTER SESSIONS			
1	Dr. Jia Liu	PD1-PD4	1:30 PM - 3:00 PM	Ballroom	Dr. Ayotunde
2	Dr. Malkia Johnson	PD1-PD4	1:30 PM - 3:00 PM	Ballroom	Ms. Amelia Potter
3	Dr. Anitra Brockman	PD1-PD4	1:30 PM - 3:00 PM	Ballroom	Dr. Moghaddam
4	Dr. Jiabing Fan	PD5-PD9	1:30 PM - 3:00 PM	Ballroom	Ms. Lucy Njoroge
5	Dr. Lisa Zheng	PD5-PD9	1:30 PM - 3:00 PM	Ballroom	Ms. Priscilla Kini
6	Dr. George Ojie-Ahimiojie	PD5-PD9	1:30 PM - 3:00 PM	Ballroom	Dr. W. Elangwe
7	Dr. Rob Richardson	PD10-PD14	1:30 PM - 3:00 PM	Ballroom	Dr. L. Harris
8	Dr. Khaled Hasan	PD10-PD14	1:30 PM - 3:00 PM	Ballroom	Ms. U. Nwonye
9	Dr. Tao Gong	PD10-PD14	1:30 PM - 3:00 PM	Ballroom	Dr. P. Chigbu
10	Dr. Anuradha Don	PM1-PM4	1:30 PM - 3:00 PM	Ballroom	
11	Dr. Bryan Gere	PM1-PM4	1:30 PM - 3:00 PM	Ballroom	
12	Dr. Darryl Isom	PM1-PM4	1:30 PM - 3:00 PM	Ballroom	
13	Dr. Ali Ishaque	PM5-PM8	1:30 PM - 3:00 PM	Ballroom	
14	Dr. Ligia DaSilva	PM5-PM8	1:30 PM - 3:00 PM	Ballroom	
15	Dr. Gordon Custer	PM5-PM8	1:30 PM - 3:00 PM	Ballroom	
16	Dr. Katherine Barrett-Gaines	PM9-PM12	1:30 PM - 3:00 PM	Ballroom	
17	Dr. Vernandi Greene	PM9-PM12	1:30 PM - 3:00 PM	Ballroom	
18	Dr. Mark Williams	PM9-PM12	1:30 PM - 3:00 PM	Ballroom	
19	Mr. Chey Cooper	PM13-PM15	1:30 PM - 3:00 PM	Ballroom	
20	Dr. Yuhao Qiang	PM13-PM15	1:30 PM - 3:00 PM	Ballroom	
21	Ms. Esther Dabipi	PM13-PM15	1:30 PM - 3:00 PM	Ballroom	
22	Ms. Andrea Taylor	PM16-PM17 ONLINE	1:30 PM - 3:00 PM	Ballroom	
23	Ms. Elissa Gordon	PM16-PM17 ONLINE	1:30 PM - 3:00 PM	Ballroom	
24	Ms. Trishala Mohan	PM16-PM17 ONLINE	1:30 PM - 3:00 PM	Ballroom	
25	Dr. Joseph Arumala	PU1-PU5	1:30 PM - 3:00 PM	Ballroom	
26	Ms. Freweyni Abrha	PU1-PU5	1:30 PM - 3:00 PM	Ballroom	
27	Ms. Stella Ayika	PU1-PU5	1:30 PM - 3:00 PM	Ballroom	
28	Mr. Cedrick Shili	PU6-PU9	1:30 PM - 3:00 PM	Ballroom	
29	Ms. Mary Twumasi	PU6-PU9	1:30 PM - 3:00 PM	Ballroom	
30	Ms. Sheila Curtis	PU6-PU9	1:30 PM - 3:00 PM	Ballroom	

MODERATORS' SCHEDULE - POSTER & ORAL SESSIONS

COMMITTEE
Dr. Jackson-Ayotunde (Chair) and Ms. Uchenna Nwonye (Co-Chair)
Ms. Feyisetan Beke and Ms. Taiwo Oluyemo

	MODERATOR	SESSION	TIME	LOCATION	Presentation
			ALL SESSIONS		
1	Dr. George Ojie-Ahamiojie	OF1 - OF4	9:00 AM - 10:00 AM	Theater	Oral Faculty
2	Ms. Katrina Kelly	OD1 - OD4	9:00 AM - 10:45 AM	2149	Oral Doctoral
3	Mr. Reuel Danquah	OD5 - OD7	9:00 AM - 10:45 AM	2149	Oral Doctoral
4	Dr. Kelsie Endicott	OD8-OD12	9:00 AM - 11:00 AM	MPR	Oral Doctoral
5	Ms. Sheila Curtis	0D13-0D15	9:00 AM - 11:00 AM	MPR	Oral Doctoral
6	Ms. Corrie Cotton	OM1-OM5	9:00 AM - 10:45 AM	2146	Oral Master's
7	Ms. Samantha Dancil	OM6-OM9	9:00 AM - 10:45 AM	2146/2147	Oral Master's
8	Mr. Samuel Kikile	0M10-0M14	9:00 AM - 10:45 AM	2147	Oral Master's
9	Ms. Charity Akpovino	OU1-OU4	9:00 AM - 10:45 AM	2144	Oral Undergraduate
11	Ms. Chioma Elemuo	PD1 - PD14	1:30 PM - 3:00 PM	Ballroom	Poster Doctoral
12	Ms. Taiwo Oluyemo	PM1 - PM15	1:30 PM - 3:00 PM	Ballroom	Poster Master's
13	Ms. Ruba Mohamed Kheir	PM16-PM17 ONLINE	1:30 PM - 3:00 PM	Ballroom	Poster Master's
14	Ms. Elizabeth Adedeji	PU1 - PU9	1:30 PM - 3:00 PM	Ballroom	Poster Undergraduate
	ALTERNATES				
	Ms. Trishal Mohan				
	Ms. Tonia Ogbuja				
	Mr. Richard Otwey				

UMES Shines!

The 2026 Association of 1890 Research Directors (ARD) Research Symposium

The University of Maryland Eastern Shore (UMES) made a strong showing at the 2026 Association of 1890 Research Directors (ARD) Research Symposium, held in New Orleans, Louisiana. The symposium, themed "Innovations in Food, Health & Agriculture: Technological Advancements, Ecological Resilience, & Economic Sustainability," advanced the ARD mission by providing a forum for interaction, knowledge sharing, network building, and showcasing the talents and achievements of the 1890 land-grant community.

Like the theme of this year's UMES Annual Research Symposium, central to the conversations at the 1890 ARD Research Symposium was the growing role of artificial intelligence (AI) and data-driven technologies in research and decision-making across the food and agricultural sectors.

UMES was represented by President Dr. Heidi M. Anderson, reflecting the university's strong commitment to research excellence and engagement within the 1890 network. The university also had a robust presence of 46 students attending as well as presenting research through oral and poster sessions and 44 faculty and staff members participating as presenters, moderators, and judges. Collectively, UMES participants contributed to a highly competitive conference featuring over 300 oral presentations and approximately 510 poster presentations across undergraduate and graduate categories.

UMES faculty also distinguished themselves at the symposium. **Dr. Lila Karki** of UMES Extension was honored with the prestigious McKinley Mayes Mentoring Award, which recognizes exceptional commitment to mentoring early-career faculty and students within the 1890 land-grant system.

UMES students excelled in competitive events. Congratulations to **Simala Wright**, who was a member of the winning Hackathon team at the 1890 ARD symposium. Other UMES scholars distinguished themselves through outstanding research achievements:

Oral Presentation Winners

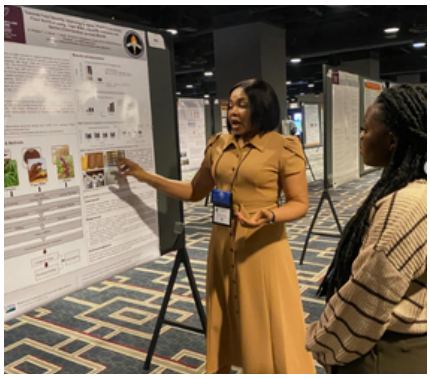
- Graduate Category: Bioenergy, Natural Resources, and Environment
  First Place: **Isabella Beasley**, M.S. Marine Estuarine Environmental Sciences
  Title**:** *Environmental Contaminants and Vector Behavior: PFAS Effects on Mosquito Ecology*
- Graduate Category: Family, Youth, Community and Economic Development
  First Place: **Lucy Njoroge**, M.S. Food and Agricultural Sciences
  Title: *Comparative Performance of Neural Networks and Traditional Models for Forecasting U.S. Cotton Price*

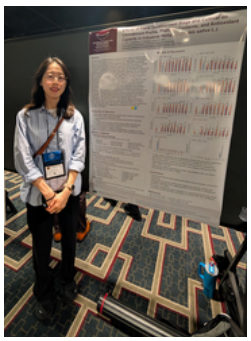
Poster Presentation Winner

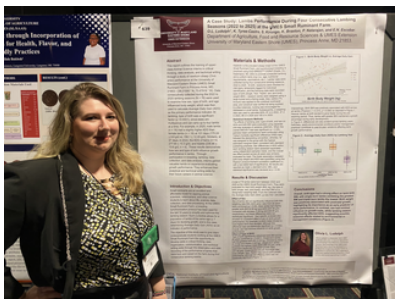
- Graduate Category: Food Safety, Nutrition, and Health
  Tied for Second Place: **Erasmus Aduteye**, Ph.D. Food and Agricultural Sciences
  Title**:** *Effects of Edible Coating on Post-Harvest Quality of Day-Neutral Strawberry*

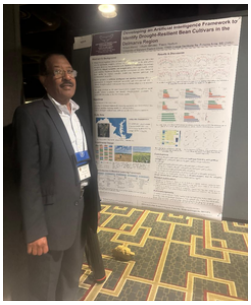
The university's strong participation and award-winning presentations underscore its role as a leader among 1890 institutions. Through impactful research and student engagement, UMES continues to contribute to advancing ecological resilience, economic sustainability, and technological innovation.

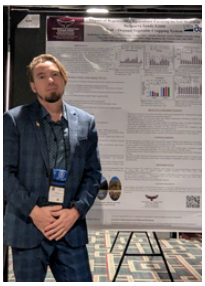
2026 ARD In Pictures...

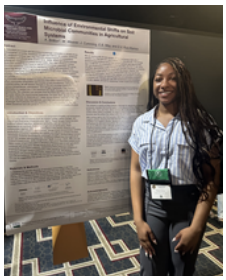






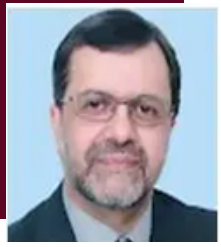






Graduate Programs & Directors

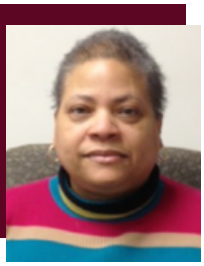
Dr. Asad Azemi
M.S. Applied Computer Science



Dr. Asad Azemi
Ph.D.. Applied Computing and Engineering

Dr. Tyler Love
M.Ed. Career and Technology Education

Dr. Victoria Volkis
M.S. Chemistry

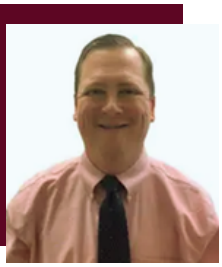


Dr. Cheryl Bowers
M.Ed. Counselor Education

Dr. Robert Brown
M.S. Criminology & Criminal Justice

Dr. Derrek Dunn
M.S. Applied Cybersecurity Engineering

Dr. Isaac Marcelin
M.S. Data Science and Analytics Engineering



Dr. Ernest England
Ed.D. Education Leadership

Dr. Yuanwei Jin
M.S. Electrical and Mechatronics Engineering

Dr. Stephan Tubene
M.S. Food and Agricultural Sciences

Dr. Caleb Nindo
Ph.D. Food and Agricultural Sciences

Dr. Bridgett Clinton-Scott
M.S. Human Ecology

Dr. Grattan C. Baldwin
Master of Arts in Teaching (MAT)

Dr. Stephen Tomasetti
M.S./Ph.D. Marine Estuarine Environmental Science (MEES)

Dr. Tao Gong
Ph.D. Organizational Leadership

Dr. Patrice Jackson-Ayotunde
M.S./Ph.D. Pharmaceutical Sciences

Ms. Nicole Wooten, PA-C, MHS
M.M.S. Physician Assistant Studies

Dr. Michael Rabel
Doctor of Physical Therapy (DPT)

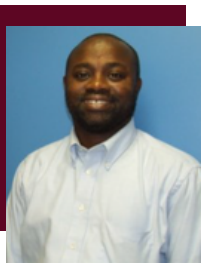
Dr. Paulinus Chigbu
P.S.M. Quantitative Fisheries & Resource Economics

Dr. Héctor Velazquez-Gonzalez
M.S. Rehabilitation Counselling

Dr. Kim Poole-Sykes
M.Ed. Special Education

Dr. Kim Poole-Sykes
Special Education (Post-Baccalaureate Certificate)

Dr. Miriam Purnell
Rural Health Disparities (Post-Baccalaureate Certificate)



Dr. Ali Ishaque
M.S. /Ph.D. Toxicology

See You Next Year!

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