BOOK OF ABSTRACTS

Sustainable Horizons:
Exploring Pathways for Knowledge Transfer through Multidimensional Research

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Book of Abstracts 2024

BioSketch

Heidi M. Anderson, President
University of Maryland Eastern Shore

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.

Heidi Anderson
UMES President

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, Provost and 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.

Rondall Allen, PharmD
Provost & Vice President for Academic Affairs

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

Dear Esteemed Scholars, Guests, and Researchers,

On behalf of the School of Graduate Studies, it is with great pleasure and excitement that I extend a warm welcome to each one of you to the 8th Annual Graduate Education Week and the 13th Annual UMES Regional Research Symposium!

Our theme for this year's Research Symposium is, "Sustainable Horizons: Exploring Pathways for Knowledge Transfer through Multidimensional Research".

In today's rapidly evolving world, the pursuit of knowledge is not only about discovery but also about the effective transfer of that knowledge across various disciplines.

This year's symposium will offer you an opportunity to learn about the important work our researchers are doing each day to seek innovative approaches to bridge gaps, connect ideas, and foster collaboration.

LaKeisha Harris, PhD
Dean,
School of Graduate Studies

We extend our heartfelt gratitude to all the participants, speakers, sponsors, and organizers whose dedication and commitment have made this event possible. Your presence and contributions are essential in making this symposium a success.

Enjoy the research symposium, take a tour of our spacious campus, and feel free to explore the town of Princess Anne.

We look forward to a great day of activities!
Warm regards,

LaKeisha L. Harris, Ph.D.

Keynote Speaker

Dr. Aaron H. Persad is Assistant Professor of Aerospace in the Engineering and Aviation Science Department at the University of Maryland Eastern Shore. Using his training as a biomedical engineer and thermodynamicist, his research activities contribute towards advancements in space sciences and technology.

Dr. Persad was a lead PI on Virgin Galactic's first hybrid research flight in November 2023.

Between 2007 and 2016, Dr. Persad was a science team member in the European Space Agency's Microgravity Application Program for research payloads related to evaporation, condensation and boiling. He helped to design and develop over 40 payloads that have flown aboard parabolic aircraft, stratospheric balloons, suborbital vehicles and the International Space Station, including UMES' first human-tended suborbital spaceflight payload.

Dr. Persad is also developing new space foods that improve human performance and cognitive health.

Aaron Persad, PhD
*Assistant Professor
of Aerospace*

His other research activities investigate the size-separation of molecules using novel filters made of graphene with Angstrom-sized features for applications in healthcare, energy, and water purification.

Dr. Persad has published several papers related to statistical thermodynamics, nanofluidics, spacesuits and STEM education. Dr. Persad has co-founded 6 companies and holds numerous patents related to atomically thin membrane separations.

He is the faculty supervisor for the UMES Engineering Club.

His doctorate degree was obtained from University of Toronto, and prior to joining UMES, he was a full time Research Scientist at MIT.

In 2017, he ranked in the Top 60 candidates in the Canadian Space Agency's Astronaut Recruitment Campaign.

UMES President & Cabinet

Dr. Heidi Anderson
President

Dr. Robert Mock
Chief of Staff

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Provost and Vice President for
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Call for Abstracts

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

Call for Abstracts
University of Maryland Eastern Shore
Eighth Graduate Education Week
Thirteenth Annual Regional Research Symposium
Student Services Center
April 18th, 2024
9:00 a.m.- 4:00 p.m.

The School of Graduate Studies at the University of Maryland Eastern Shore is pleased to announce its eighth Graduate Education Week and 13th Annual Regional Research Symposium to be held on Thursday, April 18th, 2024. The theme of this year's symposium is:

Sustainable Horizons: Exploring Pathways for Knowledge Transfer through Multidimensional Research

The theme of this year's research symposium asks you to consider what it means to be sustainable. Sustainability is indexical by definition, but is most simply defined as, *the quality of being able to continue over a period of time*. Importantly, the pursuit of sustainability differs from that of maintenance. Oftentimes, we find that instead of living our lives in such a way as to be considered sustainable, our goal is, in fact, more short-sighted and directed at maintaining our status quo rather than aiming for the long-term goal of sustainability. To be sustainable implies our willingness to seek introspection and the courage to make necessary changes to improve our lives.

Sustainability requires us to explore paths less-traveled, or possibly, to create them. Sustainability also can also require an expansion of our work, networks, practices, attitudes, and processes, and is therefore, collaborative and multidimensional in nature. In contrast, perhaps sustainability involves a pruning of some or all of these things—a chance for us to let go of the excess or baggage that is holding us back from reaching our potential. Nevertheless, the effort to achieve sustainability requires multidimensionality, both in our approaches and in our work. It was in this spirit that we developed this year's primary thematic question: *In what ways is your research sustainable?*

In an effort to foster sustainable horizons for research, we have chosen to highlight themes of sustainability, knowledge transfer, and multidimensionality. We are seeking to solicit submissions from researchers across disciplines and want to emphasize that all are welcome to share their work at the research symposium.

We look forward to your participation this year. If you need assistance with registration or abstract submission, please contact Dr. Kelsie Endicott at kjendicott@umes.edu and Dr. Wele Elangwe, at welangwe@umes.edu.

Respectfully,

LaKeisha L. Harris

LaKeisha L. Harris, Ph.D.

Engineering and Aviation Science Complex, Suite 3046   Princess Anne, MD 21853   Tel: (410) 651-6507   Fax: (410) 651-7571

Graduate Education Week Committee

Dr. LaKeisha Harris
Convener

Ms. Angela Young
Planner-in-Chief

Dr. Wele Elangwe
Program Chair &
Book of Abstracts

Ms. Amelia Potter
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- Bayero University Kano, Kano State, Nigeria
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  Department of Electrical & Computer Engineering and Bioengineering Initiative
- Shenandoah University, Winchester, VA
  Bernard J. Dunn School of Pharmacy
- University of Arkansas for Medical Sciences, Little Rock, AR 72205. Environmental Health Sciences,
- University of Georgia, Athens, GA 30602
  Department of Poultry Science,
- University of Maryland, College Park, MD 20742.
  Department of Animal and Avian Sciences, and Center for Food Safety and Security Systems
  Joint Institute for Food Safety and Applied Nutrition, & Center for Food Safety and Security Systems
  Space Systems Lab.

FEDERAL AGENCIES
- USDA-ARS-Environmental Microbial and Food Safety Laboratory, Beltsville, MD 20705.
- U.S. Food and Drug Administration, College Park, MD, 20740.

UMES Participating Departments

- University of Maryland Eastern Shore, Princess, Anne, MD 21853
    - Department of Agriculture, Food and Resource Sciences
    - Department of Education
    - Department of Engineering and Aviation Sciences
    - Department of English and Modern Languages
    - Department of Kinesiology
    - Department of Natural Sciences
    - Department of Pharmaceutical Sciences
    - Department of Pharmacy Practice and Administration
    - Department of Physical Therapy
    - Department of Physician Assistant
    - Department of Rehabilitation Services
    - Department of Social Sciences
        - Education Leadership Program
        - Organizational Leadership Program

- University of Maryland, Queenstown, MD 21658
    - Wye Research and Education Center
- University of Maryland Greenebaum Comprehensive Cancer Center, Baltimore, MD 21201
    - Hormone Related Cancers Program

Graduate Research Week Schedule

Time and Place
**Thursday
April 18, 2024
Student Services Complex
(SSC)**

Pre-Symposium Task

Download WHOVA App
https://whova.com/xems/?next=/xems/view/basics/resea_202304/

Thursday, April 18
13th Annual Research Symposium Day
https://whova.com/portal/resea_202304/

8:00am - 1:00pm: Registration - SSC Lobby
8:45am - 9:00am: Welcome - Multi-purpose room
9:00am - 10:00am: 3MT Competition - Multi-purpose room
9:00am - 12:00pm: Oral Presentations - (SSC Room 2144, 2147, 2149
                                        Theatre and Multi-purpose room)
12:00pm - 1:30pm: Lunch (SSC Ballroom)
1:30pm - 3:00pm: Poster Presentations (SSC Ballroom)
3:00pm - 4:00pm: Concurrent Sessions
                     - Networking Hour
                     - Institutional Animal Care & Use Committee (IACUC)
                       (SSC 2147)
4:00pm - 4:30pm: Awards Ceremony (Multi-purpose Room)

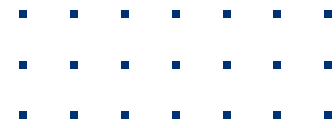### Friday, April 19
Graduate School Open House

11:00am - 3:00pm: Graduate School Open House
                      APPLICATION FEE WAIVER!!!
                      EASC Third Floor

Symposium Day Schedule

Time	Event
8:00am - 1:30pm	**Registration** SSC Lobby (Hallway between SSC Theatre and Ballroom)
8:00am - 1:30pm	**Judges and Moderators Check-in** (SSC Central Entrance)
8:00am - 8:45am	**Continental Breakfast** (SSC Ballroom)
8:45 am - 9:00am	**Greetings (SSC Multi-purpose Room)** *Dr. LaKeisha Harris*, Dean, School of Graduate Studies *Dr. Robert Mock*, Chief of Staff, Office of the President

9:00am - 10:00am	**Three Minute Thesis (3MT®) Competition**
	
	(SSC Multi-purpose Room)
	
	• Welcome and Introduction, *Dr. Wele Elangwe*
	
	• Competition rules and Judging Criteria
	
	• Competition
	  ○ Master's Category
	  ○ Doctoral Category
	
	• People's Choice
	
	• Question/Answer Session

9:00 am - 12:00pm	**Oral Presentations** (SSC Room 2144, 2146, 2147, 2149)
10:00 am - 2:00pm	**Institutional Review Board (IRB)** Table at SSC Lobby - Underneath the stairs *Dr. Jennifer Bobenko, UMES IRB Chair*
12:00pm - 1:30pm	**LUNCH** **Keynote Speaker: Dr. Aaron H. Persad, UMES** (SSC Ballroom)
1:30pm - 3:00pm	**Poster Presentations** SSC Ballroom
3:00 pm - 4:00pm	**Concurrent Sessions** • Networking Hour • Institutional Animal Care & Use Committee (IACUC) - SSC 2147 *Animal use Protocol Training - Ms. Amelia Potter*
4:00 pm - 4:30 pm	**Awards Ceremony** (SSC Multi-purpose Room)
THE END	Thank you and See you Next Year 2025!

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

Master's Category
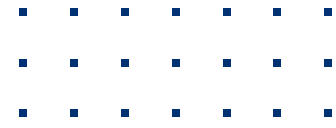   1st Place: $400
   2nd Place: $200

Doctoral Category
   1st Place: $500
    2nd Place: $250

People' Choice Award: $150

3MT Three Minute Thesis Competition

Judges & TimeKeeper

Judges

Dr. Kadeem Turnbull
Director of Alumni Relations and Special Events

Dr. Etahe Johnson
Cybersecurity Engineering Program

Ms. Tysha Palmer
Office of Institutional Research

Timekeeper

Mr. Preston Gross
School of Graduate Studies

Master's Participants

Nowrin Mow
Marine Estuarine Environmental Science (MEES)

Sunday Bala
Master of Arts in Teaching (MAT)

Uchenna Nwonye
Rehabilitation Counseling

Oghenekefe Efe-Afe
Applied Computer Science

Doctoral Participants

Rhashanda Haywood
Pharmaceutical Sciences

Salam Woldekidan
Organizational Leadership

Mary Twumasi
Pharmaceutical Sciences

Brian Goodwyn
Food and Agricultural Sciences (FASC)

Alyssa Lucero
Pharmaceutical Sciences

Chibunkem Asuzu
Applied Computing and Engineering

Competition Schedule

9:00am	**Introduction of Judges, Competition Rules and Judging Criteria.** *Dr. Wele Elangwe*, Director of Graduate Student Services
9:05am - 9:30am	## Doctoral Category
9:05am - 9:09am	**Rhashanda Haywood,** Pharmaceutical Sciences *The Discovery of Novel Organic Molecules as Anti-Seizure Agents*
9:09 am - 9:13am	**Salam Woldekidan,** Organizational Leadership *Second chance employers use of situational leadership approach and emotional intelligence*
9:13am - 9:17am	**Mary Twumasi,** Pharmaceutical Sciences *The Destiny of Life: The KARMA and magic of ENZYMES*
9:17am - 9:21am	**Brian Goodwyn,** Food and Agricultural Sciences *Mixed Crop-Livestock Farming Influences Foodborne Pathogen Incidence on Local Fresh Produce*
9:21am - 9:25am	**Alyssa Lucero,** Pharmaceutical Sciences *ABBERANT GENES: How they drive drug resistance in blood cancer*
9:25am - 9:29am	**Chibunkem Asuzu** – Applied Computing and Engineeringe *Bypassing Plagiarism Detection*
	## Master's Category
9:29am - 9:33am	**Nowrin Mow,** Marine Estuarine Environmental Sciences *Understanding Wave-current-ice interaction to tackle shoreline erosion in Lake Michigan*
9:33am - 9:37am	**Sunday Bala,** Master of Arts in Teaching *Anticonvulsant Effect of Flavonoid-Rich Fraction of FPSB on Pentylenetetrazole Induced Seizure*
9:37am - 9:41am	**Uchenna Nwonye**, Rehabilitation Counselling *Endometriosis: The Silent Disability*
9:41am - 9:45am	**Oghenekefe Efe-Afe**, Applied Computer Science *Navigation system for a Gopigo Robot in the virtual and physical realm*
9:45am - 9:55m	Questions/Voting of People's Choice Award
9:55 am - 9:57am	Word from Judge's Representative
9:57am - 10:00am	Egress to Oral Presentation Sessions
4:00pm - 4:30pm	Announcement of Winners

List of Presenters - ORAL PRESENTATIONS

10:00am OF1 — Ayurvedic Indian Medicine and Its Flagship Plant Holy Basil, Dr. Preeti Rani Sharma1, Ezra Cable1, Bokary Sylla1, Henriette Den-Ouden1, Dr. Andrew G. Ristvey2, and Dr. Victoria V. Volkis1* (1 - Department of Natural Science, University of Maryland Eastern Shore, Princess, Anne, MD 21853. 2 - University of Maryland Extension, Wye Research & Education Center, Queenstown, MD 21658)

10:15am OF2 — Bridging Health Inequities for Obesity: The SCALE-DOWN Initiative. Dr. Yen Dang1*, and Dr. T. Sean Vasaitis2 (1Department of Kinesiology, University of Maryland Eastern Shore, Princess Anne, MD 21853. 2Department of Pharmaceutical Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853)

10:30am OF31 — Exploring Self-management of Secondary Medical Conditions among Blacks with Spinal Cord Injury. Dr. Veronica Umeasiegbu and Saffiatu Sankoh. (Department of Rehabilitation, University of Maryland Eastern Shore, Princess Anne, MD 21853)

10:45am OF4 — Grapevine Precision Breeding and Gene Editing for Improving Disease Resistance and Quality Traits. Dr. Sadney.A. Dhekney*, P. Sardaru, C.L. Jackson and C. Wood. (Department of Agriculture, Food and Resource Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853)

11:00am OF5 — Impact of Lemongrass Intercropping on Tomato Yield Response and Insect Abundance Under Organic Culture. Dr. Tilgist Tolosa*, B. Smith, L. Marsh andDr. Simone Zebelo. (Department of Agriculture Food and Resource Sciences, University of Maryland Eastern Shore, MD 21853)

11:15am OF6 — The Impact of Insect Herbivory on the Level of Cannabinoids in CBD Hemp Varieties. B Brando Jackson1, Lenneisha Gilbert1, Tigist Tolosa1, ShellyAnn Henry1, Dr. Victoria V Volkis2, and Dr. Simon Zebelo1,2 (1Department of Agriculture Food and Resource Sciences, University of Maryland Eastern Shore, MD 21804. 2Department of Natural Sciences, University of Maryland Eastern Shore, MD 21804)

11:30am OF7 — Understanding Success and Challenges in a Physician Assistant Program. Dr. Khaled Hasan*, MD, MS, PhD; Prof. Nicole Wooten*, PA-C, MHS; Dr. Tamarah Thompson, DSc, MSHS, MS, PA-C. (Department of Physician Assistant, University of Maryland Eastern Shore, Princess Anne, MD 21853)

11:45am OF8 — Using CRISPR/Cas9-mediated Gene Editing to Enhance Grapevine Resistance to Powdery Mildew. Dr. Papaiah Sardaru, C.L. Jackson, C. Wood and Dr. Sadanand.A. Dhekney. (Department of Agriculture, Food and Resource Sciences, University of Maryland Eastern Shore, Princess Anne MD 21853.)

10:00am OG1 — A Participatory Extension Model to Educate and Expand Climate-smart Agriculture and Forestry Practices: A Case of Small and Minority Farmers. Dipendra Gurung*, Dr. Lila B. Karki, Dr. Prem Bhandari, Sahil Ojha, and Raksha Khadka. (Department of Agriculture, Food, and Resource Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853)

10:15am OG2 — A Qualitative Comparative Analysis (Qca) Of A Traditional Doctoral Education Leadership (Edd) To A Developing PhD Program In The Eastern Region Of The Delmarva Peninsula. Atoya Saturria-Feliz. (Department of Education, University of Maryland Eastern Shore, Princess Anne, MD 21853.)

10:30am OG3 — A Quantitative Study: Analyzing COVID-19's Impact on Enrollment and Retention Based on Race, Gender, Socio-Economic Status, and Course Modality. Kyra Milbourne. (Department of Social Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853)

10:45am OG4 — Adopting Chenopodium Quinoa in Maryland as a Mitigation to Sustainable Agriculture. John Ithiru1*, Dr. Sadanand Dhekney1 & Dr. Rick Jellen2. (1 Department of Agriculture, Food, & Resource Sciences, University of Maryland Eastern Shore, MD 21853. 2Plant and Wildlife Sciences, Brigham Young University, Provo, Utah 84604)

11:00 am OG5 — Alkali-Hydrolyzed Corn Dried, Distillers Grains with Solubles as a Promising Alternative to Antimicrobial Growth Promoters: Its Effects on Growth Performance and Breast Meat Quality of Broilers under Heat Stress.E. Noh1*, Dr. A. K. Singh2, Dr. Woo Kyun Kim2, and Dr. B. R. Min1. (1*Department of Agriculture, Food and Resource Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853. 2Department of Poultry Science, University of Georgia, Athens, GA 30602.)

List of Presenters - ORAL PRESENTATIONS

11:15am OG6 An Exploration of Attributes of Sustainable Effective Mentoring Relationships: Perspectives of Faculty and Undergraduate Student at Historically Colleges and Universities (HBCU) on The Northeast Region: A Qualitative Interview Study, Fawzia Abbas1* and LaToya Jenkins2*. (Department of Social Sciences, University of Maryland, Eastern Shore, Princess Anne, MD 21853.)

11:30am OG7 An Exploration of strategic leadership and leadership likeability and the influence and effect of congregant's engagement in a small African American Methodist Church in the Central Maryland Region: An Exploratory Case Study. Eric Hebron*1 and Dr. Gong*2 (Department of Social Sciences, University of Maryland, Eastern Shore, Princess Anne, MD 21853.)

11:45am OG8 Biochar Mediated Growth and Development in Day Neutral Strawberries. E. K. Aduteye*, Dr.N. K Dixit, and Dr .C. Nindo, (Department of Agriculture, Food and Resource Science, University of Maryland Eastern Shore, Princess Anne, MD, 21853)

Graduate Presenters   Room: SSC 2147   Time: 10:30am - 12:00pm

10:00am OG9 Bisphenol A Induces Dysfunction of Leptin Signaling Pathways in Human Dopaminergic Neurons. Ijeoma Ngoka1*, Sherene Black, Dr. Ali Ishaque, and Dr. Ahmed Elnabawi. (Department of Natural Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853)

10:15am OG10 Characterization of PGE2 EP4 Receptor in Ovarian Cancer. Mercy Amofa1*, Grace Penzenstadler1, Simran Jain2, Meghna Rao1, Favour Oladeji1 and Dr. Jocelyn Reader1. (1Department of Pharmaceutical Sciences, University of Maryland Eastern Shore School of Pharmacy, Princess Anne, MD 21853.2Stephen Decatur High School, Berlin, MD 21811.)

10:30am OG11 Delivery of siRNA through Exosome Mimetic Hybrid Nanoparticles for Bone Tissue Engineering. Meghna S Rao1*, Iram Elamin1 , Dr. S. Victor Hsia1, and Dr. Jiabing Fan1. (1* Department of Pharmaceutical Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853)

10:45am OG12 Designing Novel Small Organic Molecules as Potential Anti-seizure Agents. Haywood, Rhashanda1*; Miguel Martin, PhD1 and Patrice Jackson-Ayotunde, PhD1. (1Department of Pharmaceutical Sciences, University of Maryland Eastern Shore, Princess Anne, Maryland 21853.)

11:00am OG13 Discovery of a Novel Brachial Plexus Variant: Morphological Analysis and Pedagogical Considerations. Stefanie D. McBeth1*, James Collins1*, Lindsey E. Mosmiller1*, Brian Drummond1*, Marissa Swamy1*, Oluseun Ayoku1, Dr. Molly C. Selba1. (1Department of Physical Therapy, University of Maryland, Eastern Shore, Princess Anne, MD 21853.)

11:15am OG14 Drug Design and Discovery of N-aryl Enaminones for the Treatment of Generalized Drug-resistant Epilepsy. Mercedez Stone-Johnson, Amar Yousif1*, Rhashanda Haywood, & Dr. Patrice Jackson-Ayotunde. Department of Pharmaceutical Sciences, School of Pharmacy and Health Professions, University of Maryland Eastern Shore

11:15am OG15 Effects of Cover Crops on Phytochemical Contents and Antioxidant Capacities of Sweet Pepper. Samata Bhetwal*, Dr. Corrie Cotton, and Dr. Byungrok Min. (Department of Agriculture, Food and Resource Sciences, University of Maryland Eastern Shore, Princess Anne MD 21853.)

11:30am OG16 Effects of High-Pressure Processing (HPP) on Physicochemical Quality Properties of Fresh Blue Crab Meat. Samata Bhetwal1*, Dr. Byungrok Min1, and Dr. Catherine Liu2 . (1Department of Agriculture, Food and Resource Sciences, University of Maryland Eastern Shore, Princess Anne MD 21853. 2University of Maryland Extension, University of Maryland Eastern Shore, Princess Anne MD 21853.)

Graduate Presenters   Room: SSC 2144   Time: 10:30am - 12:00pm

10:00am OG17 (*Online*).Effects of Thermal Processing and Drying on the Nutritional Quality and Consumer Preference of Abelmoschus esculentus L. Value-added Products. Megan Reid*, Dr. Caleb Nindo, Corrie Cotton, and Dr. Byungrok Min. (Department of Agriculture, Food and Resource Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853.)

10:15am OG18 Efficacy of Bacteriophage Against Multi-Drug Resistant Salmonella Spp. in-vitro and in Pet Food. Sandesh Chapagain*1, Janak Dhakal1, Jeewantha Punchihewage Don1, and Salina Parveen1. (1Department of Agriculture, Food and Resource Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853)

List of Presenters - ORAL PRESENTATIONS

10:30 am OG19 Efficacy of Field Collected Pathogens Against Insect Pests. K.Okpah*, Dr. Tilgist Tolosa, and Dr. Simone Zebelo,(Department of Agriculture Food and Resource Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853.).)

10:45am OG20 Evaluation of Organic Insecticides and Trap Cropping on Yield of Field-Grown Amaranth viridis Linn. Zachary Williams*, Dr. Simon Zebelo, Dr. Corrie Cotton, Isaiah Nance, and Megan Reid. (Department of Agriculture, Food and Resource Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853)

11:00am OG21 Exploring the Phenomena of Disparity Regarding the Representation of African American Women in Leadership Positions at Predominantly White Institutions in North American Higher Education through the Perspective of Diversity, Equity, and Inclusion. Shekima M. Yarbray . (Doctor of Education in Educational Leadership, Delaware State University, Dover, DE)

11:15am OG22 Impact of Glyphosate on Apoptosis and Mitochondrial Function in Human Renal Proximal Tubule Epithelial Cells. Sherene Black1*, Ijeoma Ngoka, Dr Ali Ishaque and Dr. Ahmed Elnabawi. (Department of Natural Sciences, University of Maryland Eastern Shore, Princess Anne, MD21853)

11:30pm OG23 *In-Vitro* Characterization of **β**-Carboline Biosynthetic Gene Cluster, Ksl in **β**-Carboline Production. Mary Twumasi1*, Matt Kusche1, and Jaweria Sheikh1, Amna Baig1 Dr. Madan Kharel1. (1Department of Pharmaceutical Sciences, University of Maryland, Eastern Shore, Princess Anne, MD 21853.)

11:45am OG24 Need for Educating Socioeconomic Implications of Heirs Property at the Community Level. Raksha Khadka*, Dr. Lila B. Karki, Nicole Cook, and Dr. Prem Bhandari. (Department of Agriculture, Food, and Resource Sciences, University of Maryland Eastern Shore, Princess Anne, MD, 21853)

Graduate Presenters: SSC Multi-purpose Room   Time: 10:00am - 12:00pm

10:00am OG25 PI3Kδ-S Splice Isoform as an Oncogenic Driver for Tumor Aggressiveness and Drug Resistance in Lymphoma and Leukemia.Alyssa Lucero1*, Dr. Siyoung Ha1, and Dr. Bi-Dar Wang1, 2. (1 Department of Pharmaceutical Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853. 2 Hormone Related Cancers Program, University of Maryland Greenebaum Comprehensive Cancer Center, Baltimore, MD 21201)

10:15am OG26 Second Chance Employers Use of Situational Leadership Approach and Emotional Intelligence. Salam Woldekidan* (Department of Social Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853).

10:30am OG27 Targeting mTOR/AR Signaling as A Novel Therapeutic Strategy For Aggressive Prostate Cancer.Shweta Kharal*1, Mohammad Waseem1, Dr. Bi Dar Wang 1,2. (1Department of Pharmaceutical Sciences, University of Maryland Eastern Shore, Princess Anne, MD, 21853. 2University of Maryland Greenebaum Comprehensive Cancer Center, Baltimore, MD, 21201)

10:45am OG28 The Impact of Urban Agriculture on Food Security and Well-being: Evidence from Small and Minority Producers in Maryland. Sahil Ojha1, Dr. Lila B. Karki1, Dr. Prem Bhandari1, Dipendra Gurung1. (1*Department of Agriculture, Food, and Resource Sciences, University of MarylandEastern Shore, PrincessAnne, MD 21853)

11:00am OG29 The Osteoimmunomodulatory Effect of Cytokines Treating Mesenchymal Stem Cells on Bone Healing. Angela Hatton, Dr. S. Victor Hsia, Dr. Anjan Nan, Dr. Jiabing Fan. (Department of Pharmaceutical Science, University of Maryland Eastern Shore, Princess Anne, MD 21853.)

11:15am OG30 The Tensions of Mothering, Teaching, and Advocacy: An Autoethnographic Study. Candace L. Wilkerson. (Education Leadership Program, University of Maryland Eastern Shore, Princess Anne, MD 21853)

11:30am OG31 Trb3-Directed Therapy Promotes Bone Regeneration in Osteoporosis. Iram Elamin1*, Meghna S. Rao1, Dr. Ishraga S. Elsayed1, Nick Nowakowski1, Dr. Matthew Balish2, Dr. S. Victor Hsia1, and Dr. Jiabing Fan1. (1* Department of Pharmaceutical Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853. 2 Department of Pharmacy Practice and Administration, University of Maryland Eastern Shore, Princess Anne, MD 21853.)

List of Presenters - ORAL PRESENTATIONS

Undergraduate
Digital Media Presenters: SSC Ballroom Time: 9:30am - 10:00am

9:30am OU1 Comparison Between Florida and Maryland's Flooding Due to Climate Change Lahela Hall, Jaylin Johnson, Nigel Frazier, Chase Davis , Dr. R. Walter-Canton and Dr. Jennifer Keane Dawes (Department of English and Modern Languages, University of Maryland Eastern Shore, Princess Anne Maryland, 21853)

9:45am OU10 When it comes to Climate Change, Ignorance is not the Answer. Ihechukwu Usoh1*, Joshua Williams1*, Aajaylah Lemons1*, Aaliyah Logan1*, Kennis Welch1*, Dr. R.Walter-Canton and Dr. Jennifer Keane Dawes (1Department of English and Modern Languages, University of Maryland Eastern Shore, Princess Anne Maryland, 21853)

Undergraduate Presenters   Room: SSC 2149 Time: 9:00am - 10:00am

9:00am OU2 Global Warming. Caleb Clark*[1]Dr. R. Walter-Canton and Dr. Jennifer Keane Dawes *1 Department of English, University of Maryland Eastern Shore, Princess Anne, MD 21853

9:15am OU3 Lunar Robotics: A Platform for Active Learning and Research. Lance Ward1*, Dr. Abhijit Nagchaudhuri1, Jackson Cuppett1, Oghenekefe Efe-Afe1, Romeo Perlstein2, Danny Pham1, Rahul Vishnoi2, and Parker Wilson1, (1Department of Engineering, University of Maryland Eastern Shore, Princess Anne, MD 21813. 2Space Systems Lab, University of Maryland, College Park, MD 20742)

9:30am OU4 Microplastics Found in the Maryland Coastal Bays. Kayla Adams and Dr .Paulinus Chigbu (Department of Natural Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853.)

9:45am OU5 Radiative Cooling Properties on Bio-degradable, Abundant and Inexpensive Cellulose Materials. Clinton Wiggins III, Ralphael Ogodo, Isaac Omodia,Yeganeh Mansourian, Sudarshan Kundu, Kausik S Das* Department of Natural Sciences, University of Maryland Eastern Shore, Princess Anne, MD, 21853

Undergraduate Presenters   Room: SSC 2144 Time: 9:00am - 10:00am

9:00am OU6 Research Proposal on the Effects of Erosion in Ocean City, MD in 2024. Angelica Vilorio*1] Dr. Jennifer Keane Dawes. (*1 Department of English, University of Maryland Eastern Shore, Princess Anne, MD 21853)

9:15 am OU7 Socio Economic Ramifications of Climate Change. Lauier Witchell and Dr. Jennifer Keane Dawes (*1 Department of English, University of Maryland Eastern Shore, Princess Anne, MD 21853

9:30am OU8 The Effects of Climate Change on the Rise in Electrical Bills on Marginalized Communities. Cheickh Ndiaye and Dr. Jennifer Keane Dawes. *1Department of English, University of Maryland Eastern Shore, Princess Anne, MD 21853

9:45am OU9 Vibration Induced Adhesion of Thin Flexible Membranes Ralphael Agodo1, Clinton Wiggins III1, Isaac Omodia1, Kausiksankar Das1*, and L. Mahadevan2 (1 Department of Engineering, University of Maryland Eastern Shore, Princess Anne, MD 21853. 2Harvard University)

List of Presenters - POSTER PRESENTATIONS

PF 1 Genomic Diversity of Salmonella Serovars Isolated from Organic and Non-organic Retail Whole Chicken Carcasses on the Eastern Shore of Maryland, USA
Dr. Anuradha Punchihewage-Don*1, Dr. Salina Parveen1, Dr. Zhao Chen2, and Dr. Jianghong Meng2 1Department of Agriculture, Food, and Resource Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853. 2Joint Institute for Food Safety and Applied Nutrition, & Center for Food Safety and Security Systems, University of Maryland, College Park, MD, 20740

PF 2 Impact of Number of Full-time Faculty on NAPLEX First-Attempt Pass Rates
Omar F. Attarabeen, PhD Department of Pharmacy, University of Maryland Eastern Shore, Princess Anne, MD 21853

PG 1 Anticonvulsant Effect of Flavonoid-Rich Fraction of Ficus platyphylla Stem Bark on Pentylenetetrazole Induced Seizure in Mice. Madinat Hassan1, Sunday Z. Bala2, and Aisha M. Gadanya3. 1Biology Department, Faculty of Science, Airforce Institute of Technology, Kaduna State, 2Department of Education, University of Maryland Eastern Shore, Princess Anne, MD 21853. 3Biochemistry Department, Faculty of Basic Medical Science, Bayero University Kano, Kano State, Nigeria.

PG 2 Application of SARIMA model on forecasting the Global Price of Corn
Raksha Khadka*, and Dr. Yeong Nain Chi. Department of Agriculture, Food, and Resource Sciences, University of Maryland Eastern Shore, Princess Anne, MD, 21853

PG 3 Application of Time Series Analysis (SARIMA Model) for Forecasting the Global Price of Lamb. Sahil Ojha1* and Dr. Yeong Nain Chi1 1*Department of Agriculture, Food, and Resource Sciences, University of MarylandEastern Shore, PrincessAnne, MD 21853

PG 4 Assessing Patient Spirituality and Patient Perspectives on Pharmacists Inquiring about Spiritual Needs in Community Settings. Taylor Martin PharmD Candidate1, Dana Adams PharmD Candidate1, Miriam Purnell PharmD1, Mark S. Johnson PharmD, BCPS2
1 Department of Pharmaceutical Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853. 2 Bernard J. Dunn School of Pharmacy, Shenandoah University, Winchester, VA

PG 5 Biochemical Changes Underlying the Neuroendocrine Differentiation of Prostate Cancer Cells. Anique L. Tchio and Dr. Miguel Martin-Caraballo. Department of Pharmaceutical Sciences, University of Maryland Eastern Shore School of Pharmacy, Princess Anne, MD 21853

PG 6 Bridging Global Pharmacy Education: The UMES-Sunyani Technical University Articulation Agreement. *Kawanda Williams, PharmD1, Brittney Henry, PharmD Candidate1, Mumsy Wilberforce, PharmD Candidate1, Joelle Odigie, PharmD Candidate1, Faith Joseph, PharmD Candidate1, Mercedez Stone-Johnson, PharmD Candidate1, Hoai-An Truong, PharmD, MPH, FAPhA, FNAP1 1Department of Pharmaceutical Sciences, University of Maryland Eastern Shore, Princess Anne, MD, 21853

PG 7 Characterization of Aromatic Decarboxylases involved in Manzamine Producer Micromonospora sp. M42. Matthew Peter Kusche*, Dr. Madan Kharel, Mary Twumasi, Jaweria Sheikh, and Amna Baig. Department of Pharmaceutical Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853

PG 8 Comparative Analysis of Different Time Series Models for Forecasting GDP of the Developing and Developed Countries. Raksha Khadka*, Dipendra Gurung, Sahil Ojha, Karen Gitau, Tseganesh Tegegne Sete, Victoria Hanzer-Diaz, Ryan Howe, and Dr. Yeong Nain Chi
Department of Agriculture, Food, and Resource Sciences, University of Maryland Eastern Shore, Princess Anne, MD, 21853

PG 9 Comparing the Effectiveness of Amoxicillin and Azithromycin for Management of Pneumonia. Keturah Cook*, PA-S2; Bianca Perou*, PA-S2; Dr. Khaled M. Hasan, MD, MS, PhD. Department of Physician Assistant, University of Maryland Eastern Shore, Princess Anne, MD 21853

List of Presenters - POSTER PRESENTATIONS

PG 10 Developing a Microfluidic Mesh Platform for Spatiotemporal Delivery of Exosomes to Bone Defect. Priscilla Okyere1*, Victor Hsia1, Lanju Mei2, Tian-Ming Fu3, Jiabing Fan1 1*Department of Pharmaceutical Sciences, University of Maryland, Eastern Shore, Princess Anne, MD 21853. 2Department of Engineering and Aviation Sciences, University of Maryland, Eastern Shore, Princess Anne, MD 21853. 3Department of Electrical & Computer Engineering and Bioengineering Initiative, Princeton University, Princeton, NJ 08544

PG 11 Does the incorporation of Fluoxetine into Cognitive Behavioral Therapy affect health outcomes for depressed teens? Nana Kweh*, Samantha Bernard*, Dr. Khaled Hasan Department of Physician Assistant, University of Maryland Eastern Shore, Princess Anne, MD 21853

PG 12 Drug Design and Discovery of N-aryl Enaminones for the Treatment of Generalized Drug-resistant Epilepsy. Mercedez Stone-Johnson, Amar Yousif1*, Rhashanda Haywood, and Dr. Patrice Jackson-Ayotunde. Department of Pharmaceutical Sciences, School of Pharmacy and Health Professions, University of Maryland Eastern Shore.

PG 13 Ecological and Nutritional Analysis of Forage Fish in the Northwest Atlantic Shelf: Fatty Acid Compositions, Proximate Composition, Stable Isotopes, and Mercury Concentration: Assessing Patterns in the Fatty Acid Compositions, Proximate composition, Stable Isotopes and Mercury Concentration of Forage Fish Species in the Northwest Atlantic Shelf. Tebyan Ahmed1, Dr. Ali Ishaque1, Chelsea Richardson1, Dr .Paulinus Chigbu1, Dr. Ashok Deshpande2 and Dr. Mark J. Wuenschel3. 1 Department of Natural Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853. 2 NEFSC, J.J. Howard Lab, Sandy Hook, NJ; 3NEFSC, Woods Hole, MA.

PG 14 Effects of Consistent, Self-Selected Physical Activity on Physical Performance and Quality of Life for Employees in an Office Setting: A Pilot Study. Dr. Stephanie McAllister1*, Evan Cord1*, Valerie Hammett1*, Amanda Irwin1, Angela Skolnitsy1*, Paige Wilde1* 1Department of Physical Therapy, University of Maryland Eastern Shore, Princess Anne, MD 21853

PG 15 Evaluating the Oviposition Behavior of Corn Earworm on Hemp. Asim Ahmed*, T. Tolosa, B. Jackson, S. A. Henry; and S. Zebelo. Department of Agriculture Food and Resource Sciences, University of Maryland Eastern Shore, MD 21853

PG 16 Examining Employment and Stigma Among Incarcerated Black People with Disabilities Eyerusalem Fitta. Department of Rehabilitation Counseling, University of Maryland Eastern Shore, MD 21853

PG 17 Exploring Factors of STEM Success among African American Students with Disabilities at HBCU: Application of the Intersectionality and PVEST Framework. Dr. Lisa Zheng, Derionah Abner and Carmen Ramos. Department of Rehabilitation, University of Maryland Eastern Shore, Princess Anne, MD 21853

PG 18 Exploring the Impact of Marijuana on Mental Health and Cognitive Function. Momina Aslam*, PA-S; Yusef Rakin*, PA-S; Dr. Khaled M. Hasan MD, MS, PhD. Department of Physician Assistant, University of Maryland Eastern Shore, Princess Anne, MD 21853

PG 19 Forecasting Global Price of Soybean Using Autoregressive Integrated Moving Average (ARIMA) Model Dipendra Gurung*, and Dr. Yeong Nain Chi. Department of Agriculture, Food, and Resource Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853

PG 20 Functional Properties of Phosvitin Hydrolysates Produced Using Innovative High-temperature Mild-Pressure Pretreatment and Two-Enzyme System. E. Noh1*, Dr. S. H. Moon2, Dr. D. U. Ahn3, and Dr. B. R. Min1. 1*Department of Agriculture, Food and Resource Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853. 2Environmental Health Sciences, University of Arkansas for Medical Sciences, Little Rock, AR 72205. 3Department of Animal Science, Iowa State University, Ames, IA 50011.

PG 21 Identification of Current Pharmacy Emergency Preparedness and Response Regulations in Individual States. Pamela Koga PharmD Candidate1; LCDR Trisha Chandler, PharmD, MSEM; Allison L Hill, PharmD, RPh; CAPT Kimberly Langley, PharmD, MBA, BCPS; Jeffrey J Rochon, PharmD, FAPhA, FWSPA; Hoai-An Truong, PharmD, MPH, FAPhA, FNAP1. 1 Department of Pharmacy Practice and Administration, University of Maryland Eastern Shore, Princess Anne, MD 21853

List of Presenters - POSTER PRESENTATIONS

PG 22   Intervention with Physical Therapy and Exercise Improves Long-Term Outcomes in Children and Adolescents with Juvenile Idiopathic Arthritis. Janell Good*, PA-S2; Kimberly Lal*, PA-S2; Dr. Khaled Hasan. Department of Physician Assistant, University of Maryland Eastern Shore, Princess Anne, MD 21853

PG 23   New Bioactive Metabolites Producer Actinomycetes Retrieved from Appalachian Mountains. Jaweria Sheikh*, Amna Baig* ,Mary Twumasi*, Behnam Khatabi and Madan Kharel. 1*Department of Pharmaceutical Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853

PG 24   Novel Non-Invasive Interventions in the Management of Peripheral Artery Disease
Joshua Hefta*, Patrick Luo*, Carl Suarez*, Erotokritos Varlas*, and Dr. Thomas Pellinger Department of Physical Therapy, University of Maryland Eastern Shore, Princess Anne, MD 21853

PG 25   Optimizing Resin Extraction of Phenolic Antioxidants from Aronia mitschurinii: Enhancing Efficiency and Sustainability through Resin Reusability. Ezra Cable1*, Ryan Buzzetto More1, Dr. Andrew G. Ristvey2, and Dr. Victoria V. Volkis1. 1*Department of Natural Sciences, University of Maryland, Eastern Shore, Princess Anne, MD 21853. 2University of Maryland Extension, Wye Research & Education Center, Queenstown, MD 21658-0169

PG 26   PI3Kδ-S Splice Isoform as an Oncogenic Driver for Tumor Aggressiveness and Drug Resistance in Lymphoma and Leukemia. Alyssa Lucero1*, Dr. Siyoung Ha1, and Dr. Bi-Dar Wang1, 2 1 Department of Pharmaceutical Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853. 2 Hormone Related Cancers Program, University of Maryland Greenebaum Comprehensive Cancer Center, Baltimore, MD 21201

PG 27   Phytochemical Properties, Processing, and Applications of Juvenile Zingiber Officinale
Bokary Sylla, and Victoria V. Volkis. Department of Natural Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853

PG 28   Phytochemicals as Active Ingredients in Antifouling Formulations. Keith Bratley, William Harrod, Victoria V. Volkis, Ezra Cable, Bokary Sylla, and William Weaver. Department of Natural Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853.

PG 29   Phytochemicals Contents and Antioxidant Capacities in Different Cultivars of Industrial Hemp. Samata Bhetwal, Dr. Sadanand Dhekney, and Dr. Byungrok Min. Department of Agriculture, Food and Resource Sciences, University of Maryland Eastern Shore, Princess Anne MD 21853

PG 30   Pinus Taeda (Loblolly Pine) Cell Density Response to Saltwater Intrusion. Samantha Jalkowski and Dr Stephanie Stotts. Department of Agriculture, Food and Resource Sciences, University of Maryland Eastern Shore, Princess Anne MD 21853.

PG 31   Predicting Social Loafing Behavior with the Big Five Inventory – 10
Dr. Michael Patterson*, Jazmin Wilson*, and Riley Horner* Department of Education, University of Maryland, Eastern Shore, Princess Anne, MD 21853

PG 32   Puff, Puff...Puke?...Study the prevalence of Hyperemesis among Chronic Cannabinoid Users. Dr. Khaled M. Hasan, MD, MS, PhD, and Victoria Connelly* PA- S2. Department of Physician Assistant, University of Maryland Eastern Shore, Princess Anne, MD 21853

PG 33   Survival and Transfer of Foodborne Pathogens in Biologically-Amended Soils on Integrated Crop-Livestock Farms Located on the Maryland Eastern Shore. B. Goodwyn*, A. Punchihewage Don, M. Schwarz, J. Meredith, F. Hashem, S. Parveen, P. Millner, J. Bowers, and D. Biswas, Department of Agriculture, Food, and Resource Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853; USDA-ARS-Environmental Microbial and Food Safety Laboratory, Beltsville, MD 20705; U.S. Food and Drug Administration, College Park, MD, 20740; Department of Animal and Avian Sciences, and Center for Food Safety and Security Systems, University of Maryland, College Park, MD 20742.

PG 34   The Effect of Delayed Cord Cutting on Pediatric Development. Meagan Auth*, PA-S2; Elisa Rivera*, PA-S2: Khaled Hasan, MD, MS, PhD. Department of Physician Assistant, University of Maryland Eastern Shore, Princess Anne, MD 21853.

PG 35   The Effect of Early ADHD Intervention in Pediatric Populations. Donte Lampley*, PA-S, Phoebe Iloanya*, PA-S, Dr. Khaled Hasan, MD, MS, PhD. Department of Physician Assistant, University of Maryland Eastern Shore, Princess Anne, MD 21853.

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PG 36 The Effect of Finerenone on Renal and Cardiovascular System: Outcomes in Patients with Hypertension. Alvine Momo*, PA-S; Monyae Randall*, PA-S; Dr. Khaled M. Hasan, MD, MS, PhD. Physician Assistant Department, University of Maryland Eastern Shore, Princess Anne, MD 21853

PG 37 The Effect of Pelvic Positioning and Shoewear on Gluteus Medius Activation. Ibukun Lawal1*, Brendan Born1, Matthew Mannick1, Nicholas Rabat1, Jerome Thomas1 and Dr. Michael Rabel1. Department of Physical Therapy, University of Maryland, Eastern Shore, Princess Anne, MD 21853

PG 38 The Impact of Corn Earworm Damage on the Expression Level of Cannabinoid Synthesis Genes in Hemp Plant. F. Abrha*, T. Tolosa, and S. Zebelo, Department of Agriculture Food and Resource Sciences, University of Maryland Eastern Shore, MD 21853

PG 39 The Impact of Postpartum Depression on the Developmental Progress of Children Marshae` Cappaninee*, PA-S; Sara James*, PA-S; Dr. Khaled Hasan MD, MS, PhD Department of Physician Assistant, University of Maryland Eastern Shore, Princess Anne, MD 21853

PG 40 The Impact of Pre-Rehabilitation on the Recovery and Outcomes of Total Knee Replacement. Feven Eyob*, PA-S2; Eileen Martin*, PA-S2: Dr. Khaled M. Hasan, MD, MS, PhD. Department of Physician Assistant, University of Maryland Eastern Shore, Princess Anne, MD 21853

PG 41 The Impact of Social Media Use on Mental Health. Khaled M. Hasan, MD, MS, PhD, Taylor Creighton*, PA-S2, Faderera Oreagba*, PA-S2; Mario Musumeci, PA-S2; Tyler Tulak, PA-S2 Department of Physician Assistant, University of Maryland Eastern Shore, Princess Anne, MD 21853

PG 42 Time Series Analysis and ARIMA Modeling of the Unemployment Rate in the USA Karen Gitau, and Dr. Yeong Nain Chi. Department of Agriculture, Food & Resource Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853

PG 43 Time Series Analysis of the Global Price of Poultry: SARIMA model. Victoria Hanzer-Diaz, and Dr. Yeong Nain Chi. Department of Agriculture, Food & Resource Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853

PG 44 Time-series Analysis for Global Wheat Price Prediction. Tseganesh Sete and Dr. Yeong Nain Chi. Department of Agriculture, Food & Resource Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853

PG 45 Using machine learning to investigate the health effects of traffic related PM2.5 air pollution on Chronic Disease Prevalence in the Georgetown Community of Salisbury, Maryland. Katrina Kelly*1, Dr. Joseph S. Pitula1, Dr. Yeong-Nain Chi2, Dr. Ali Ishaque1, and Dr. Kathryn Barrett-Gaines3. 1*Department of Natural Sciences, University of Maryland, Eastern Shore, Princess Anne, MD 21853. 2Department of Agriculture, Food & Resource Sciences, Princess Anne, MD 21853. 3Department of Social Sciences, Princess Anne, MD 21853

PG 46 Understanding wave-current-ice interaction to tackle shoreline erosion in Lake Michigan. Nowrin Mow* and Dr.Meng Xia. Department of Natural Sciences, University of Maryland, Eastern Shore, Princess Anne, MD 21853.

PG 47 Diagnosing Pulmonary Embolisms in Pregnancy: Computed Tomography vs. Nuclear Medicine Ventilation/ Perfusion Scan. Victoria Connelly; Chelsea Uwanaka*; Dr. Khaled Hasan, MD, MS, PhD. Physician Assistant Department, University of Maryland Eastern Shore, Princess Anne, MD 21853

PG 48 The Comparative Prevalence of Obesity Among African Americans and Caucasian Populations. Howard Harris*; Kelechi Omenyinma; and Dr. Khaled M. Hasan, MD, MS, PhD Physician Assistant Department, University of Maryland Eastern Shore, Princess Anne, MD 21853

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PUG 1
Abundance and Diversity of Mosquitoes in Somerset and Wicomico Counties
Kahlila Ramadhan, Fatima Taha, Thresa Ogbonna, Mobolaji Okulate and Dia-Eldin A Elnaiem. Department of Natural Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853.

PUG 2
Designing an Aquarium to Test the Effectiveness of Nontoxic Polymer Formulations at Preventing the Accumulation of Biofilms. Ryan Buzzetto-More1*, Ezra Cable1, Keith Brately1, Bokary Sylla1, Dr. William Weaver1, and Dr. Victoria V. Volkis1. 1*Department of Natural Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853

PUG 3
Financial Ratio Analysis of Deere & Company. Van E. Spencer*, and Dr. Yeong Nain Chi Department of Agriculture, Food & Resource Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853

PUG 4
Highly Nutraceutical Aronia Berry-Based Power Aid Drinks: Unleashing the Synergy of Antioxidants, Terpenes, and Essential Oils. Ludan Osman1, Bokary Sylla1, Andrew G. Ristvey2*, and Victoria V. Volkis1* 1 - Department of Natural Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853. 2 - University of Maryland Extension, Wye Research & Education Center, P.O. Box 169, Queenstown, MD 21658-0169

PUG 5
Optimization of Attraction Media of Mosquito Gravid Traps. Fatima Taha, Khalilah Ramadhan, Justin Ajayi, Mobolaji Okulate and Dia-Eldin A. Elnaiem. Department of Natural Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853.

PUG 6
Phytochemicals as Active Ingredients in Antifouling Formulations. Keith Bratley, William Harrod, Victoria V. Volkis, Ezra Cable, Bokary Sylla, and William Weaver. Department of Natural Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853.

PUG 7
Predicting Social Loafing Behavior with the Big Five Inventory – 10. Dr. Michael Patterson*, Jazmin Wilson*, and Riley Horner*. Department of Education, University of Maryland, Eastern Shore, Princess Anne, MD 21853

PUG 8
Sodium Hydrogen Exchanger Isoform 3 Gene ExpressioniIn the Kidney of a Zebrafish Hyperglycemia Model. Fabiola Beauvoir* and Tracy Bell, PhD. Department of Natural Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853.

PUG 9
Studying Thermal Decomposition of Aronia mitschurinii Based Power Aid Drinks as a Key for preservation of Phenolic Antioxidants. Kanaya Streeter1, Bokary Sylla1, Ludan Osman1, Andrew G. Ristvey2*, Victoria V. Volkis1*. 1 Department of Natural Sciences, The University of Maryland Eastern Shore, 3, Princess Anne, Maryland 21853. 2Wye Research and Education Center, University of Maryland, Queenstown, MD 21658.

PUG 10
SWOT Analysis on FarmBot. Jordan Frazier, Simala Wright, Jaden Batson, Glenn Jones, and Dr. Yeong Nain Chi. Department of Agriculture, Food & Resource Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853

PUG 11
The Impact of Beauveria bassiana on Squash Bugs Mortality. K.Waters*, K.Okpah*, T. Tolosa, and S. Zebelo, Department of Agriculture Food and Resource Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853.

PUG 12
The Investigation of Universal Robots with Multiple Degrees of Freedom. Oreoluwa Emmanuel Olajide, and Dr. Payam Matin. Department of Engineering, University of Maryland Eastern Shore, Princess Anne, MD 21853.

PUG 13
Video summary of the study abroad experience of University of Maryland Eastern Shore students under The Richard A. Henson Honors Program at Sunyani Technical University and Ghana. Joshua Williams1*. Department of English and Modern Languages, University of Maryland Eastern Shore, Princess Anne, MD 21853.

PUG 14
Voices Unveiled: Exploring Therapy Attitudes Among African American Baby Boomers (Ages 59-68). Te'Andra Evans*, Charlize Williams*, and Dr. Lisa Zheng. Department of Rehabilitation Psychology University of Maryland Eastern Shore, Princess Anne, MD 21853

Oral Abstracts - Faculty

(Titles in Alphabetical Order)

Ayurvedic Indian Medicine and Its Flagship Plant Holy Basil

Dr. Preeti Rani Sharma1, Ezra Cable1, Bokary Sylla1, Henriette Den-Ouden1, Dr. Andrew G. Ristvey2, and Dr. Victoria V. Volkis1*

1 - Department of Natural Science, University of Maryland Eastern Shore, Princess, Anne, MD 21853

2 - University of Maryland Extension, Wye Research & Education Center, Queenstown, MD 21658

Holy basil, or Ocimum tenuiflorum, is a natural plant of several Asian nations, particularly India, where it is an essential component of Aurovedic medicine.Holy basil can be cultivated in some areas of the United States, as has been previously demonstrated. Holy basil contains a variety of compounds, including alkaloids, proteins, carbohydrates, lipids, glycosides, phenols, saponins, tannins, and terpenes. It is therefore known to have several pharmacological benefits, including anti-inflammatory, antioxidant, cardioprotective, and anti-diabetic properties.The health benefits of growing holy basil are driving up its popularity in the United States. It has reportedly been grown in California, Georgia, and a few other states; nonetheless, the phytochemical makeup of those plants is very different from that of the ones grown in India. Here we provide our initial findings about the optimal growing practices for holy basil in Maryland, and a comparative analysis between plants cultivated in Maryland and other states and nations. Examining the chemical composition of antioxidants and essential oils in holy basil plants in relation to soil, harvesting time, processing technique, fertilizer, and several other variables is the aim of this research. Using HPLC, GCMS, and UV/Vis spectroscopy, we pay particular attention to phenolics, carotenoids, essential oils, terpenes and terpenoids, and minerals.

Bridging Health Inequities for Obesity: The SCALE-DOWN Initiative

Dr. Yen Dang1*, and Dr. T. Sean Vasaitis2

1Department of Kinesiology, University of Maryland Eastern Shore, Princess Anne, MD 21853

2Department of Pharmaceutical Sciences, University of Maryland Eastern Shore, Princess Anne, MD 21853

In Somerset County, Maryland, where obesity rates are disproportionately high among minority and economically disadvantaged groups, the SCALE-DOWN program was implemented to target overweight and obese minorities on a university campus. The program aimed to address social determinants of health (SDOH) by assessing participants' social risks and connecting them with local resources through the Neighborhood Navigator. Referrals were made based on economic stability, education access, healthcare, and community context. Additionally, evidence-based physical activity programs tailored to individual needs were offered, with participants receiving fitness trackers to monitor progress. Two hundred fifty-seven participants, primarily African American females, enrolled in the program, with a significant portion facing food insecurity, transportation issues, financial strain, and unemployment. A subgroup of 20 participants entered the physical activity program, with baseline measurements showing weight was 205.2 lbs ± 49.1 with a BMI of 34.4 kg/m2 ± 8.7kgm/m2 and fat percentage of 37% ± 8.6%. After three months, the weight decreased to 185.4 lbs ± 52.1 lbs with a BMI of 29.3 kg/m2 ± 8.32 kg/m2 and a fat percentage of 32.9% ± 8.8%. Exit surveys indicated 100% satisfaction with the program. The integration of social needs screening, local resource referral and tailored physical activity programs demonstrated a comprehensive approach to addressing SDOH and obesity management. The program's success highlights the importance of addressing both medical and social needs to improve health outcomes among vulnerable populations. Similar strategies should be adopted by other organizations to promote healthy behaviors and address SDOH disparities.

Exploring Self-management of Secondary Medical Conditions among Blacks with Spinal Cord Injury

Dr. Veronica Umeasiegbu and Saffiatu Sankoh

Department of Rehabilitation, University of Maryland Eastern Shore, Princess Anne, MD 21853

Spinal cord injury (SCI) is associated with high-level losses in sensory and motor functioning depending on level and severity of injury. The estimated population of individuals with SCI in USA in 2021 is approximately 299,000 million. Non-Hispanic Black (25%) and Hispanics (14.1%) account for a total of 39.1% of persons with SCI in the USA. This statistics shows an increase in the population of Blacks with SCI in the nation (National Spinal Cord Injury Statistical Center; NSCISC, 2022). Stevens (2011) posits that the impacts of SCI is worse for ethnic minorities (Black and Hispanics) aging with SCI. Individuals with SCI who are Black and Hispanics have greater health disparities compared to individuals with SCI who are White. Older Blacks with SCI experience greater secondary health risks and poorer health outcomes, For example, Blacks with SCI are less likely to achieve greater community and social integration, less likely to receive appropriate and customizable wheelchair and back-up wheelchair, and less likely to have access to usual source of medical care. These health disparities among Black adult with SCI are driven by risk factors associated with secondary health conditions, such as pressure ulcer.

These disparate outcomes are also due, in part, to primary care providers (PCPs) working with Blacks lacking the knowledge and skills to provide quality care for this population (Stevens, 2011). The goal of this study is to improve health outcomes and quality of life of Blacks aging with SCI and secondary health conditions (SHC) by assessing gaps in self-management knowledge, experiences, self-efficacy, cultural considerations, needs, behaviors, and attitudes of Blacks with SCI and those of primary care providers (physicians, physician assistants, and nurses) when working with Blacks with SCI. An embedded concurrent mixed methods design will be used in this study. This design involves the concurrent collection of qualitative and quantitative data with more focus on collecting detailed qualitative data. This design is also referred to as a mixed method integration design. A small quantitative component is embedded into the study to compliment the dominant qualitative data that will be collected. Qualitative data will be collected via individual interviews with individuals with SCI and the primary care providers. A short survey will be used to collect quantitative data for research questions 1.1 and 1.2 under specific aim 1. Data analyses will involve descriptive statistics and correlational analysis for the quantitative data. Qualitative data will be managed and analyzed using MAXQDA Software. After data collection, transcribed data and field notes will be triangulated (verified for accuracy) by the research team. This study is on-going.

Grapevine Precision Breeding and Gene Editing for Improving Disease Resistance and Quality Traits.

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Grapevine precision breeding and gene editing enable rapid genetic improvement of elite table and wine cultivars without compromising existing desirable enological and viticultural characteristics. Grapevine precision breeding and genome editing is now possible due to the development of reliable plant regeneration and gene insertion protocols in combination with newly available information on the Vitis genome. Embryogenic culture protocols have been established in several grapevine species and cultivars for use as target tissues to insert and/or edit traits of interest. Several genetic elements and genes conferring traits of interest have been isolated from sexually compatible Visit species and tested for their transfer to commercial cultivars. Highly efficient CRISPR/Cas9-mediated gene editing protocols have been optimized by targeting a grapevine phytoene desaturase (PDS) 1 gene, which allows for easy identification of edited events based on albino/bleached or mosaic plant phenotypes. These protocols have been extended to utilize gene editing for improving disease resistance to powdery mildew, quality traits such as berry colors and post-harvest shelf life. The development of such systems can overcome limitations encountered in conventional breeding and enable rapid improvement of existing grapevine cultivars for abiotic/biotic stress tolerance and qualitative traits

The Impact of Insect Herbivory on the Level of Cannabinoids in CBD Hemp Varieties

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In the United States, industrial hemp is defined as a Cannabis sativa L. plant not containing more than 0.3% delta-9-tetrahydrocannabinol (D9THC) by dry weight. Plants respond to insect herbivore damage by changing their chemistry to counter the effects of herbivore attacks. Here, we hypothesized that the corn earworm (Helicoverpa zea) infestation might impact the level of cannabinoids (Cannabidiol (CBD) and D9THC). In a laboratory trial, the CBD hemp, Cherry Blossom, and The Wife varieties were subjected to Herbivore Damage (HD), Mechanical Damage (MD), and Control. After 24 hrs of the treatments, we found a significant increase in CBD and D9THC in HD plants compared with MD and Control plants. Similar experiments were conducted under the field conditions. Compared to the control plants, a substantial increase in CBD and D9THC was observed in herbivore-damaged hemp plants. However, in the field trial, the levels of cannabinoids were not significantly higher in the wife variety. Interestingly, the Corn earworm larvae fed with CBD and D9THC spiked diet showed a significant reduction in body mass compared to the larvae fed with the control diets. Conclusion: The level of cannabinoids does not seem genetically fixed; they are affected by insect herbivory. Our results suggest that CBD hemp plants are exposed to insect herbivory spikes in cannabinoid production and surpass the 0.3% legal limit of D9THC. The growth and development of Corn earworm, North America's number one hemp pest, is affected by cannabinoids. The increased concentration of CBD and D9THC observed in herbivore-damaged hemp plants might be associated with the direct deterrence of the corn earworm larvae. Further research is underway using different hemp varieties to assess if herbivory and other biotic stressors impact the level of cannabinoids.

Oral Abstracts - Faculty

(Titles in Alphabetical Order)

Understanding Success and Challenges in a Physician Assistant Program

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The physician assistant (PA) program is one of the most rapidly expanding programs in healthcare education. Graduates of the PA program become actively involved in healthcare services in varied settings including hospitals, outpatient clinics, and specialty facilities. The PA program is increasingly appealing to students who have a future goal of becoming part of a healthcare team. With a rigorous, condensed curriculum, enrolled students must be prepared and committed to addressing potential obstacles during didactic and clinical years. For the past three years (2020 to 2023), 67 PA students were enrolled in this study aimed at investigating challenges hindering successful academic progress in the University of Maryland Eastern Shore (UMES) PA program. Of enrolled students, 59 (88%) successfully continued in the program, passing all required curriculum courses. However, eight (12%) students faced academic difficulties during PA schooling, leading to program dismissal, withdrawal, or deceleration. The Mann-Whitney U test was employed to compare quantitative data, and the Chi-square was used to compare qualitative data between these two groups of PA students. The data reveals that when comparing successful and struggling students, undergraduate overall GPAs (3.3 and 3.2, $p=0.37$) and science GPAs (3.2 and 3.0, $p=0.37$) did not significantly impact student success (i.e., progress) or failure in the PA program respectively. However, when assessing academic progress by semester, 59 (88%) of PA students successfully completed the fall semester with a GPA of 3.4. In contrast, during the same semester, eight (12%) students failed at least one academic course, resulting in a GPA of 2.7. Three of the struggling students (37.5%) withdrew before the end of the fall semester ($p=0.004$). Similar GPA patterns were observed in the spring ($p=0.0005$) and summer ($p=0.08$) semesters. This study demonstrated that undergraduate GPAs do not significantly impact student progress in the PA program, concluding that there are other factors influencing student success or failure in the PA program. Additional research is needed to identify reasons for academic challenges faced by students in the PA program. Thus, PA programs should continuously review policies and procedures as well as available data to identify and understand student success and challenges.

Using CRISPR/Cas9-mediated Gene Editing to Enhance Grapevine Resistance to Powdery Mildew

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Grapevine powdery mildew caused by Erysiphe necator is the most important fungal pathogen that severely affects production worldwide with adverse effects on fruit yield and quality. Conventional breeding for improving disease resistance has limited applications due to the heterozygous nature of the grapevine genome, incompatibility barriers among Vitis species and a long juvenile period. Genome editing of grapevine has the potential to improve specific traits in elite cultivars without disrupting existing desirable characteristics. In the current study, the grapevine Mildew Locus O (MLO) genes were disrupted using CRISPR/Cas 9-mediated genome editing to study plant response to Erysiphe necator infection. A binary vector containing dual guide RNA sequences targeting the MLO-6 and MLO-7 genes along with Cas 9 and a hygromycin selectable marker, under the control of a CaMV 35S promoter was transferred to Agrobacterium and used to transform grapevine embryogenic cultures. Forty-seven edited plant lines were recovered on the basis of hygromycin resistance, acclimated under conditions of high humidity and transferred to a greenhouse. Molecular analyses including PCR and sequencing were carried out to conform editing of the MLO genes in regenerated plant lines. Edited plant lines were asexually propagated to produce replicate clones and screened along with non-edited controls in a greenhouse for their response to infection by Erysiphe necator. Among the various plant lines studied, 3 lines exhibited a significant decrease in powdery mildew symptoms and infection severity compared to the non-edited controls. We are currently screening additional plant lines for their response to powdery mildew while also generating edited plants from other Vitis cultivars. The use of CRISPR/Cas-9 mediated genome editing can provide durable disease resistance with the potential to improve the profitability and sustainability of the grape and wine industry.

Oral Abstracts - Graduate

(Titles in Alphabetical Order)

A Participatory Extension Model to Educate and Expand Climate-smart Agriculture and Forestry Practices: A Case of Small and Minority Farmers

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Agriculture accounted for 9.4% of U.S. greenhouse gas (GHG) emissions in 2022.Efforts to lower this impact is essential to ensure sustainable and environment-friendly agricultural production. Studies show climate-smart agriculture and forestry (CSAF) practices, such as reduced tillage and integration of perennial trees alongside crop fields, can substantially mitigate GHG emissions and increase carbon sequestration. However, the adoption of CSAF practices among historically underserved small producers (HUSPs) and landowners is low due to a lack of awareness, education, technical knowledge and skills, financial support, and reluctance to change traditional farming practices. While adopting the CSAF practices is pivotal for minimizing GHG emissions and increasing carbon sequestration, it is equally essential to educate and encourage individuals to practice and adopt these strategies. The University of Maryland Eastern Shore (UMES) Extension aims to educate, encourage, and expand the adoption of these CSAF practices among HUSPs, landowners, veterans, and other community members. In the previous study conducted by UMES Extension, 77.8% of the total respondents (n = 36) had indicated willingness to participate in the training related to CSAF practices. The objective of the study is to educate, train, and exhibit CSAF practices, highlighting their socio-economic and environmental benefits, assess the resulting reductions in GHG emissions and increased carbon sequestered in the soil, and familiarize participants with carbon farming and trading practices. The study is working on establishing two CSAF demonstration sites in Glen Arm, Baltimore County, and at Washington High School, Somerset County, Maryland. These demonstration sites will feature alley cropping with high carbon sequestering potential fruit trees (fig, persimmon, pawpaw, etc.), vegetables (pumpkin, bell peppers, etc.), and herbs (basil, nettle, etc.) adhering to climate-smart agriculture guidelines. Carbon sequestration resulting from the CSAF practices will be measured and compared at the sites using a before vs. after project intervention evaluation approach. A predictive econometric model will be used to estimate the longevity of CSAF practices, carbon credit benefits, cash flow from alley cropping, and environmental benefits associated with reducing GHG emissions and increasing carbon sequestration. Additionally, a survey will be administered to evaluate participants' perceptions, factors influencing willingness, and barriers to adopting CSAF practices.

A Qualitative Comparative Analysis (Qca) Of A Traditional Doctoral Education Leadership (Edd) To A Developing Phd Program In The Eastern Region Of The Delmarva Peninsula

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Amidst the growing demand for highly skilled and accomplished educators, along with the recent push to further differentiate the Doctorates in Education from the Doctorates in Philosophy in higher education, the curricula of EdD programs across the country have come under scrutiny and criticism for failing to align with the demands of schools and professionals in the field. The purpose of this qualitative phenomenological study using comparative analysis is to explore the programming objectives of a traditional EdD to a developing PhD program in meeting the needs of students to become critical thinkers and leaders who are able and equipped to lead across disciplinary domains and paradigms. Many professional associations, governmental organizations, researchers, university faculty, and administrators have called for improved preparation of U.S. educational leadership programs over the last thirty years. Doctoral degree programs, like the EdD and PhD programs, are frequently created to emphasize the necessary and desired program outcomes. Academic institutions across the globe have initiated the demolition of EdDs that focus on teaching with the replacement of PhDs. The study will concentrate on research, including theory reflective practice, and deficit thinking models. In addition, a synopsis of the curriculum's overarching learning objectives provides readers with a comprehensive understanding of the objectives of the entire curriculum. The ramifications of this program modification are yet glaringly unstudied. The current research study provides a voice for the challenges and effects that doctoral students face during their study transition. The sunnybrook framework, social cognitive theory, and Schlossberg's transition theory serve as the study's theoretical pillars. Data collection from questionnaires, survey tools, and focus groups completed by enrolled, non-enrolled, and graduate students will be analyzed using thematic analysis methods. The challenges that doctorate students who are affected by these changes are expressed in this dissertation. The EdD program and the transitional PhD program will be compared concerning survey responses. In addition to comparing the programs, this study will examine how school leadership is changing in our nation and the need for education leaders with new abilities and attitudes to manage complex, diverse, and innovative organizations. The discussion of current research from leadership preparation programs, focusing on the EdD and PhD degrees in educational leadership, will infer conclusions, interpretations, and recommendations.

A Quantitative Study: Analyzing COVID-19's Impact on Enrollment and Retention Based on Race, Gender, Socio-Economic Status, and Course Modality.

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Currently, little to no research is available that translates the decrease in college enrollment and retention into dollar amounts, nor discussions about the numbers and funding it will take to revive colleges to pre-Covid numbers. COVID-19 was said to have hit areas, populations, and groups of people who were already underrepresented, but this remains unproven for our college students who outside of enrollment numbers have received minimum acknowledgment and concern of life during COVID-19 (Aucejo et al., 2020; Kwakye et al., 2021; Raaper & Brown, 2020; Wheeler & Ruger, 2013;). Higher education leadership, while trying to remain afloat during the pandemic, has not addressed those populations most impacted by the pandemic, created programs to assist those students, nor increased personnel and the reach of student support services. With enrollment, a concern for the majority of colleges and universities, and the national concerns around students' mental well-being the growing concern, is too much for one solution to sustain (Hoover, 2020; Kim et al., 2020; Kwakye et al., 2021). There is little data are found at a country, state, and local level concerning the impacts of COVID-19, although much is being discussed amongst faculty, staff, and students. COVID-19 has not only heavily changed day-to-day operations but also how we think and our priorities (Marguerite, 2021; Thomas & Allen, 2021; Toquero, 2020). The researcher conducted a comprehensive examination of two closely situated universities, positioned approximately 12 miles apart, thereby requiring a mere 17-minute travel duration to traverse the distance. Notwithstanding their geographic proximity, these two academic institutions represent markedly distinct foundations in terms of their institutional classification, core mission, and the diverse demographic constituencies they serve. This study centers its investigation on the divergent responses exhibited by these universities in the wake of the COVID-19 pandemic. While one of the universities opted to initiate the resumption of on-campus learning as early as the Fall of 2020, the other university made the strategic decision to persist with online instructional modalities throughout the entire academic year spanning 2020-2021. The central objective of the researcher is to illuminate the extent to which each institution's chosen response strategy influenced key academic metrics, specifically student enrollment and retention. Furthermore, this research aims to discern whether the impact of these responses exhibited significant variations contingent upon the unique attributes of each institution.

Adopting Chenopodium Quinoa in Maryland as a Mitigation to Sustainable Agriculture

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The World today is largely dependent on Agriculture that is constrained by climatic changes to sustain the ever growing population which is expected to exceed nine billion by 2050. Threat of hunger and diet related challenges is evident and among the numerous strategies used to respond to food demand is the reintroduction of genetic diversity to fully domesticated crops to increase variability in the genes responsible for the environmental adaptability, plasticity, and resilience that their wild ancestors still possess. An alternative approach lies in the domestication of plants not yet used in agriculture at the global level and focus breeding efforts in neglected and underutilized species and plants that are only partially domesticated (orphan crops) and those that still harbor considerable genetic variability, which may contribute to improved yield and adaptability like quinoa (Stanschewski et al., 2021). Quinoa (Chenopodium quinoa Willd.) is a high value nutritional crop recognized by the Food and Agricultural Organization declaring 2013 as the "International Year of Quinoa" for its capacity to help mitigate hunger and malnutrition in food-insecure countries. It has been staple food in South America for more than 7000 years for its abundant nutrition benefits including high protein, the composition and quantity of lipids, amino acids, fibers, vitamins and minerals. Quinoa is genetically diverse with resilience to drought, frost and salinity, with adaptability to sodic and alkaline soils. Adaptability of C. quinoa in North America and more so Maryland is constrained by the effect of high temperature during the production stage that negatively impact the seed setting and the high levels of saponin that gives quinoa a bitter taste. Introgression of the domesticated Chenopodium quinoa Willd with the more heat tolerant wild species Chenopodium berlandieri (both allotetraploid 2n=4x=36, AABB subgenomes) and selecting genotypes with desirable agronomic traits in Maryland and Utah States has been the focus of this study. Eighteen advanced lines of crosses between the domesticated genotypes with the C. berlandieri will be evaluated based on agronomic traits and molecular characterization. The simulated genomic selection for heat tolerance, low saponin level and grain yield in the two environments with a high level of genotype-by-environment interaction (G×E) for the latter trait will be done, using genomic data of known commercialized genotypes. The selected lines will be utilized for optimizing tissue regeneration, transformation and gene editing protocols for Chenopodium quinoa targeting improvement of heat tolerance and low saponin level.

Oral Abstracts - Graduate

(Titles in Alphabetical Order)

Alkali-Hydrolyzed Corn Dried, Distillers Grains with Solubles as a Promising Alternative to Antimicrobial Growth Promoters: Its Effects on Growth Performance and Breast Meat Quality of Broilers under Heat Stress

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One of the major contributors to antimicrobial resistance is the misuse of antimicrobial growth promoters (AGPs) in livestock production. Phytochemicals, particularly phenolic acids, are considered one of the highly potential alternatives for AGPs. While corn dried, distiller grains with solubles (DDGS) contain a considerable amount of phenolic acids, their bioavailability is extremely low. In our prior study, alkali-hydrolyzed DDGS (AH-DDGS) was developed to enhance the availability of its phenolic acids. The objective of this study was to determine the effects of AH-DDGS as an alternative to AGP on broiler production and meat quality under heat stress. A total of 640 male broiler chicks were allocated randomly to 32 floor pens each pen with 20 birds. They were fed diets for 42 days, consisting of corn/soybean meal diets with 4 treatments: 1) Negative Control (NC), 5% commercial DDGS, 2) Positive Control (PC), 5% commercial DDGS and commercial AGP (Bacitracin methylene disalicylate at 500 g/tonne of feed), 3) T1, 5% AH-DDGS produced through alkali hydrolysis using $Ca(OH)_2$ at a rate of 0.45 mol/kg wet distillers grains, and 4) T2, a combination of 2.5% commercial DDGS and 2.5% AH-DDGS. Heat stress (8 h/day) at 35°C during the grower phase (day 15-28) and 33°C during the finisher phase (day 29-42) was applied to all treatments. Growth performance, breast meat quality, and oxidative stress of broilers were determined. AH-DDGS (T1 and T2)-fed broilers showed similar growth performance to PC-fed while showing higher growth performance than NC-fed (P<0.05). Breast meat from AH-DDGS-fed broilers showed significantly higher marinade uptake and cooking yield, along with lower lipid oxidation rates compared to the control groups (P<0.05). There were no significant differences among the treatments in terms of carcass yield as well as other meat quality parameters such as color, drip loss, and textural properties. The results showed that AH-DDGS showed similar effects on broiler growth performance to AGPs and also enhanced the oxidative stability of broiler breast meat, thereby partially improving muscle protein functionalities. Therefore, these indicated that AH-DDGS, rich in bioavailable phenolic acids, can be a promising and economically viable alternative to AGPs, suggesting benefits for maintaining/improving broiler health, productivity, and meat quality against heat stress.

An Exploration of strategic leadership and leadership likeability and the influence and effect of congregant's engagement in a small African American Methodist Church in the Central Maryland Region: An Exploratory Case Study.

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The present study investigates the impact of leadership likeability and strategic leadership on congregants' engagement in a small African American Methodist church in the central Maryland region. A single exploratory case study was conducted on a small United Methodist church in Highland, Maryland. Qualitative data was gathered from the pastor, lay leaders and the congregation through individual interviews, focus groups and observation. The data gathered from the various groups was coded into manageable segments and specific titles were given to the various information segments. The data was then processed by using an electronic transcription software Maximum Analysis of Qualitative Data (MAXQDA). The data from the study answered the research question: What role does strategic leadership and leadership likability play in influencing congregants' engagement? The findings from the study indicate that strategic leadership plays a stronger role in congregants' engagement compared to leadership likeability. The findings provide a new direction for small churches struggling to maintain current members and attract new members. In addition, the study and its findings support the field of Ecclesiology and Organizational Leadership in that it provides much needed research in the area of the small African American church where there seems to be a dearth of research.

Keywords: Pastor, Lay Leaders, Congregants, Strategy, Engagement, Likeability.

An Exploration of Attributes of Sustainable Effective Mentoring Relationships: Perspectives of Faculty and Undergraduate Student at Historically Colleges and Universities (HBCU) on The Northeast Region: A Qualitative Interview Study,

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Despite the recognized importance of mentoring, little is known about specific mentoring behaviors and personal quality of mentors and mentees and the actions of mentors to support this relationship that result in positive outcomes (Eller et al., 2014). Mentoring is playing a multi-faceted role in higher education, covering academic practice, graduate employability and student wellbeing to enhance academic success (retention, grades, social integration, satisfaction with college, adjust-

ment to college), career development, and psychological well-being. This study aimed to explore the attributes of sustainable effective mentoring relationships through the perspectives of faculty as a mentor and undergraduate student as a mentee at an HBCU on the Northeast Region using qualitative semi-structured interviews. The role of student support is becoming increasingly important in the educational setting especially at Historically Colleges and Universities (HBCU) where 40-50% of students are first generation, underserved and underrepresented (Frazier, 2020). While the study explored various organizational leadership theories, Path Goal theory (House, 1971) was thought to be a relevant one in mentoring relationship as it illustrates the interrelationship between the mentor's behavior and mentee's behavior, which is supported by the four principles of defining goals, clarifying a path, removing obstacles, and providing support; a typical role of a mentor trying to foster a relationship with mentees. This study involved purposive sample of five pairs of mentors and mentees (n=10) with audio-recorded interviews to explore their relationships, mentors' support and mentors' expectations for mentees' involvement in the institution. To foster effective and sustainable mentoring relationship, findings suggested several personal characteristics for mentors, mentees, and actions by the mentors includes: a) honesty; b) trustworthy; c) active listening; d) facilitate goal setting; e) exhibit professional knowledge and skills; f) possess an interpersonal skill including being accessible and approachable; g) support in providing information for planning, access to resources; h) two-way dialoguing with feedback and reflections; i) and establishing a safe learning environments. Keywords: Effective Relationships, mentors, mentees. Sustainable relationship.

Biochar Mediated Growth and Development in Day Neutral Strawberries
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Biochar has gained popularity in agriculture due to its potential to boost soil fertility, crop productivity, and carbon sequestration. The goal of this study was to investigate the impacts of different biochar rates; 0%, 5%, and 10%, on two strawberry cultivars, Seascape and Monterrey. The research was carried out at UMES under greenhouse regimes. This study assessed growth characteristics such as the number of leaves, flowers, yield, chlorophyll content, plant height, and pest and disease symptoms. The highest average plant height (18.1 cm, Seascape) and (17.4 cm, Monterrey) was recorded in the 10% biochar rate after 60 days after transplanting. Similarly, the highest average number of leaves (23 for seascape), (14 for Monterrey) and flowers (34 for Seascape) were also recorded in the 10% biochar rate after 60 days of transplanting. There was a significant difference in chlorophyll content (SPAD units) in both strawberry cultivars after 60 days of transplanting. There was a significant difference in yield in biochar application compared to no biochar application in Monterrey variety (p= <0.0001) and in seascape variety (p=0.021). Furthermore, there was an increase in the relative abundance percentage of soil microbial community in the 5% biochar rate after 6 months of application. These findings emphasize the potential of biochar as a helpful addition in strawberry cultivation, aiding in overall plant growth and development.

Bisphenol A Induces Dysfunction of Leptin Signaling Pathways in Human Dopaminergic Neurons
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Bisphenol A (BPA) is an endocrine disrupting chemical. Early life exposure to BPA is known to result in various adverse health effects. Obesity is influenced by behavioral, social, environmental, genetic, and economic variables. The hypothalamus of the central nervous system controls energy balance and food intake to ensure that the body's physiological requirements are met. Research has shown that the hypothalamus is the primary site of action for endocrine regulators like leptin in controlling appetite and body weight. Furthermore, leptin signaling may act on other brain regions to mediate the reward value of foods, as evidenced by the presence of leptin receptors in other brain regions, such as dopaminergic neurons. Current research suggests that leptin may mediate food patterns thus, impacting energy balance and food motivation through the activation of dopaminergic neurons in the midbrain. The aim of this study was to examine the interaction of BPA with leptin receptor signaling pathways in dopaminergic neurons using human neuroblastoma SH-SY5Y cells. Leptin or BPA were administered to cells in varying concentrations either separately or in combination. Cell viability, orexigenic agouti-related peptide (AgRP) levels and signal transducer and activator of transcription (STAT3) protein expression were assessed. Results showed that the low concentrations (0.01-80μM) of BPA tested had no significant effect on cell viability. Leptin significantly induced STAT3 expression at 15 minutes post leptin treatment. Exposure to BPA showed significant increase in STAT3 expression at 15 min post leptin treatment. This effect was blocked by a selective STAT3 inhibitor, NSC74859. Co-treatment of neuronal cells with leptin and BPA for 24h resulted in induction of STAT3 expression which remained for up to 48h. Leptin (100nM) reduced the orexigenic neuropeptide AgRP levels. In contrast, exposure to BPA significantly increased AgRP levels. Co-treatment of neuronal cells with leptin and BPA resulted in enhancement of AgRP levels. These effects might play a role in the dysfunction of leptin signaling pathways and the development of leptin resistance which are factors that lead to obesity. Therefore, BPA may contribute to the risk of obesity. Supported by Title III.

Oral Abstracts - Graduate

(Titles in Alphabetical Order)

Characterization of PGE2 EP4 Receptor in Ovarian Cancer

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Ovarian cancer has the highest mortality rate among gynecologic malignancies in the United States. The recurrence of ovarian cancer often becomes untreatable due to resistance to chemotherapy. This calls for new therapeutic approaches. Cyclooxygenases (COX-1 and COX-2) are enzymes that catalyze the production of a lipid molecule called prostaglandin E2 (PGE2), which mediates inflammatory responses and is linked to cancer progression, including ovarian cancer. PGE2 is transported out of cells by a protein called multidrug resistance-associated protein 4 (MRP4) where it acts in a paracrine and autocrine manner by activating a family of four G-protein coupled receptors (EP1-4) that are linked to different intracellular signaling pathways. EP2 and EP4 can activate PKA/cAMP, PI3K, and ERK pathways. We hypothesize that the EP4 receptor is overexpressed in ovarian cancer and that PGE2 binding to EP4 promotes ovarian tumor formation. To test these hypotheses, we examined EP4 expression in human ovarian cancer tissue microarray (TMA) and human ovarian cancer cell lines. We found that EP4 was expressed in 38.7% of ovarian cancer tissues but was scarcely present in normal ovarian tissue. We also observed increased expression in multiple ovarian cancer cell lines, and treatment with an EP4 antagonist led to decreased cell proliferation and migration. Furthermore, silencing the EP4 receptor with siRNA led to reduced proliferation and migration of ovarian cancer cells. Adding EP4 antagonist to chemotherapy sensitizes the cells to the treatment leading to a decrease in cell growth compared to chemotherapy alone. Moreover, the addition of EP4 to chemotherapy increases apoptosis in ovarian cancer cells versus monotherapy. We also observed alterations in the cell cycle with EP4 treatment. Therefore, based on these findings, targeting the PGE2 EP4 receptor should be explored as a potential treatment for ovarian cancer.

Delivery of siRNA through Exosome Mimetic Hybrid Nanoparticles for Bone Tissue Engineering

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Large bone defect reconstruction poses significant clinical challenges, necessitating effective tissue engineering solutions. Traditional auto/allograft methods are hampered by availability and donor site complications. RNA interference therapy holds promise but efficient delivery of siRNA molecules to the target site remains a challenge. Although lipid-based nanoparticles are commonly employed as carriers for siRNA, concerns regarding their delivery efficiency persist. Extracellular vesicles derived from mesenchymal stem cells (MSCs) have garnered attention as a potential carrier for the delivery of siRNA, but low efficiency has hindered exogenous cargo loading. This study aims to develop exosome mimetics (EM)- liposome hybrid nanoparticles encapsulating noggin (a BMP antagonist) siRNA and assess their potential in bone tissue engineering in combination with a bioscaffold. A biomimetic approach was adopted to generate semi-synthetic hybrid nanoparticles. An extrusion technique was used for the production of EMs from human MSCs. Subsequently, these EMs were combined with noggin siRNA and liposomes to create the hybrid through a lipid-film hydration process followed by extrusion. The hybrid nanoparticles underwent physiochemical characterization. The gene-silencing efficacy, toxicity assessments, and osteogenic impacts were evaluated in vitro. Additionally, the hybrid nanoparticles were incorporated into apatite-coated PLGA scaffold to form a hybrid nanoparticle/scaffold complex and was assessed for osteogenic potential in vitro. Our data reveal the successful fabrication of hybrid nanoparticles capable of functionally delivering noggin siRNA while maintaining essential EM characteristics. Compared to liposomes, the hybrid didn't exhibit a dose-dependant decrease in cell viability indicating enhanced biocompatibility and upregulation of osteogenic markers including early ALP and later mineralization when tested with hMSCs. Importantly, increased osteogenesis was observed within the hybrid nanoparticle/scaffold complex in vitro. Our findings demonstrate that the hybrid nanoparticle/scaffold complex exerts a significant osteogenic induction, indicating its potential for applications in tissue engineering. Further research aims to evaluate its efficacy in an in vivo mouse critical-sized calvarial defect model. We anticipate that our work will provide a promising alternative for addressing large bone defects in the context of bone tissue engineering.

Designing Novel Small Organic Molecules as Potential Anti-seizure Agents

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Epilepsy is one of the most common neurological disorders, with 3 million people in the United States and 65 million people worldwide living with this disorder. In America, 1 in 26 individuals will eventually develop epilepsy in their life. Our lab engages in early drug design and the discovery of novel enaminone analogs as potential anti-seizure agents for epilepsy. Preliminary studies performed by our research team led to the identification of IAA65, a potent T-type

voltage-gated calcium channel (T-VGCC) blocker. The overarching goal of the work presented is to utilize hit-to-lead optimization studies to build a library of 20 IAA65 derivatives as T-VGCC blockers. The methodology employed in this work involved utilizing MedChem Designer and ADMET Predictor 10.0 to design the small molecules. Whole cell patch clamp recordings were performed to assess the effects of target analogs on voltage-activated Ca+2 currents in human embryonic kidney (HEK-293) cells constitutively expressing the Cav3.2 channel subunit. Cav3.2 transfected HEK 293 cells were treated with 50µM of test compounds (RHB-59, RHB-62, RHB-95, RHB-103, RHB-107 and RHB-111) and compared to the control group (none pretreated HEK 293 cells). Statistical analyses consisted of t-test for pairwise comparisons or one-way ANOVA followed by post hoc analysis using Tukey's honest significant difference test for comparisons between multiple groups. Preliminary in vitro studies showed compound RHB-111 at 50 µM caused a significant reduction in the calcium currents generated by the Cav3.2 T-VGCC subunit. Enaminone analogs RHB-62 and RHB-95 caused a reduction in the Ca+2 current, with lower potency than RHB-111 respectively. No inhibitory effect was shown at a similar concentration for analogs RHB-59, RHB-103, RHB-107 or ABA-58. Further in vitro studies revealed the effect of RHB-111 on calcium currents was concentration dependent, as the compound caused a left-ward shift in the steady-state inactivation of T-VGCC. These results show that RHB-111 is a potent inhibitor of T-VGCC by altering channel inactivation. In vitro studies are currently underway on analog, RHB-111 to further examine the mechanism of action on T-VGCCs. A target-based drug design strategy was employed, that led to the discovery of RHB-111, as a potent T-VGCC blocker. Future studies will involve lead optimization and target validation studies on lead analog RHB-111.

Discovery of a Novel Brachial Plexus Variant: Morphological Analysis and Pedagogical Considerations
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Understanding the components of the brachial plexus, its relationship with surrounding structures, and its variants is of vital importance in educational, clinical, and surgical settings. The specific combination of variants presented in this case report has not been identified simultaneously in the same donor. We performed a routine cadaveric dissection of the cervical region of a 94-year-old male. Anomalous findings were noted on the right side, including combined variations in the trunks, divisions, and contributions. Three trials of bilateral caliper measurements of the nerves were recorded. Additionally, a bilateral visual analysis of relevant musculature was performed. As a result of our analyses, we found there to be non-fusion of the right upper trunk. Suprascapular nerve was found branching from C5 root only. Trunks I-IV contribute anterior and posterior divisions to each associated cord. Findings following caliper measurements are as follows: 2 upper trunks of the variant side were larger than the non-variant side upper trunk, posterior cord was the same diameter on each side, median nerve was larger on the variant side, and the suprascapular nerve was smaller on the variant side. Morphological analysis of related musculature found that there was no apparent difference in size between the right and left infraspinatus muscles but a slight difference was noted that the right supraspinatus muscle appeared thicker. Upon the discovery of the diameter size difference between variant and non-variant side, we considered the relationship between anatomical variants and common sites of compression. This is of interest clinically as there could be complications when it comes to medical interventions and procedures. Specifically, this variant is notable as compression of C5 VPR would result in drastic effects on the muscles innervated by the suprascapular nerve, which would not be the case with typical morphology. In order to investigate how we can best teach complex morphology like what was observed in our donor, we did a follow-up study presenting a lesson on these structures to 46 students at the University of Maryland Eastern Shore who were randomly assigned into 2 groups: one group received didactic instruction on the observed variant while the other received additional 3D-printed learning materials. Performance outcomes and metrics assessing confidence were not found to be statistically significant, however, enjoyment and recommendation of visualization resources were found to be statistically significant. The results of this study encourage future research surrounding the role of enjoyment/engagement in anatomy education.

Effects of Cover Crops on Phytochemical Contents and Antioxidant Capacities of Sweet Pepper
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Sweet pepper (Capsicum annuum) is a carotenoid-rich, non-leafy vegetable consumed for its aroma, flavor, and health benefits. They are rich in numerous bioactive compounds, such as carotenoids, phenolics, ascorbic acid, and carotenoids, essential for improving immune response. The phytochemical profile and contents and antioxidant capacities of pepper fruits are greatly influenced by agricultural practices. Cover crops have been introduced for sustainable crop production. Cover crops are a group of plants that are grown to provide benefits, such as soil health enhancement, control of weeds, pests, and diseases, water availability, and nutrition, for the successful growth of future crops. This study aimed to determine the effects of cover crops on phytochemical contents and antioxidant capacities in different parts (whole, skin, and seeds) of pepper fruits. Sweet peppers were grown at the UMES research farm in 2021 and 2022 after different cover crops were grown and tilled: 1) no cover crop (Cont), 2) Oat and Radish mix (OR), and 3) Rye, Radish, and Crimson Clover mix (RRCC).

Pepper fruits were harvested three times (HT1, HT2, and HT2) a 3-week apart from August to September. Upon harvest, the fruits were separated into skin and seeds. The samples were extracted using 80% methanol and their phytochemical higher, while FD(HW), HAD(HW) and ID(HW) were significantly lower in water absorbance for the rehydration times of 5 and 10 minutes. For the sensory evaluation, 58%, 67%, 55%, and 67% of respondents indicated that the rehydrated samples were just right for flavor, color, texture, and firmness, respectively; 67% of the respondents indicated that the moisture of the rehydrated sample was somewhat too dry; and 35% of respondents indicated that the overall quality of the rehydrated sample was excellent. This study provides valuable insights for the development of value-added production of ethnic crop catering to the ethnically diverse consumers.

Efficacy of Bacteriophage Against Multi-Drug Resistant Salmonella Spp. in-vitro and in Pet Food

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Handling of contaminated pet foods and carrier pets are the potential sources of Salmonella contamination in households. Further, the occurrence of multi-drug resistant (MDR) Salmonella in pet foods makes the kids and elderly population more vulnerable. Pet food processing lacks established pathogen mitigation steps; however, chemical food additives are often incorporated in dry pet foods during coating. Whereas, raw pet foods often lack any such interventions. Salmonella-specific bacteriophages could be a potential alternative to chemical additives in pet food owing to their specificity without altering the sensory properties. This study aims to evaluate the effect of bacteriophage against MDR Salmonellain vitro and in pet food. Salmonella Kentucky strain 24 and S. Infantis strain 4 resistant to 7 and 4 clinical use antibiotics respectively were tested against the bacteriophage. Commercially available bacteriophage, Salmofresh® stock was serially diluted in suspension medium (SM) buffer. A growth curve analysis of S. Infantis at 25 °C and 37 °C was performed at OD600. A mixture of 100 µL Salmonella Kentucky (8 logs) and 100 µL of bacteriophage in 4 ml of soft agar (0.4%) was overlaid on pre-made tryptic soy agar (TSA) plates and evenly distributed to solidify. The solidified plates were incubated at 37 °C for 24h and the visible plaques were counted and expressed as PFU/mL. The study was conducted in duplicate and the means were used to calculate the lag phage and PFU values. S. Infantis strains 4 exhibited significant ($p \leq 0.05$) growth inhibition at 37 °C and 25 °C with lag phage extended to 9 h. However, at 37 °C, Salmonella entered an exponential phase (OD600 > 0.2) at ~9 h briefly before it actually dropped again. On the other hand, the bacteriophage efficiently developed plaques on S. Kentucky lawn at the concentration of 8.8 PFU/mL indicating its efficacy against the MDR S. Kentucky. The project is currently evaluating the efficacy of bacteriophage in pet foods against multiple MDR Salmonella serotypes. The bacteriophage could potentially be used to control MDR Salmonella in pet food thereby potentially safeguarding the households from Salmonella contamination originating from pets and pets' food.

Efficacy of Field Collected Pathogens Against Insect Pests.

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This research aims to evaluate the efficacy of field-collected entomopathogenic fungi against chewing and sucking insects. The field-collected fungi are isolated from cadavers of insects and identified based on their colony color, as White and Pink, until further identification takes place using molecular techniques. The collected test insects (Corn Earworm (CEW)(chewing) and squash bugs (sucking)) were dipped into a fungal suspension, and the insect diet was sprayed with 500 µl of a fungal suspension and then placed into a petri dish. For comparison, control groups were treated with sterilized water, and data was collected every two days until the test insects entered the pupal stage. Dip assay results showed that the rate of growth of the CEW treated with pink and white strains was lower compared to the control groups, 1.17g, 1.06g, and 1.25g, respectively. Spray assay results showed the rate of growth of the CEW treated with pink and white strains was lower than the control groups, 0.59g, 0.57g, and 0.6g, respectively. The number of days to pupation seems to be impacted by the entomopathogenic fungi. A Dip assay of the squash bugs showed that within three days, there was a 50% mortality rate in the pink and white strains. The study of the squash bug is at its preliminary stage, so dip and spray assay will be conducted in the upcoming season. This fungus shows its potential as a biological control agent in controlling the insect pest population.

Evaluation of Organic Insecticides and Trap Cropping on Yield of Field-Grown Amaranth viridis Linn.

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Ethnic crops are defined as crops that are not traditionally grown in the United States, but imported to the U.S. and grown on a small scale to satisfy the need of various ethnic groups. Around 1.5 million people live on the Delmarva Peninsula, and as the region's population increases so does the need to grow desired ethnic crops. The increased demand for locally grown foods provides opportunities for small farmers to grow ethnic crops to serve the diverse population and create

niche markets. organic insecticides (T1: Control, T2: Neem Oil, T3: Spinosad, and T4: Sevin), 2) evaluate the use of trap cropping (industrial hemp) (T1: Hemp and T2: No-hemp field), and 3) evaluate the use of a trap crop (industrial hemp) planted at several distances (T1: 0 ft, T2: 3 ft, T3: 6 ft, T4: 9 ft) on yield and pest pressure of field-grown amaranth. Four weeks after transplanting amaranth seedlings in the research fields, the shoots were harvested weekly for 7-8 weeks. Insects were collected using the sweeping net method before every harvest, and shoot fresh weight, dry weight and marketable yield were measured. In the insecticide study, average marketable yield in weeks 3-5 were significantly higher in the sevin treatment, while in week 6 the sevin and spinosad treatments were significantly higher when compared to the control. The trap crop study showed that No-hemp treatment was significantly higher in average total yield in weeks 4 and 6, and average marketable yield in weeks 4 and 5. The number of insects collected from the insecticide and trap crop studies were significantly higher in the control treatments, and significantly lower in the sevin and 9 ft treatments, respectfully. Marketable yield was also higher in the sevin and 9 ft treatments. The results of this study will provide small farmers with knowledge of IPM methods that can help them grow a healthy high-yielding marketable amaranth crop to cater to the ethnically diverse consumers on the Delmarva Peninsula.

Exploring the Phenomena of Disparity Regarding the Representation of African American Women in Leadership Positions at Predominantly White Institutions in North American Higher Education Through the Perspective of Diversity, Equity, and Inclusion.

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Throughout history, African American women in higher education have encounter numerous obstacles to achieving leadership positions, particularly at Predominantly White Institutions (PWIs). This study explores the structural inequalities faced by African American women seeking leadership roles and investigates the processes and practices used by these institutions to determine leadership suitability. The issues lie not in the qualifications of women of color and their capabilities but the threat she poses employed at a PWI. Using a qualitative design, the research probes into the experiences and perspectives of African American women from various PWIs. The study reveals the impact of diversity, equity, inclusion, and representation on their opportunities within these institutions. The findings underscore the systemic challenges present and the urgent need for fair DEI in higher education leadership within predominantly white intuitions.

Impact of Glyphosate on Apoptosis and Mitochondrial Function in Human Renal Proximal Tubule Epithelial Cells

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Glyphosate is the most frequently used herbicide in the world. An increased risk of long-term environmental exposure is indicated by glyphosate traces detected in the urine and blood of pregnant women, children, and workers in both the agricultural and non-agricultural sectors. The characteristics of renal anatomy and physiology render the kidneys especially susceptible to toxic xenobiotics. The kidneys are susceptible to oxidant-induced injury due to their high reliance on mitochondria and energy to facilitate the transport function of the nephron. Proximal tubules have a high abundance of mitochondria than other renal cell types to facilitate their active transport and secretory functions. The aim of this study was to investigate the cytotoxic effects of glyphosate human renal proximal tubule epithelial cells (RPTEC/TERT1). Cells were exposed to glyphosate at a concentration range of 0.00001 to 10mM for up to 24h. Cell viability, lactate dehydrogenase (LDH), apoptosis, ROS production, cytochrome C release and mitochondrial membrane potential and level ATP were evaluated. Cell viability was significantly reduced by glyphosate exposure in a concentration-dependent manner. After 6 hours, even with low concentrations of glyphosate, ROS levels in human RPTEC/TERT1 cells were much higher than 3h. Glyphosate caused an increase in LDH release, which may indicate damage to the plasma membranes of human RPTEC cells. Low concentrations of glyphosate significantly increased ROS production in a time-dependent manner. Treatment of RPTEC/TERT1 cells with the antioxidant N-acetyl-L-cysteine (NAC) significantly inhibited glyphosate-induced ROS production, indicating that this effect is due to glyphosate. Exposure to glyphosate significantly increased the executioner caspase-3 activity in a concentration-dependent manner. Treatment of RTEC/TERT1 cells with NAC as a caspase-3 inhibitor, significantly decreased glyphosate-induced apoptosis, indicating that glyphosate induced apoptosis via caspase-3 pathway. The apoptotic effects of glyphosate, at least in part, are mediated via induction of oxidative stress. Glyphosate significantly impaired the mitochondrial function as shown by loss of mitochondrial membrane potential, ATP levels and cytochrome c oxidase activity. These results imply that loss of mitochondrial function, depletion of the cellular levels of ATP, and induction of oxidative stress play a contributing role to the cytotoxic effects of glyphosate, and that glyphosate adversely results in impairment of renal function. Glyphosate may therefore pose a health risk to humans.

Oral Abstracts - Graduate

(Titles in Alphabetical Order)

In-Vitro Characterization of β-Carboline Biosynthetic Gene Cluster, Ksl in β-Carboline Production

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Natural drug products represent a major source of pharmaceuticals and other commercial products. Indole alkaloids such as β-carbolines demonstrate promising biological activities such as antimicrobial, anti-parkinsonism, and anticancer activities. While numerous β-carbolines have been isolated from plants, few molecules of such class have been isolated from microbes. Pictet-Spenglerases (PS) utilize L-tryptophan as a substrate and convert it into a β-carboline core employing the Pictet-Splengler reaction. Thus far, only two Pictet-Spenglerases, McbB, and NscbB are known to catalyze the formation of such products: 1-acetyl-3-carboxy-β-carboline and 1-acetyl-β-carboline. Kitasatospora setae (an actinomycete) produces β-carboline kitasetaline through the expression of a dedicated biosynthetic gene cluster (BGC). Kitasetalic acid is believed to be a pathway intermediate based on in-vivo studies. The in vivo studies suggest KslB converts L-tryptophan into kitasetalic acid which further aromatizes to produce JBIR-133 through the activity of KslA. The proposed activities of KslB (ring closure) and KslA (aromatization) are starkly distinct compared to those catalyzed by well-characterized enzymes McbB and NscB. In this study, we aim to fully characterize the reactions catalyzed by KslB and KslA through in-vitro enzyme assay using purified enzymes. We have generated expression constructs by cloning kslA and kslB genes in the pET-28a vector. Both proteins were over-expressed and recently purified. KslB is capable of catalyzing Pictet-Splenger reaction where as its product is oxidized by KslA to furnish full aromaticity in the products. Characterization of reaction kinetics catalyzed by these enzymes is currently underway. The present work showcases the unique catalytic abilities of the KslA-B system and offers a significant addition to the little-known Pictet-Speglerases.

Need for Educating Socioeconomic Implications of Heirs Property at the Community Level

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Heirs' property refers to land inherited by family members without a clear will or estate planning strategy. In 44 states and the District of Columbia, approximately $32.3 billion worth of heirs' properties have been assessed, with 64.6% of heirs in rural areas at risk of losing their properties. This type of property, which stems from intestate inheritance, presents significant socio-economic and legal challenges, particularly for African Americans in the United States. These challenges include the erosion of generational heritage, family disputes, financial exploitation by developers, and obstacles in effective land management due to unclear legal documentation. The primary objectives of this study are to educate community people about the heirs' property, assess the socio-economic and environmental implications of heirs' property at the community level, and aware people the possible consequences of heirs' property from a legal standpoint. The project intends to mitigate the risks associated with heirs' property and preserve generational wealth and integrity across geographical boundaries. For this, participatory training programs, interactive workshops, town halls, and world café meetings will be conducted across various counties in Maryland, focusing on the Eastern Shore. These events will highlight the complexities of shared ownership among descendants with different interests and residency patterns and offer proactive solutions such as estate planning, coordination among families, and financing succession plans. The events will be evaluated to measure their impact on participants' knowledge, skills, and understanding of Heirs' property. Surveys will be conducted at the end of each event, followed by a 3-month follow-up to assess changes in participant knowledge. Through these educational events, participants will have strengthened awareness, knowledge, skills, and attitudes, leading to observable shifts in behavior, decision-making practices, and actions. Ultimately, the impact of heirs' property education can extend beyond individuals to broader community dynamics, driving positive changes in socioeconomic and environmental conditions.

PI3Kδ-S Splice Isoform as an Oncogenic Driver for Tumor Aggressiveness and Drug Resistance in Lymphoma and Leukemia

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The PI3K pathway has been shown to be upregulated in various cancers. Especially, of the PI3K isoforms (PI3Kα/β/δ), PI3Kδ is implicated in hematologic malignancies, such as lymphoma and leukemia. Previous research has revealed

aberrant RNA splicing of PIK3CD as a critical mechanism that drives tumor growth and drug resistance in prostate cancer. In this study, we hypothesized that the aberrant PI3Kδ splice isoform may lead to hyperactivation of PI3K/AKT/mTOR signaling, potentially promoting cancer aggressiveness and drug resistance in lymphoma and leukemia. To test this hypothesis and evaluate whether PIK3CD-S splice variant or PI3Kδ-S splice isoform can serve as a precision biomarker and/or potential therapeutic target for lymphoma and leukemia, several experiments were conducted. First, a series of lymphoma and leukemia cell lines (including JeKo-1, Ramos, SU-DHL-5, and Hs 505.T) were examined for their PIK3CD-S/PIK3CD-L and PI3Kδ-S/PI3Kδ-L expression profiles using RT-PCR and immunofluorescence assays, respectively. Second, western blot analysis of PI3K/AKT/mTOR signaling molecules were performed in lymphoma and leukemia cell lines in the absence or presence of Idelalisib, a PI3Kδ specific inhibitor. Third, in-vitro functional assays (MTT and apoptosis assay) were further employed to assess the inhibitory capacities of Idelalisib in lymphoma/leukemia cells with differential PIK3CD-S/PIK3CD-L expression profiles. Our results indicated that Idelalisib was able to effectively inhibit PI3K/AKT/mTOR pathway, reducing cancer cell viability, and inducing cell apoptosis in the cell lines expressing low PIK3CD-S/PIK3CD-L ratios. In contrast, Idelalisib was less effective in inhibiting cell viability and inducing cell apoptosis in cancer cell lines that expressed high PIK3CD-S/PIK3CD-L ratio (such as Hs 505.T). Our results suggest that PI3Kδ-S is a more oncogenic isoform that contributes to hyperactivation of PI3K/AKT/mTOR signaling and confers resistance to Idelalisib in Lymphoma/leukemia cells. PI3Kδ-S, therefore, may represent as a potential therapeutic target and prognostic biomarker for aggressive forms of hematologic cancer.

Second Chance Employers Use of Situational Leadership Approach and Emotional Intelligence

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This literature review explores the effectiveness of situational leadership in organizations that hire justice-system-impacted individuals. Drawing upon the Second Chance Business Coalition (SCBC) Onramps Guide, which offers a comprehensive pathway for organizations and leaders, this study examines the role of emotionally intelligent, adaptable leadership in fostering success for this demographic. The SCBC endeavors to facilitate legislative change and transform policies while advocating for the recruitment, hiring, training, and retention of formerly incarcerated individuals. The review emphasizes the importance of addressing implicit bias in recruitment processes and promoting transparency regarding background checks. It advocates for an inclusive and empathetic approach, aligning with the principles of situational leadership and inclusive leadership tenets. Furthermore, the review highlights the significance of ongoing talent development, mentorship programs, and educational initiatives to support the growth and advancement of justice-system-impacted individuals within organizations. It underscores the role of organizational culture in fostering a sense of belonging and organizational identification among employees. However, the review acknowledges the limitations of situational leadership, including the lack of theoretical basis for developmental levels and considerations for demographic characteristics. Nonetheless, it argues that situational leadership offers a flexible and adaptable framework for addressing the diverse needs of employees, including those with justice-system backgrounds. In conclusion, the review suggests that situational leadership, with its emphasis on clear communication, goal-setting, and adaptability, offers a promising approach for organizations seeking to reduce recidivism and support the successful reintegration of justice-system-impacted individuals into the workforce.

Targeting mTOR/AR Signaling as A Novel Therapeutic Strategy For Aggressive Prostate Cancer

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Prostate cancer (PCa) has been recognized as a major global health concern, considerably ranging from low-grade, high-grade, to life-threatening tumors. Notably, African American (AA) men exhibited 1.7-fold higher PCa incidence and 2.3-fold higher PCa mortality rates when compared to the European American (EA) men. Besides the socioeconomic factors, emerging evidence has highlighted that biological risk factors may play critical roles in the AA PCa disparities. Androgen deprivation therapy (ADT) is a well-established regimen underpinning the current prostate cancer treatment. However, considerable number of the patients ultimately develop castration-resistant prostate cancer (CRPC) disease. To date, the molecular mechanism underlying the CRPC progression remains elucidated and a novel/effective therapy for CRPC is still in urgent need. Our previous study suggested that the crosstalk between androgen receptor (AR) and mTOR signaling may represent a critical mechanism promoting CRPC progression and AA PCa disparities. In this study, we further explore whether co-targeting mTOR and AR signaling could improve the treatment efficacies for CRPC and/or AA PCa. Specifically, mTOR inhibitor Rapamycin (Rap) and AR antagonists Enzalutamide (Enz) and Abiraterone (Abi) were employed to assess their effects, as single agent or in combination, on modulation of AR/mTOR signaling in CRPC and AA PCa. The in-vitro functional (MTT, and crystal violet staining) assay results have demonstrated that combination of Rap and Enz (or Abi) significantly enhances the cytotoxicity, compared to Rap or Enz/Abi as single agent, against CRPC and AA PCa. Western blot and Immunofluorescence assays further revealed that combination of Rap and Enz (or Abi) effectively inhibited protein levels of pmTOR/mTOR, pAR/AR/AR-V7 in CRPC and AA PCa cells. In conclusion, our study suggests that co-targeting AR and mTOR signaling may represent a promising/novel therapeutic strategy for aggressive PCa, especially for CRPC and AA PCa.

Oral Abstracts - Graduate
(Titles in Alphabetical Order)

The Impact of Urban Agriculture on Food Security and Well-being: Evidence from Small and Minority Producers in Maryland

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Growing food in urban areas, commonly known as urban agriculture (UA), primarily comprises backyard gardening, roof-top farming, hydroponics, aeroponics, aquaponics, vertical farming, and community gardening. UA eases access to food, reconnects communities to growing food, and creates economic opportunities, especially for small and minority producers. The University of Maryland Eastern Shore has implemented a UA project in the greater Baltimore area to promote local food production, enhance access to nutrient-rich fresh produce, and improve producers' knowledge and skills in urban agriculture. This study investigated the role of UA in addressing household food security challenges and enhancing well-being, with a focus on small and minority producers. The project applied a snowball extension model to recruit nearly 100 ethnic minority urban gardeners and engaged them through UA initiatives. An in-person survey using a semi-structured questionnaire was administered to assess the impact of the ongoing UA project and 71 urban gardeners (59% female participation). Preliminary findings showed that 86% of the respondents realized increased access to fresh, nutritious, affordable, and culturally preferred vegetables in their backyards. The majority of the respondents (91%) cultivated leguminous crops, followed by solanaceous crops (83%) and cucurbits (76%). Moreover, the adoption of low-input and sustainable methods, such as composting and rainwater harvesting, reduced the production cost of vegetables, as reported by 83% of the respondents. The reduction in the cost of production was associated with the increase in income and purchasing power of minority producers, thereby enhancing their access to other food items. Additionally, marketing vegetables to contact customers, farm gate sales, and festivals, such as street, cultural events, and restaurants, stimulated the circular economy. Furthermore, 89% of the respondents reported improvements in the health and well-being of family members, as UA offers physical activity, mental relaxation, and enhanced social and cultural ties among community members. By promoting local food production, reducing production costs, and improving health outcomes, UA emerges as a promising strategy to address food security challenges and augment well-being, particularly for small and minority households in Maryland.

The Osteoimmunomodulatory Effect of Cytokines Treating Mesenchymal Stem Cells on Bone Healing

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Bone fractures are one of the leading injuries treated by orthopedic surgeons. Despite intense investigations, the underlying molecular and cellular mechanisms of bone remodeling remain largely unknown due to its complexity and heterogeneity over space and time. The healing of injured bones involves spatiotemporally coordinated intercellular communication between immune cells and resident bone marrow mesenchymal stem cells (MSCs) in the injury region. While bone injury elicits an acute inflammatory response, which is beneficial to bone defect healing, chronic inflammation has been shown to be associated with impaired bone healing and osteolysis, in the presence of massive polarized macrophage infiltration and pro-inflammatory cytokine secretion. The lack of comprehensive mechanistic insights has considerably hindered the advancement of effective therapeutic strategies for severe bone injuries. Here, our objective is to investigate the osteoimmunomodulatory effects of MSCs in inflammatory contexts, with the ultimate aim of enhancing stem cell-based therapies to facilitate improved bone healing.To examine the osteoimmunomodulatory potential of MSCs, mouse MSCs (mMSCs) were exposed to various cytokines, including TNFα, IFNγ, IL-4, and IL-10, while they were cultured in osteogenic media (OM). The osteogenic differentiation of treated mMSCs was assessed by examining early and late osteogenic markers through real-time PCR, alkaline phosphatase (ALP) staining and activity, and Alizarin Red staining and quantification. In addition, the expression level of several inflammatory genes in the treated mMSCs was evaluated using a real-time PCR assay. Our results indicated that TNFα-treated mMSCs displayed a significant increase in osteoblast differentiation, as evidenced by elevated expression of osteogenic genes, enhanced ALP activity, and increased mineral deposition. Furthermore, TNFα-treated mMSCs exhibited upregulated expression of anti-inflammatory genes, including IL-4 and IL-10.In summary, we found that TNFα-treated mMSCs display apparent osteoimmunomodulation, characterized by enhanced osteogenesis and anti-inflammatory response. The next step in our studies is to investigate the osteoimmunomodulatory effects of modified MSCs in a mouse bone defect model. These findings are expected to serve as a solid foundation for enhancing MSC-mediated therapies in bone repair and regeneration.

Oral Abstracts - Graduate

(Titles in Alphabetical Order)

The Tensions of Mothering, Teaching, and Advocacy: An Autoethnographic Study
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The journey of challenges and controversy that our most essential peer group face in public education has expanded from generation to generation. They have carried their emotions, feelings, and sense of well-being on the backs of each other on the football field, basketball team, lacrosse and wrestling team, and gang affiliation. The impact on young Black and Brown males is filled with darkness and uncertainty. Many of them are still unaware of the treasures that lie within them because of the obstacles they faced during their early years of learning. Do they feel valued, discarded, useless, neglected, ignorant or irrational? How many of them have settled for something less than perseverance? Many will never reach their fullest potential, experience the state of geniuses fulfilling their ambitions. Together we can strive to implant rays of radiant light, hope, self-inspiration of their abilities, and specialize in their gifts.

Trb3-Directed Therapy Promotes Bone Regeneration in Osteoporosis

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Age-related osteoporosis, a leading public health concern, is characterized by metabolic imbalance and aberrant bone remodeling due to reduced bone mass and increased marrow fat. This condition contributes to over 200 million fractures worldwide annually, leading to decreased quality of life and increased morbidity and mortality. The regeneration of bone injuries especially in osteoporotic conditions remains a significant challenge. Dysregulated differentiation of mesenchymal stem cells (MSCs) within bone marrow leads to an increase in adipocytes at the expense of osteoblasts, exacerbating osteoporosis. Modulating MSC lineage commitment presents a promising therapeutic strategy for mitigating osteoporotic bone loss. Our prior research has identified Trb3 as a critical molecular switch governing MSC lineage fate by regulating adipogenesis and osteogenesis programming. The objective of this study is to investigate the therapeutic potential of targeting Trb3 for bone defect repair in osteoporotic conditions. Our previous investigations have demonstrated that exosome mimetics (EMs) enriched with endogenous osteogenic or therapeutic factors can significantly enhance bone regeneration. In this study, we have developed modified EMs expressing endogenous Trb3 (EM-Trb3) through small molecule-treating human MSCs followed by an extrusion approach. We assessed the in vitro osteogenic and adipogenic effects of EM-Trb3 at the gene and protein levels using various molecular techniques. To evaluate in vivo bone repair, EM-Trb3 was loaded onto an apatite-coated PLGA scaffold to create an EM-Trb3/scaffold complex. The characteristics of the EM-Trb3/scaffold complex was further examined in vitro. EM-Trb3 significantly enhanced MSC osteogenesis, as evidenced by a notable increase in the expression levels of osteogenic genes (Osterix, Runx2 and Osteocalcin). Conversely, EM-Trb3 inhibited adipogenic differentiation of MSCs. Furthermore, the EM-Trb3/scaffold complex exhibited excellent cellular viability and effective osteogenic induction, along with the suppression of adipogenic differentiation. EM-Trb3 has showcased its osteogenic-promoting and adipogenic-inhibiting properties across both 2D and 3D settings. These results lay a strong groundwork for exploring bone defect mending in Ovariectomized (OVX) mouse models. The successful completion of these findings holds potential for transitioning this strategy to extensive bone defect restoration in osteoporotic individuals.

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Digital Media Presentation in Ballroom
Comparison Between Florida and Maryland's Flooding Due to Climate Change

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Climate change has been affecting the weather causing more rain. This affects the ocean levels by causing them to rise. This has made transportation issues, living costs, homelessness, business shutdowns, and citizen injuries rise. Shifts in climate should not be this drastic causing so much damage so quickly. In Florida, high tide has become a common increase. Climate change has reached between 1 and 2 feet above the average high tide. Locations have also affected this because of the sea level walls. The NOAA has predicted that from May 2023 to April 2024 the U.S. will experience between four to nine high tide flood days. This is a huge increase from last year's prediction of three to seven days. The damages in Florida range from Everglades City up to Fort Myers. The flooding has affected dozens of homes in Southwest Florida. The National Flood Insurance Program has spent more than $24 million to rebuild citizens homes and businesses. In Sanibel, Florida, six homes cost more than $1.7 million to rebuild after flooding damage. Additionally, in Fort Myers Beach, 25 homes were estimated to be around $4.6 million to rebuild. In Maryland flooding has also impacted the area due to climate change. It has hugely affected the transportation system and citizen life. Flooding in Maryland has affected close to 15,000 lane miles of the state-maintained roadways. There have been 2,771 incidents of flooding that caused damages in Maryland. It was found that 78% occurred outside the 100- or 500-year flood zones mapped by the Federal Emergency Management Agency (FEMA). This has affected close to 480,000 people annually. It has cost about $15 million per year in Maryland and totaled $230 million. These costs were related to emergency response and infrastructure repairs. We propose to examine all of the damages and effects of flooding between Maryland and Florida during our study. We hope to spread awareness to UMES students and staff about how damaging climate change has become.

Global Warming

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Global warming is a worldwide issue, but your opinion varies depending on where you're from. In areas where environmental education is prioritized, such as particular schools in urban or suburban settings, students will further their knowledge on recycling, deforestation, and climate change. Some schools have dedicated environmental programs, access to resources like recycling facilities and green spaces, and partnerships with local organizations focused on sustainability. As a result, students from these areas are more likely to have a strong understanding of global warming and its implications for the planet. What happens to students who are less fortunate to be in a county where these resources are available? Can they still learn the same information on their own? This research seeks to investigate the potential correlation between an individual's background and home environment and their understanding of global warming. The primary aim of my study is to determine whether factors such as upbringing and family environment directly influence one's knowledge of global warming. To achieve this goal, I have designed a survey consisting of questions regarding participants' racial or ethnic identity, their parent's level of education, the geographical location of their upbringing, and the grade at which they were first introduced to information about global warming. Through this survey, I want to uncover any relationships between these variables and individuals' awareness of global warming. By examining these connections, my research aims to contribute valuable insights into the factors that shape environmental knowledge and attitudes, informing future practical education and communication strategies on this critical issue.

Lunar Robotics: A Platform for Active Learning and Research

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The experiential learning and research project reported here involves robotic exploration in simulated lunar environments and terrestrial analog sites. Utilizing Ubuntu Linux distributions and the Robot Operating System (ROS), alongside external software tools such as PyTorch and MATLAB, this study aims to enhance robotic autonomy and efficiency in extraterrestrial explorations. Ongoing efforts of the project team at the University of

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Maryland Eastern Shore (UMES) include: i.) enabling remote operation capabilities for multiple mobile robots recently acquired in the UMES robotics laboratory, ii.) employing 2D LiDAR integrated with these mobile robots for SLAM (Simultaneous Localization and Mapping) to generate comprehensive 2D maps, iii.) collaborating with the University of Maryland's Space Systems Laboratory (UMD-SSL) to leverage their extensive robotics expertise, and iv.) designing and simulating novel robotic systems within ROS and Gazebo for virtual lunar landscapes. The project team plans to use depth cameras integrated with these mobile devices for 3D mapping, as well as explore applications of deep learning to interpret LiDAR and visual data for autonomous decision-making. The goal is to develop advanced navigation systems to achieve predefined objectives in both physical and virtual moon-like terrains. This project not only demonstrates the potential of combining AI and robotics related to space exploration with education and research in the university settings but also provides the foundation for innovative endeavors related to NASA's Science and Technology Mission Directorate (STMD) for the ARTEMIS mission.

Microplastics Found in the Maryland Coastal Bays

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Microplastics (MPs) are very small fragments of plastic resulting from disposed and decomposed larger plastic pollutants found in the environment. The typical size of microplastics is about ≤ 5mm and are found primarily in large bodies of water. These tiny pieces of plastic enter our waterways through improper disposal of plastic products, water runoff, tire abrasion, etc. Although tiny, MPs are very detrimental to the environment, posing environmental concerns, such as marine organisms mistaking MPs for food and moving up in the food chain through bioaccumulation. The ingestion of plastics also can affect an organism's dietary habits, block nutrients, cause reproductive issues, or even physical damage to the organism itself. This study investigated the presence of MPs in Maryland Coastal Bay Spot (Leiostomus xanthurus) and Atlantic ribbed mussels (Geukensia demissa). The fish samples were collected using an otter trawl and the mussels were collected by hand. Once collected, the length and weight of each fish and mussel were measured. The stomachs of the fish and mussels were removed, and 10% KOH solution was added to the stomach contents to dissolve the organic material. The stomach samples containing 10% KOH solution were left to incubate at 60°F for 1-2 days. After incubation, density separation was done with Na_2WO_4. The top layer of the solution was filtered for MPs and then examined under a microscope. The average amount of microplastics found in the Spot and Atlantic ribbed mussels were about 0.9± 1.768945072 and 0.2± 0.421741168 MPs/individual, respectively. When comparing the mussels found in Ocean City to the mussels found in Assateague, the mussels from Assateague had a slightly higher average amount of MPs present (0.3 MPs/individual) compared to Ocean City (0.1 MPs/individual).

Radiative Cooling Properties on Bio-degradable, Abundant and Inexpensive Cellulose Materials

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Have you ever thought about why people in tropical countries and very hot weather prefer to wear cotton in the summer? The answer lies in more than just its breathability and absorption properties. We have found that cotton, more generally, cellulose based materials actually show significant radiative cooling properties. This phenomenon involves the escape of infrared waves (8 - 13 μM) from heated materials into outer space, rather than being trapped in the atmosphere. The aim of this project was to assess the cooling capabilities of cellulose and its composites with polymers. To evaluate cooling power, substrates were heated to ambient temperature, and the energy required to maintain this temperature was measured using thermocouples and Arduino based sensors. Three composite samples were tested: Polydimethylsiloxane (PDMS), a cotton pad (pure cellulose), and a blend of PDMS with powdered cellulose. Results revealed that each polymer could cool down to temperatures up to 15 degrees Celsius below ambient without external power. Interestingly, during peak afternoon heat (1pm to 3pm), cellulose demonstrated over 500 milliwatts of cooling power, while PDMS and its cellulose blend showed around 300 milliwatts. This suggests that cellulose and its composites could be promising, eco-friendly materials for radiative cooling applications.

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Research Proposal on the Effects of Erosion in Ocean City, MD in 2024

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The high sea level in Ocean City, Maryland has been a consistent threat. Research has shown that the shore has retreated by 75 meters since 1880 and when applied to the most recent times of 2020 to 2024, in the next 30 years, Ocean City will experience a "century's worth" of sea level rise. There have been measures taken to prevent the sea levels from affecting the town of Ocean City, but these measures can affect the low-lying areas in the long run as they increase the level of tides, causing very bad floods. This research paper aims to provide information on the changes of sea-level rise and tide level rise, as well as how environmental organizations can change the strategies to slightly prevent the loss of homes and property, based on the review of scientific studies, first-person reports, and research proposals done in Maryland. Analysis of the reports and information have provided a possible solution to the impact of high sea level and high tides in Ocean City. Marsh walls are the best preventative measure for floods to be less destructive and for the tide to be less energetic, while in contrast, high rising seawalls have protected communities but have also increased the sea level and tide level on the coastline, thus making high rise floods less preventable, and letting high amounts of water into the communities all at once. Applying investment into marsh farming, instead of dramatically increasing the height of seawalls, can make the floods in communities less energetic and more manageable over the years. Letting water naturally flow into the communities can be the way to prevent drastic floods and losses.

Socio Economic Ramifications of Climate Change

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The primary thesis of this study is the socio-economic implications of climate change specifically in the eastern shore of Maryland. Climate change is a big topic nowadays and how it affects the eastern shore of Maryland socially and economically is critical.First, this abstract is about the influence of climate change in the eastern shore of Maryland social economically speaking; which is referring to severe flooding, extreme weather patterns, and rising sea levels are some of the biggest concerns of the communities in the eastern shore. Furthermore, this study examines poverty being a deterrent to climate change because families are unable to rebuild after flooding which highlights the disparities in vulnerable and unfortunate capacity among different communities. Half of the families' incomes are below the federal poverty line. In addition to poverty, the citizens of the eastern shore of Maryland also must deal with bad geography because the areas are very rural, a lot of residents are living in food deserts where there are not grocery stores for 25 miles from their homes. One in nine families living on the eastern shore are troubled by food insecurities. In conclusion, I will be examining the socio-economic implications of climate change specifically relating to the eastern shore area of Maryland. The three most pivotal concerns affecting the residents are severe flooding, extreme weather patterns, and rising sea levels. Not to mention that three of the counties on the eastern shore are the most poverty-stricken counties in the state.

The Effects of Climate Change on the Rise in Electrical Bills on Marginalized Communities

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Since the start of the industrial revolution there have been negative impacts on the ozone layers caused by the changes in climate. Another impact has been an increase in electrical bills in marginalized communities facing heatwaves, droughts, and storms which have led to higher energy consumption in cooling, increased water usage, and heating, burdening households with increases in electrical expenses. Throughout the years, we have steadily seen changes in the world we inhabit and shifts of weather patterns, causing irregular heat waves. Households are using air conditioning longer and more frequently, causing higher bills. This can be damaging towards marginalized communities because if most of their funds are consumed by electrical bills, families will struggle to pay off other necessary bills. This study offers an insight into the interrelationship between climate change and energy demand, and highlights the disproportionate impact on marginalized communities. It seeks to propose a sustainable solution to address the changes.

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Vibration Induced Adhesion of Thin Flexible Membranes

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This research project originated from a curiosity driven question: Can a carpet actually fly? While flying carpets are a fantasy, often seen in films like "Aladdin," the concept translates in science to a vibrating membrane that can produce lift. This idea parallels the natural movements of stingrays and manta rays. We tried to replicate this motion in the lab by vibrating a thin elastic sheet on an acrylic plate and see if it can generate a time averaged directional pressure, in this case vibration induced adhesion, in some parameter space. A sourcemeter supplying current and voltage to a micro-vibration motor kept the membrane vibrating. We have done a comprehensive investigation on the load capacity as a function of the frequency and amplitude of vibration. Moreover, we have measured the vibration modes of the membrane using a high-speed camera. This innovation has the potential to be used in emergency response robots to clear debris or rescue trapped civilians. Our current focus involves changing the disc radii to observe its impact on the force of adhesion. Additionally, we are trying to gain a deeper understanding of how the gap between the disk and the plate changes dynamically with the vibration parameters.

Digital Media Presentation in Ballroom
When it comes to Climate Change, Ignorance is not the Answer.

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Climate Change is a phenomenon that occurs after long-term shifts in temperatures and weather patterns. Shifts in climate could very well be natural. Some causes are changes in the sun's activity, orbital changes, or large volcanic eruptions. However, since the Industrial Age human affairs and blatant ignorance of the harm inflicted on our planet have been the primary cause of climate change. The effects of climate change are everywhere, but more apparent in certain sections of the world. For example, in Maryland climate change is not as obvious, but many of these changes, such as abnormally warm temperatures are evident in the Arctic. Some Maryland residents, particularly in underserved communities, have never traveled outside the country, let alone the state. Many do not have access to higher education. This is the case in Somerset County, the poorest county in Maryland which is reported to have only 15.7% of residents have a bachelor's degree or higher. As a result, many Maryland residents are unaware of the true meaning of climate change, since it is not happening to them firsthand. We would propose to examine the effects of climate change on the Arctic with its melting ice caps and its impact on Maryland's climate. We hope that in doing so, we will bring more awareness to UMES students, and more concern about the future of Maryland and the world.

(Titles in Alphabetical Order)

Genomic Diversity of Salmonella Serovars Isolated from Organic and Non-organic Retail Whole Chicken Carcasses on the Eastern Shore of Maryland, USA

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Multidrug resistant Salmonella is becoming a public health hazard. This study aimed to investigate the genomic diversity of the selected Salmonella serovars isolated from organic and non-organic chickens using whole-genome sequencing (WGS). A total of 94 Salmonella isolates [Infantis (n=71), Enteritidis (n=13), Typhimurium (n=10)] recovered from organic and non-organic retail chickens were subjected to WGS using Illumina MiSeq. All Salmonella isolates contained at least one antimicrobial resistance (AMR) gene. All S. Typhimurium and S. Enteritidis isolates, and 98.6% of S. Infantis isolates possessed aac(6')-Iaa which predicted resistant to aminoglycosides. Most isolates harbored AMR genes for sulfonamides, β-lactamase inhibitors, tetracyclines, and fluoroquinolone/quinolone resistance regardless of chicken types. Fisher's exact test indicated a significantly higher prevalence of AMR genes in Salmonella isolated from organic chickens. The virulence genes that stimulate Salmonella pathogenicity island 1 (SPI1) encoding, type three secretion system 1 (TTSS-1) translocated effectors, SPI2 encoding, TTSS-2 translocated effectors, fimbrial adherence determinants, serum resistance, stress adaptation and Mg2+ uptake were observed in every serovar regardless of chicken types. Seven plasmids were detected, including IncFIB(pN55391), IncFIB(S), Col(BS512), IncFII(S), IncX1, IncC, and ColpVC in non-organic chicken, whereas organic chickens only carried three plasmids [IncFIB(pN55391), Col(BS512), and IncC]. Phylogenetic analysis confirmed that Salmonella isolates of each serovar were genetically related. These results suggest that the Salmonella isolates from organic and non-organic chickens possessed various AMR and virulence genes and thus have the potential to cause salmonellosis.

Impact of Number of Full-time Faculty on NAPLEX First-Attempt Pass Rates

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Having a high number of faculty members in a pharmacy school may enrich student experience and promote individualized learning. Despite previous research on the impact of different school characteristics, the literature is scant on whether faculty size impacts the pass rates of NAPLEX, which is the licensing exam for pharmacy graduates in the US. This study aimed to investigate the association between faculty size and NAPLEX first-attempt pass rates. We hypothesized that higher numbers of full-time faculty members are linked to higher NAPLEX pass rates. Data was downloaded from the National Association of Boards of Pharmacy website, the American Association of Colleges of Pharmacy website, and individual pharmacy schools' websites. Analysis was limited to US-based pharmacy schools. Following IRB approval, a bivariate analysis was conducted to test the association between 2023 NAPLEX first-attempt pass rates and the number of full-time faculty members reported in the academic year 2022-2023. Then, a linear logistic regression model was conducted to examine this association after controlling for several covariates: program age, program structure (accelerated vs. traditional), program type (public vs. private), and class size. Analysis was conducted using SPSS version 28. A total of 137 pharmacy programs with complete data on all variables were included in the analysis. Faculty size was positively correlated with NAPLEX first attempt pass rate in the bivariate analysis (r = .314, n = 137, p < .001). However, this association lost statistical significance in the linear regression model (p = .323) after controlling for the above-mentioned covariates. Although having a large number of faculty members may aid with curriculum delivery and fair distribution of workload, this factor is not necessarily associated with NAPLEX first-attempt pass rates. Rather, program administrators may consider factors directly tied to learning for the purpose of supporting student education, such as student engagement, curriculum content, and program robustness.

Anticonvulsant Effect of Flavonoid-Rich Fraction of Ficus platyphylla Stem Bark on Pentylenetetrazole Induced Seizure in Mice

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Epilepsy is characterized by recurrent spontaneous seizures. Several antiepileptic drugs have been used over the years and these drugs have shown serious side effects, thereby prompting the use of medicinal plants to avert the resultant side effects of anti-epileptic drugs. To evaluate the anticonvulsant effect of the flavonoid-rich fraction (FRF) of Ficus platyphylla stem bark (FPSB) on pentylenetetrazole (PTZ) induced seizures in mice. Experimental cohort study. We evaluated the anticonvulsant effect of the flavonoid-rich fraction (FRF) of Ficus platyphylla stem bark (FPSB) on pentylenetetrazole (PTZ) induced seizures in mice by measuring its antioxidant activity in vivo and in vitro and identify possible flavonoids present via Liquid Chromatography Mass Spectroscopy (LC-MS) and Fourier Transform Infrared Spectroscopy (FTIR). One way analysis of variance (ANOVA) was used to determine the level of significance at a 95% confidence interval followed by Tukey's multiple comparison test using SPSS software. The FRF of FPSB exhibited weak anticonvulsant activity against PTZ-induced seizure in mice. Maximum anticonvulsant activity (25% protection) was observed at a dose of 100 mg/kg and 200 mg/kg with a delay in the meantime of onset of myoclonic jerks and latency to tonic seizure. The effect of the fraction was found to be dose-independent. The FRF contains a flavanone Astilbin (flavonoid 3 O glycosides) which may have effectuated the high antioxidant activity against 2,2 diphenyl 1 picrylhydrazyl (DPPH) and nitric oxide (NO) while increasing brain glutathione content and decrease in malondialdehyde content. Although the anticonvulsant capacity of FRF on PTZ-induced mice was minimal, this further requires an exploration of other seizure models to ascertain its mechanism of action.

Application of SARIMA model on forecasting the Global Price of Corn

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A time series data, a set of observations or series of numerical data taken at regular time intervals, is fundamental for trend analysis and forecasting its future values. The main purpose of this study was to demonstrate the role of the time series model in predicting processes and to pursue the analysis of time series data using long-term records of the monthly global price of corn from January 2014 to December 2023. In order to find a solution, the auto.arima() function from the "forecast" package in R 4.3.2 for Windows was employed to identify both the structure of the series (stationary or not) and type (seasonal or not) and sets the model's parameters, which takes into account the AIC, AICc or BIC values generated to determine the best fitting seasonal ARIMA model. Following the Box–Jenkins methodology, the ARIMA(0,1,1)(0,0,1)[12] was selected to be the best-fitting model for the time series, according to the lowest AIC value in this study. According to the Ljung–Box Q–test, the p-value of the test was 0.7013, indicating that the residuals were random and that the model provided an adequate fit to the data. The overall study demonstrated the efficacy of the SARIMA model in forecasting the global price of corn. Farmers can predict market trends and implement strategies to navigate the dynamics of the corn market by utilizing time series analysis techniques.

Application of Time Series Analysis (SARIMA Model) for Forecasting the Global Price of Lamb

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Forecasting the prices of agricultural commodities is crucial for anticipating favorable or unfavorable events in farming or agri-food enterprises. Seasonal Autoregressive Integrated Moving Average (SARIMA) models are powerful tools in time series analysis and forecasting, particularly when dealing with data that exhibit seasonality and other complex patterns. Forecasting the global price of lamb holds significant importance for farmers and stakeholders as it facilitates informed decision-making and market strategy. This study aimed to explore the application of the time series analysis (SARIMA model) to predict processes and forecast the global price of lamb meat. The monthly data on global lamb prices spanning from January 2010 to December 2023 were used to analyze the data. Utilizing the 'forecast' package in R (version 4.3.2), the study employed the 'auto. arima ( )' function to identify the structure and type of the time series data, while also determining optimal model parameters based on the Akaike Information Criterion (AIC), Corrected Akaike Information Criterion (AICc), or Bayesian Information Criterion (BIC) values. Following the Box-Jenkins methodology, the ARIMA (2,0,2) (1,0,0) [12] was selected as the best-fitted model, evidenced by the lowest AIC value (944.05). Furthermore, the adequacy of the chosen model is validated through the Ljung-Box Q-test, yielding a p-value of 0.8877, indicating a satisfactory fit to the data with random residuals. The results of SARIMA demonstrated its effectiveness in capturing the seasonality, trends, and fluctuations in global lamb prices, enabling farmers, traders, and policymakers to anticipate market trends and implement strategic decisions effectively

Assessing Patient Spirituality and Patient Perspectives on Pharmacists Inquiring about Spiritual Needs in Community Settings

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As we strive towards health equity, healthcare professionals (HCPs) must consider all factors affecting patient health. HCPs are increasingly aware of the importance of integrating spirituality or religion into patient care. However, there is limited literature on the role of pharmacists in conducting spiritual assessments and how patients perceive their involvement in this area. Therefore, the purpose of this study was to evaluate the spirituality or religious involvement of community-dwelling individuals and gain insight into their perspectives on pharmacists inquiring about their spiritual needs to improve health outcomes. This multicenter, cross-sectional study was approved by the institutional review boards of the University of Maryland Eastern Shore (UMES) and Shenandoah University (SU). It was conducted through an electronic survey at three health fairs or vaccination clinics organized by UMES or SU. The health fairs were conducted both on and off campus. The 19-item survey was completed by a convenient sample of adults aged 18 years or older who provided informed consent. The survey assessed the participants' religious involvement and their spiritual history. The CSI-MEMO (Comfort or Stress, Influence, Member, and Other) Spiritual History tool was used to obtain information about spiritual beliefs and preferences in their care. The validated five-item Duke University Religion Index (DUREL) was used to measure dimensions of religious involvement: Organizational Religious Activity (ORA; 1-item), Non-Organizational Religious Activity (NORA; 1-item), and Intrinsic Religiosity (IR; 3-item). The possible score ranges for ORA (six response options: 1=never, 6=more than one time per week), NORA (six response options: 1=rarely or never, 6=more than one time per day), and IR (five response options; 1=definitely not true, 5=definitely true). Additionally, the participants were asked about their perspectives on pharmacists or other HCPs inquiring about their spiritual or religious needs before providing care in community settings. The survey also included demographic questions. The data was analyzed using descriptive and inferential statistics. The survey was completed by 57 participants. Most respondents were females (68.4%) and were 60 years of age or older (40.4%). The majority identified as Black/African American (45.6%) or White (38.6%). About 56.4% of the participants identified as Christian, while 19.3% were not affiliated with any religion. For the DUREL, participants scored high on IR with a median score of 13. The median scores of ORA (3) and NORA (3) indicated that most participants engaged in activities once a week. The CSI-MEMO Spiritual History demonstrated that most participants (78.9%) found comfort in their spiritual beliefs. Over half, or 53%, stated that their religious or spiritual views did not influence their medical decisions. The vast majority, 93%, did not have any needs they wanted their healthcare provider to address. When inquired about the appropriateness of pharmacists asking about patients' religious and spiritual beliefs before providing recommendations or counseling, 43.9% of the participants found it suitable, while 24.6% disagreed, and the remaining 31.6% were neutral. Slightly more participants (50.9%) thought it was appropriate for doctors, nurse practitioners, or physician assistants to ask about religious and spiritual beliefs before offering treatment.

Overall, most participants either found it appropriate or were neutral towards pharmacists inquiring about their spirituality or religion before providing treatment recommendations or counseling. However, one limitation of the study was that the survey was not pretested, which may have led to some participants misinterpreting certain questions. More comprehensive and in-depth research studies with larger and more diverse participant groups are needed to determine the significance of these findings. Further studies that include pilot or pretest surveys are warranted to understand pharmacists' attitudes toward implementing spiritual assessments in outpatient settings.

Biochemical Changes Underlying the Neuroendocrine Differentiation of Prostate Cancer Cells.

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Prolonged treatment of prostatic adenocarcinomas with androgen deprivation therapies (ADT) can result in the development of castration-resistant prostate cancer (CRPC). Several molecular mechanisms have been proposed to mediate the transformation of androgen-dependent adenocarcinomas into CRPC. Neuroendocrine differentiation (NED) is an important factor in the phenotypic switch to advanced prostate cancer (PCa) and can be found in ~30% of CRPC. Paracrine secretion of the pro-inflammatory cytokine IL-6 by the tumor microenvironment appears to be particularly relevant as a primary inducer of NED in prostate tumors. There are significant biochemical changes in prostate tumors because of NED and progression to a castration-resistant phenotype. However, the cause-effect relationship between various signaling mechanisms and PCa differentiation is not well understood. This study was designed to characterize the expression of the Akt3 signaling molecule and the transglutaminase 2 (TG2) protein, involved in posttranscriptional modifications, that occur in various PCa cell models, including LNCaP, C4-2, and PC3 cells. These cell lines represent different stages in tumor progression. The ability of IL-6, cAMP-inducing agents, or androgen deprivation to promote the biochemical differentiation of PCa cells was assessed by western blot analysis in LNCaP, C4-2, and PC3 cells cultured for 4-8 days. LNCaP cells treated with IL-6, forskolin (FSK), or androgen deprivation for 4-8 days express the neuroendocrine marker tubulin IIIβ, indicating significant induction of NED. Akt3 was not expressed in LNCaP or C4-2 cells but was highly expressed in PC3 cells. Akt3 expression was not altered by long-term stimulation with IL-6, FSK, or androgen deprivation. On the contrary, the expression of TG2, involved in posttranscriptional modification of proteins, was highly expressed in LNCaP cells stimulated for 8 days with IL-6 (or IL-6+FSK). TG2 expression was detected in PC3 cells. These findings reveal a complex pattern of biochemical changes in PCa undergoing NED.

Poster Abstracts - Graduate
(Titles in Alphabetical Order)

Bridging Global Pharmacy Education: The UMES-Sunyani Technical University Articulation Agreement

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The collaboration between academic institutions from different countries is pivotal in enhancing global pharmacy education. The articulation agreement between the University of Maryland Eastern Shore (UMES) and Sunyani Technical University (STU) in Ghana exemplifies this international educational partnership. This study explores the benefits and challenges of such collaborations, focusing on how they address gaps in resources, training, and global exposure in pharmacy education.This research aims to evaluate the effectiveness of the UMES-STU articulation agreement in fostering educational and professional growth for students from both institutions. The study hypothesizes that this agreement significantly improves educational outcomes, cultural competence, and professional readiness of pharmacy students in both the US and Ghana. A programmatic and comparative analysis was conducted to evaluate the UMES-STU articulation agreement's impact on pharmacy education. This included examining the 3+3 pathway program for STU students and the clinical experiences for UMES pharmacy students in Ghana. The prerequisites of STU's bachelor program were compared with UMES's pharmacy program requirements to assess the efficiency of the articulation agreement in facilitating student progression. Additionally, the study delved into how the agreement has contributed to enhanced curricula, cross-cultural competencies, research collaborations, and resource sharing between the institutions. To contextualize these findings, a brief literature search was conducted to understand how other schools utilize international articulation agreements. This involved reviewing academic journals, case studies, and institutional reports to draw comparisons and identify trends, challenges, and best practices in international educational partnerships. This comparative analysis provided a broader understanding of the role and impact of such agreements in the global educational landscape, enriching the evaluation of the UMES-STU collaboration. This multifaceted approach offered a comprehensive analysis of the articulation agreement's effectiveness and strategic value in advancing pharmacy education. Preliminary findings show that UMES students gain invaluable clinical experience and cultural exposure working alongside clinical pharmacists in Ghanaian hospitals. An enrollment increase for future rotation of 50% was tracked, highlighting the program's growing appeal. STU students benefit from accelerated entry into UMES's pharmacy program, seamless transfer, clear pathway to gain prerequisites, reduced undergraduate cost, receiving advanced education and training, and networking opportunities. UMES and STU both benefit with an expanded pool of students, enhanced reputations and partnerships, streamlined admissions processes, diversification of student body, fulfillment of mission and goals, and higher retention and graduation rates. The agreement has enhanced curriculum relevance, cross-cultural competence, and has opened avenues for joint research and resource sharing. Conclusion: The UMES-STU articulation agreement demonstrates a successful model for international collaboration in pharmacy education. It provides mutual benefits by combining resources and expertise, enriching student experiences, and preparing graduates for the globalized healthcare sector. The study suggests expanding similar models to other institutions, enhancing global health perspectives. Future research should focus on long-term career outcomes for participants and the impact on healthcare systems in both countries. This articulation agreement sets a precedent for future partnerships, contributing to the evolution of a more interconnected and globally competent pharmacy education.

Characterization of Aromatic Decarboxylases involved in Manzamine Producer Micromonospora sp. M42

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Manzamines are complex marine alkaloids that have exhibited a broad range of biological activities and unique structural features. As of now, however, little is known concerning how manzamines are biosynthesized and what enzymes are implicated in the biosynthetic process. To elucidate biosynthetic steps and the enzymes implicated in Manzamine A production, the whole genome of the producer bacterium Micromonospora sp. M42 was sequenced and annotated. Bioinformatic analysis was conducted to devise a biosynthetic model for the production of manzamine A. We propose the conversion of L-tryptophan to tryptamine by an aromatic decarboxylase, which represents the first step of the manzamine A biosynthetic process. We identified four candidate genes in the genome of Micromonospora sp. M42 strain. The genes were cloned and heterologously expressed in E. coli. Functional analysis of these decarboxylases is currently underway.

Comparative Analysis of Different Time Series Models for Forecasting GDP of the Developing and Developed Countries

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Time series data is crucial for analyzing trends and forecasting future values. This study aimed to determine and compare the most suitable model for predicting the GDPs of seven countries, namely China, Israel, Japan, Kenya, Nepal, Panama, and the USA, from January 2012 to December 2022. To achieve this, various models such as the linear trend, quadratic trend, exponential trend, Auto Regression, Moving Average, and Simple Exponential Smoothing models were run on the data using Excel. The error measurement metrics, including Mean Absolute Error, Mean Squared Deviation, and Mean Absolute Percentage Error, were analyzed, and the models with the lowest values of these metrics were considered the best-fit models. The quadratic trend model for Israel and Kenya, the first-order Moving Average model for Japan and Nepal, the Exponential trend model for China, and the third-order auto-regressive model for Panama and the USA were found to be the best-fit models for forecasting bthe GDPs. Overall, the study demonstrated the effectiveness of various models in forecasting GDPs. By utilizing time series analysis techniques, governments, and other stakeholders can predict their GDPs, and thus develop and implement strategies for sustainable GDP growth in their respective countries.

Comparing the Effectiveness of Amoxicillin and Azithromycin for Management of Pneumonia

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Pneumonia, a lung infection primarily caused by S. Pneumoniae bacteria, exhibits varying prevalence rates across different age groups in the United States. Amoxicillin, an amino penicillin widely used in primary care, offers broad-spectrum coverage against gram-positive bacteria and some gram-negative strains, distinguishing it from traditional penicillin. Azithromycin, classified as Macrolide, serves as an effective treatment for pneumonia and other infections, particularly chest-related ones. Historical insights reveal the emergence of antibiotic resistance shortly after the introduction of penicillin, with initial observations in staphylococci, streptococci, and gonococci highlighting the ongoing challenge of microbial adaptation.The aim of study is to compare the effectiveness of amoxicillin and macrolides in treating Pneumonia caused by S. pneumoniae in patients without comorbidities.To understand the effectiveness between amoxicillin and azithromycin in its entirety, we researched careful criteria to select relevant studies from peer-reviewed and critically appraised articles published in the last seven years (1998-2023). In addition, while researching polymerase Chain Reaction (PCR) was employed to detect bacteria, notably S. pneumoniae, using specific primers and multiplex PCR. DNA extraction from sputum samples was conducted via the phenol-chloroform method, with standard strains serving as positive controls during the analysis. Two of the articles compared minimum inhibitory concentration of Amoxicillin and Azithromycin on Strep Pneumoniae. Azithromycin was shown to have a higher MIC than amoxicillin. In two other articles antibiotic resistance percentages were compared. In article one Amoxicillin had the most resistance. In article nine azithromycin had the most. Both medications showed significant improvement rates in a different study that looked at cure rates. Improvement rates for azithromycin ranged from 82% to 96%, whereas those for amoxicillin/clavulanic acid revealed improvement rates between 88% and 96%s. In the analysis of five separate studies, the research found that amoxicillin was more effective than azithromycin in four cases. These results highlight the superior effectiveness of Amoxicillin over Azithromycin in the investigated circumstances.

Developing a Microfluidic Mesh Platform for Spatiotemporal Delivery of Exosomes to Bone Defect

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The reconstruction of large bone defects presents a fundamental challenge in orthopedic and plastic surgery. Increasing evidence suggests that exosomes secreted by mesenchymal stem cells (MSCs) play a crucial role in intercellular communication with immune cells and bone healing. Despite intensive investigations, the underlying molecular and cellular mechanisms of bone remodeling remain largely unknown due to the complexity and heterogeneity in space and time. One of the major limiting factors is the lack of an effective approach to studying the spatial and temporal immunoregulation of exosomes in vivo. Here, we develop and apply a novel technology with three-dimensional (3D) patterned microfluidic channels to spatiotemporally deliver exosomes, facilitating the investigation of exosome-mediated immunomodulatory regulation during bone defect healing. Exosomes have been successfully isolated from human MSCs (hMSCs) using an ultracentrifugation method. Additionally, a microfluidic mesh platform has been created, incorporating biodegradable biomaterials through 3D printing technology for the spatiotemporal delivery of exosomes. This platform has been integrated with a hydrogel-based tissue scaffold to study its osteogenic effects in vivo by employing a tissue-engineering approach. This work establishes a foundation for further spatiotemporal investigations into the roles of MSC-derived exosomes in inflammatory regulation and bone healing in vivo through the mesh/hydrogel complex. The success of future endeavors based on this research could provide a novel tissue engineering approach for repairing large bone defects.

Diagnosing Pulmonary Embolisms in Pregnancy:
Computed Tomography vs. Nuclear Medicine Ventilation/ Perfusion Scan

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Pregnancy puts women at risk for blood clots, since it increases clotting factors in the body. Incidence of pulmonary embolism in pregnant women: 1 in 7,000 pregnancies, and accounts for 11% of maternal death. Methods of Diagnosing Pulmonary Embolism include Computed Tomography Chest (CTPA) and Nuclear Medicine Ventilation: Perfusion Scan (V/Q). Average dosing of CTPA: 5.1 mSv. Average dosing of (V/Q): 2.5 mSv. The objective of this study is to compare the radiation dosage between CT scans and nuclear medicine ventilation-perfusion (VQ) scans in pregnant women diagnosed with pulmonary embolism. A meta-analysis was conducted to find journals that investigated dosing and detection of pulmonary embolism while using CTPA and NM V/Q scans. The data from these studies was extracted to compare radiation doses and the ability to detect PE from these two modalities. Inclusion criteria: radiation of NM compared to CT, radiation doses of fetus to mother in radiographic imaging, methods for diagnosing pulmonary embolism, radiation dose to pregnant women during CT or NM V/Q scan. Pregnant women who were diagnosed with PE were exposed to higher levels of breast radiation with CTPA than V/Q scans. Most studies suggest women who receive CTPA have a 13.6% risk for breast cancer. The negative predictive value for V/Q scans and CTPA were comparable. An extremely low rate of false negative results was found for both modalities. Moreover, V/Q scans are associated with higher radiation dosage to the fetus than CTPA. Although the dosage is small. Due to the lack of robust data, discerning the comparison between CTPA and V/Q scans posed a significant challenge. Based on these results, it is recommended that the NM V/Q perfusion scan is the modality of choice in regards to radiation dose; however; CTPA had a better positivity rate and negative predictive value when diagnosing pulmonary embolism in pregnancy compared to a NM V/Q scan. One caveat to this is that CTPA did have a higher percentage of missed PE that was discovered during follow up compared to the V/Q perfusion scan. Further studies should be evaluated to include a national study.

Does the incorporation of Fluoxetine into Cognitive Behavioral Therapy affect health outcomes for depressed teens?

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Adolescent major depressive disorder is a significant public health concern. Cognitive Behavioral Therapy (CBT) has emerged as a pivotal approach to addressing mental health issues, including depression. Fluoxetine, an FDA-approved Selective Serotonin Reuptake Inhibitor (SSRI), is recognized as an effective pharmacological intervention for treating MDD in both adults and adolescents. The combination of CBT and fluoxetine represents a comprehensive treatment option for managing MDD in adolescents, integrating psychological and pharmacological modalities to address the multifaceted nature of the disorder.Evaluate the efficacy and safety of Fluoxetine therapy, Cognitive Behavioral Therapy (CBT), and their combination in treating major depressive disorder in adolescents. In a comprehensive examination of adolescents with Major Depressive Disorder (MDD), a randomized controlled trial (RCT) strategically allocated participants to four treatment groups, with a focus on ensuring a balanced distribution of characteristics. The study incorporated the following elements: the population under consideration (P) consisted of adolescents struggling with Major Depressive Disorder, the intervention (I) involved the administration of fluoxetine, the comparison (C) encompassed a combination of Cognitive Behavioral Therapy (CBT) with fluoxetine, and a placebo group. The primary outcome (O) measured the percentage of remission and reduction in depression symptoms within each participant group. Combining fluoxetine and cognitive-behavioral therapy (CBT) was the most effective treatment for adolescents with major depressive disorder, with a 71% response rate, while fluoxetine alone had a 60.6% response rate. CBT alone did not show significant benefits compared to placebo. The studies indicate that combining fluoxetine and other pharmaceutical agents with CBT provides a favorable balance of benefits and risks for this population. Clinicians can use these findings to inform their treatment decisions for adolescent patients with MDD

Drug Design and Discovery of N-aryl Enaminones for the Treatment of Generalized Drug-resistant Epilepsy

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 Epilepsy is one of the most common neurological disorders, with 3 million people in the United States and 65 million people worldwide living with this disorder. The neurological disorder is characterized by abnormal electrical activity between excitatory and inhibitory neurons. Despite the optimal use of available antiseizure drugs, the management of epilepsy has been challenging. There is an increased demand for ASDs to treat generalized drugresistant epilepsy (GDRE). Research efforts in our lab engage in early drug design and development of novel antiseizure analogs as potential agents for the treatment of GDRE. Development of novel N-aryl enaminone analogs involves an initial compound design method using insights from previous structure-activity relationship studies. The synthesis of the target analogs begins with making the enaminone intermediate.This is a critical step. First, a condensation reaction with ethyl crotonate and trifluoromethyl acetoacetate forms a cyclic sodium enolate. The sodium enolate undergoes an acidification reaction to convert it into an organic compound called the vinylogous acid (AYA-64). Following the acidification step, the AYA-64 underwent an ester hydrolysis and decarboxylation reaction to generate 5-methylcyclohexane-1,3 dione (AYA-68). The resulting 5-methyl diketone was recrystallized before proceeding to the final step, the amination reaction. AYA-68 underwent conversion from a 5-methyl diketone compound to an enaminone intermediate, (AYA-72). Compound MWA-17 an enaminone intermediate was also successfully synthesized by the same methods above. All compounds produced underwent purification and characterization using techniques such as melting point (mp), Gas Chromatography/Mass Spectrometry analysis (GSMS), and Proton Nuclear Magnetic Resonance spectroscopy (HNMR). Final results, AYA-72 (78% yield; 7.27g), the mp range (165.03-171.48°C) is wide indicating there were impurities. Compound AYA-72 will need further purification using the chromatography CombiFlash method. MWA-17 (64.78% yield; 972 mg) had a sharp melting point range of 166-167.2°C. AYA-72 and MWA-17 will be used as the limited reagent in the final reaction to produce novel analog(s) that will undergo in vitro and in vivo studies.

Ecological and Nutritional Analysis of Forage Fish in the Northwest Atlantic Shelf: Fatty Acid Compositions, Proximate Composition, Stable Isotopes, and Mercury Concentration:
Assessing Patterns in the Fatty Acid Compositions, Proximate composition, Stable Isotopes and Mercury Concentration of Forage Fish Species in the Northwest Atlantic Shelf

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Marine ecosystems face increasing stress due to human-induced climate change and other anthropogenic activities, such as nutrient enrichment and exposure to toxic chemicals. Forage fish are pivotal in marine ecosystems, serving as a crucial link between lower and higher trophic levels. Hence, declines in forage fish populations can have cascading ecological and economic consequences. The study utilized samples that were collected during NOAA bottom trawl surveys of the northwest Atlantic shelf. Environmental characteristics such as temperature, salinity, and dissolved oxygen were recorded during sample collections. Specimens of each forage species were measured and weighed. Subsequently, their muscle tissues were freeze-dried, and the one-step-step fatty acid methyl esters (FAMEs) method were employed to determine the fatty acid compositions. Proximate composition (PC) was used determined the energy density calculations. Stable isotope samples were sent to the stable isotope facility at the University of California Davis, and nitrogen and carbon

isotopes were used to determine trophic levels and carbon sources, respectively. An MA-3000 mercury analyzer was employed to measure the mercury concentrations in the tissue of the fish species. This study enhances understanding of trophic relationships and the nutritional values of forage fishes, including the influence of climate variability on their trophic ecology. It will also document the extent of mercury contamination in the fishes. Results will help with ecosystem management. Our preliminary results for samples collected in spring 2022 showed significant differences in the fatty acid biomarker compositions among and within species (R = 0.461, p < 0.001). Specifically, our analyses showed that Merluccius bilinearis, Scomber scombrus, Peprilus triacanthus, and Illex illecebrosus (northern shortfin squid) had high levels of a fatty acid biomarker for brown algae (35.29%, 33.48%, 32.25%, and 25.31%, respectively), while Peprilus triacanthus, Loligo forbesii (longfin squid), and Merluccius bilinearis showed low levels of fatty acid biomarker for diatoms (22.46%, 19.57%, and 16.02%) respectively. Additionally, our study revealed a positive correlation (p-value: 0.001) between energy densities and lipid contents among the forage species. Conversely, protein contents correlated negatively (p-value: 0.563) with energy densities. Furthermore, our stable nitrogen isotope analysis had Alewife (Alosa pseudoharengus) at the highest trophic level (3.4), while (Illex Illex illecebrosus) at the lowest trophic level (1.8). Consequently, Alewife exhibited the highest mercury concentrations (193.7 ±65.8 ppb), while Atlantic Herring (Scomber scombrus) had the lowest (82.3 ±33.2 ppb). These findings contribute to a better understanding of forage fish ecology and provide valuable insights into the nutritional dynamics and contamination levels within marine ecosystems. Ultimately, such knowledge can inform more effective ecosystem management strategies aimed at preserving the health and sustainability of marine environments.

Effects of Consistent, Self-Selected Physical Activity on Physical Performance and Quality of Life for Employees in an Office Setting: A Pilot Study.

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Physical activity and its impact on general health has been extensively investigated in the literature. Many studies exploring the relationship of exercise and health in office workers have incorporated methods using a standardized program or have used a podometer to quantify physical activity. There is a paucity of research investigating physical activity, measured by the duration and intensity, as recommended by published guidelines. The purpose of this pilot study was to examine the effects of self-selected physical activity using recommended parameters on endurance, strength, health, and quality of life (QOL). We hypothesized that there would be improvements in physical performance measures and self-reported health and quality of life, as well as subject attrition. Intra-rater and inter-rater reliability were established for the student investigators (ICC≥0.96). A convenience sample from a local non-profit agency was recruited for this observational longitudinal study. Participants performed the Six Minute Walk Test (6MWT), 30 Second Chair Stand Test (30CST), grip strength, and self-reported measures including the Short Form-36 and the 5-Item Physical Activity Questionnaire at baseline, 6 weeks, and 12 weeks. At baseline, subjects were educated on the benefits of physical activity, recommended guidelines of duration and intensity, types of exercises with pictures, and provided an activity log to track daily physical activity. Statistical analyses included descriptive statistics, Pearson's correlations, repeated-measures ANOVA, and non-parametric tests. Significance was established at p<0.05. Nineteen subjects participated in baseline testing, but only 11 subjects, mean age of 51 years (SD=16) and 73% female, were included in the final data analysis. There was a significant difference in 6MWT and 30CST performance from baseline to 12-weeks. Grip strength was strongly correlated with average minutes of physical activity at 6 weeks (r=0.80, p<0.05) and 12 weeks (r=0.88, p<0.01). There was a significant reduction in the average minutes and intensity of physical activity reported from 6 weeks to 12 weeks. Findings of this pilot study indicate interventions of education and physical activity improve endurance and strength in office workers but do not significantly change self-reported health and QOL. Results also suggest adherence and consistency with physical activity duration and intensity decrease over time. Future studies investigating physical activity and the relationship with self-reported health and QOL are warranted.

Evaluating the Oviposition Behavior of Corn Earworm on Hemp

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Finding and choosing a good site for oviposition 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. The laboratory assay assessed the test by presenting a pair of treatments (hemp varieties and non-BT corn) to females in black cloth cages. The two hemp varieties used in this experiment were Trump and Mountain mango. The oviposition assay results showed a significantly higher number of CEW eggs laid on the two hemp varieties (Trump and Mountain mango) than the corn plant. Our laboratory and field study provided insight that CEW preferred specific 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 the headspace volatiles and study their role in attracting or repelling females.

Examining Employment and Stigma Among Incarcerated Black People with Disabilities

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The article advocates for a more inclusive definition of incarceration that covers a wide range of enclosed settings outside of typical prisons by examining the complex relationship between employment and stigma among Black individuals with disabilities who are incarcerated. By integrating social scientific views and examining the political economy of incarceration, this study illuminates the complex nature of incarceration and its effects on oppressed communities. This article examines the differences in employment prospects among ex-offenders with disabilities. It identifies the significant effects of

incarceration on post-release health outcomes, drawing on empirical information from the National Longitudinal Survey of Youth. In addition, the study looks into the incidence of disabilities in institutions/facilities and finds that Black, Hispanic, and multiracial impaired people are significantly overrepresented in these settings. By scrutinizing the incapacitating characteristics of correctional facilities and other detention centers, the paper highlights the pressing requirement for legislative measures to tackle structural disparities and foster the integration of individuals with disabilities into society.

Exploring Factors of STEM Success among African American Students with Disabilities at HBCU: Application of the Intersectionality and PVEST Framework

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STEM education is crucial for societal advancement, and ensuring the success of underrepresented groups, such as African American students with disabilities at Historically Black Colleges and Universities (HBCUs), is imperative for fostering diversity and inclusivity in these fields. This literature review aims to explore the factors influencing STEM success among this specific demographic, utilizing the intersectionality and PVEST framework as analytical lenses. Intersectionality acknowledges the interconnected nature of social categorizations such as race, gender, and disability, and how they intersect to shape individuals' experiences and opportunities, while the PVEST (Phenomenological Variant Ecological Systems Theory) framework offers a comprehensive understanding of the factors contributing to academic achievement and success. By applying these frameworks, this review seeks to provide insights into the unique challenges and opportunities faced by African American students with disabilities pursuing STEM disciplines at HBCUs.

Exploring the Impact of Marijuana on Mental Health and Cognitive Function

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Cannabis, commonly known as marijuana, is a psychoactive plant with active compounds, particularly THC (tetrahydrocannabinol) and CBD (cannabidiol), that interact with the endocannabinoid system in the human body, influencing mood, perception, and cognition. While cannabis has been utilized for medicinal, recreational, and spiritual reasons, its use is not without controversy. With its widespread popularity, concerns about addiction have arisen, prompting a closer examination of the potential risks associated with cannabis use. The aim of this study is to examine the impact of marijuana on mental health and cognitive function, consisting of aspects such as depression, schizophrenia, and addiction. The research was conducted on multiple online databases and medical journals including PubMed, Google Scholar, and JAMA Network. The terminologies that were used to search for studies were: "Marijuana", "Cannabis", "THC", "Cannabis and Cognitive Function", "Effects of Cannabis on Mental Health", and "Marijuana and Depression". This comprehensive approach aimed to capture a broad spectrum of studies related to marijuana's impact on cognitive function and mental health.The study adhered to specific inclusion criteria, requiring that studies undergo a peer-reviewed process, be conducted within the last two decades, and qualify as a systematic review, meta-analysis, or randomized controlled trial. Six studies met these criteria including men and women across different age groups. The primary focus centered on the examination of cannabis use and the comparison of cognitive function between cannabis users and non-users. The outcomes illuminated associations between marijuana use and cognitive and mental health outcomes, revealing increased rates of depression, suicidal ideation, potential declines in IQ, elevated incidences of schizophrenia, heightened anxiety levels, a greater likelihood of alcohol addiction, and an increased propensity for illicit drug use. The use of marijuana may increase the likelihood of mental health disorders, such as depression and schizophrenia. Moreover, it is associated with a decline in IQ and an elevated risk of addiction. Further research is warranted to ascertain the complete impact of CBD and CBD-containing products on psychiatric disorders, allowing for more confident recommendations.

Forecasting Global Price of Soybean Using Autoregressive Integrated Moving Average (ARIMA) Model

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Soybean ranks among top crops in the U.S. and globally. The fluctuations in its price have a 3 demand, significantly affecting both farmers and consumers. Precise forecasting of its price is essential to minimize risks related to these price fluctuations. A time series modelling approach, employing Box-Jenkins' ARIMA model, is one of the most widely used linear models for time series forecasting. The objective of this study is to determine the best-fit ARIMA model for projecting global soybean prices and to validate the model using model selection criteria such as Akaike Information Criterion (AIC). Analysis was done within R 4.3.2 using a monthly global soybean price data spanning from January 2000 to January 2024. The Seasonal ARIMA (0,1,2) (0,0,2)12 with the lowest AIC value of 2544.29 was identified as the best-fit model for this time series data. Further validation through the Box-Ljung test returned the p-value of 0.8926, confirming that the model is fit for forecasting the future soybean prices. Thus, the results underscore the efficacy of the ARIMA model in accurately predicting monthly prices of soybean, allowing farmers and agricultural authorities to make competent decisions and effectively regulate agricultural supply chain.

Functional Properties of Phosvitin Hydrolysates Produced Using Innovative High-temperature Mild-Pressure Pretreatment and Two-Enzyme System

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Phosphopeptides are considered promising bioactive components due to their ability to deliver essential metal ions. Phosvitin, an egg yolk protein, is a highly phosphorylated protein than casein, making it a potential source for phosphopeptide production. However, its complex structure makes hydrolysis extremely difficult. In the previous study, high-temperature mild-pressure (HTMP) pretreatment significantly facilitated its enzyme hydrolysis. This study aimed to determine the functional properties of phosvitin hydrolysates produced using HTMP pretreatment and enzyme hydrolysis with two proteinases. The Phosvitin solution underwent HTMP pretreatment at 1.5 atm and 121 °C for 30 min before being hydrolyzed for 6 hours using food-grade proteinases singly or in combination at their optimal temperature and pH: trypsin, Protex-6L (alkaline serine endopeptidase), Multifect-14L (mainly thermolysin), trypsin+Protex-6L, and trypsin+Multifect-14L. Metal ion (calcium, iron, and copper)-binding capacities, antioxidant capacity in an oil emulsion system, angiotensin-I-converting enzyme (ACE)-inhibitory activity, and in vitro cytotoxic effects on different cancer cells via the MTT assay were determined. HTMP treatment with two-enzyme hydrolysis slightly but significantly reduced the calcium-binding capacity of phosvitin ($P<0.05$) while HTMP pretreatment decreased both iron- and copper-binding capacities ($P<0.05$). Iron-binding capacity was further decreased by two-enzyme hydrolysis ($P<0.05$), regardless of enzyme type. Two-enzyme hydrolysates showed greater efficacy in inhibiting iron-induced oxidation in oil emulsion compared to HTMP-treated phosvitin and one-enzyme hydrolysates ($P<0.05$). Enzyme hydrolysates showed significantly higher ACE-inhibitory activities than both phosvitin and HTMP-treated phosvitin ($P<0.05$), with two-enzyme hydrolysates, showing significantly higher activity compared to one-enzyme hydrolysates ($P<0.05$). Two-enzyme hydrolysates showed significant cytotoxicity among all tested cancer cell lines, with AGS cell (stomach) showing the lowest sensitivity, while MCF-7 (breast) and HT-29 (colon) cells showed the highest sensitivity to the hydrolysates. The results suggested that combining HTMP pretreatment with a two-enzyme system can produce phosvitin hydrolysates rich in small phosphopeptides (<2 kDa), effectively binding and releasing essential metal ions, thus potentially serving as essential mineral carriers to enhance human nutrition.

Identification of Current Pharmacy Emergency Preparedness and Response Regulations in Individual States

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In response to the evolving landscape post-pandemic, pharmacy practice regulations and policies established in 2020 have been undergoing a process of review and revision. These regulations and policies encompass critical aspects such as state emergency refill protocols and emergency action plans. Recent developments including the COVID-19 pandemic, natural disasters, and the events preceding Kevin's Law have affected policies in place for emergency refills, all of which were implemented post-disasters or tragedies. Furthermore, while framework and observational analyses of the pharmacist's role in emergency preparedness have been studied, as well as information on policy changes post-COVID has been evaluated, not many studies have been done evaluating trends in policies to identify a proactive policy associated with best outcomes and support. The goals of this project are to identify: (1) individual state emergency refill policies; (2) individual state disaster/emergency rates defined by Federal declared disasters; (3) effectiveness of these policies defined by state healthcare costs; and (4) supportive policies in place defined by insurance coverage for emergency refills. The objective of this focused review is to identify key trends in existing pharmacy emergency preparedness and response regulations/policies in individual states in order to create or propose policy change, public health educational materials, and pharmacy policy changes. This scoping regulation/policy review has been conducted from June to October 2023. More than 30 studies have been evaluated. Literature review was conducted through scientific databases including Medline, ESBCO, and Google Scholar. Key words to evaluate background emergency preparedness studies previously conducted include "emergency refills", "pharmacy preparedness during disaster", "pharmacy", "disaster", "pharmacy emergency preparedness", "emergency prescription assistance program studies", "studies on effectiveness of pharmacy emergency preparedness response (PEPR)". Studies were excluded if those did not evaluate pharmacy roles during disaster response. To evaluate individual state policies, state boards of pharmacy websites were searched for "emergency refill", "emergency dispensing", or "state of emergency" laws. If websites were unable to show laws pertaining to emergency refills, further analysis was done on Google utilizing keywords including "emergency refills per [state]", "state of emergency per [state]". Meanwhile, the Federal Emergency Management Agency (FEMA) website will be used for evaluation of disasters per state. The assessment of state healthcare costs will be done utilizing CMS health expenditure data and literature reviews of medical costs post-states of emergency. Evaluation of supportive policies will be done through review of CMS policies for emergency refill coverage as well as individual state legislation and suggestions. Trends shall be analyzed by comparing current state laws and healthcare costs. Forty-one states had readily identifiable laws. Of such, 10 states allowed a maximum emergency refill of 72 hours. Eighteen states allowed emergency refills up to a 30-day supply, while two states offered emergency refills more than 30 days. Per CMS expenditure data, overall healthcare spending from 1991-2020 has increased by 6.6% per year. Average Medicare spending per state in 2020 for states without emergency dispensing law was $12,610.56. Average Medicare spending per state in 2020 for states with emergency dispensing law was $15,604.20. Of the three major payors within Medicare, Humana states within its website to "suspend restrictions on refills to allow for travel difficulties and evacuations" and to offer support up to 30 days after public health emergency has ended. CVS health

did not have a public statement. United Health stated that it offers support, but depends on plan specifics. Overall, studies have shown cost-benefit from preventative measures. However, there is less data for emergency preparedness and more studies are needed. A more critical analysis is needed considering both healthcare and economical impacts of such policies. Implications from such laws have yet to be seen, unless there is unfortunately another disaster. Preventative measures are paramount.

Intervention with Physical Therapy and Exercise Improves Long-Term Outcomes in Children and Adolescents with Juvenile Idiopathic Arthritis

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Juvenile idiopathic arthritis [JIA] is a form of arthritis that affects children causing joint stiffness and swelling. Early intervention to treat JIA involving physical therapy and exercise focuses on the musculoskeletal system's receptiveness to therapy, which can lead to beneficial long-term outcomes. To assess a personalized physical therapy and exercise program for children with JIA, targeting reduced bone density risk and enhanced quality of life. Several research were conducted to assess the effects of early physical therapy and exercise interventions in children with JIA. One study analyzed various physical activity modes including strength, flexibility, aerobic exercise, and conventional therapy using statistical analysis programs. Another study divided subjects into a weekly physical exercise group and a control group. They were evaluated three times, assessing bone mineral density using the DEXA scan. A separate study asked participants to fill out a physical activity questionnaire [PAQ] in which they self-reported the amount of pain they had with certain physical activities and if the pain decreased with more activity. One study followed a single child with JIA and assessed their pain and range of motion through manual therapy, targeted exercises, and functional activities. Finally, a study assessed if exercise improved the quality of life for children with JIA. The outcomes revealed enhanced bone health and improved functional capacity in children with JIA. There was more physical activity with swimming and biking rather than walking or riding exercises as these were more strenuous on the joints. Bone mineral density values increased significantly in the exercise group compared to the control group. There was a negative correlation between physical activity and pain severity in children with JIA. Range of motion increased with more physical activity, and exercise therapy improved functional ability and quality of life. The early physical therapy and exercise greatly benefited children with JIA. Targeted physical therapy enhanced joint mobility and improved muscle strength, while minimizing pain. Regular exercise was also shown to improve bone mineral density and quality of life of the participants. This approach of incorporating physical activity towards children with JIA along with their comprehensive care plan ensures a more holistic and sustained improvement in their well-being.

New Bioactive Metabolites Producer Actinomycetes Retrieved from Appalachian Mountains

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Actinomycetes continue to be a prolific source for bioactive secondary metabolites. Actinomycetes are credited for production ofinvaluable therapeutic agents such as antibiotics, immunosuppressants, and pesticides and other products of high economic values. Traditional approaches for identification of new actinobacterial metabolites have become increasingly inefficient due to repeated isolation of known metabolites and lack of structural novelty in the newly isolated metabolites. To address this, we here employ the novelty of metabolite signature- driven study approach for the identification of new or novel metabolite producer actinomycetes. We have isolated 305 morphologically distinct actinomycetes strains from the soil samples collected from the Appalachian mountain range in western Maryland. Methanolic extract of 10-15% of the isolates exhibited antimicrobial activities against one or more bacterial test strains. Based on LC-MS profile, TLC signature and biological activities, we have prioritized a list of isolates for a thorough metabolite study. Large scale fermentation and isolation of metabolites from the newly isolated strains are currently underway.

Novel Non-Invasive Interventions in the Management of Peripheral Artery Disease

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Peripheral artery disease (PAD), which affects an estimated 8-10 million Americans and 236 million individuals worldwide, is characterized by occlusive plaques in the arteries of the legs. The hallmark of PAD is pain in the legs with physical exertion known as claudication. PAD is associated with increased risk of cardiovascular mortality and substantial medical expenditures, often including medications and surgeries that are costly, and sometimes accompanied by complications. Thus, the goal of this review is to highlight promising non-invasive interventions (NIT) in the management of PAD. Exercise significantly improves functional outcomes and quality of life (QOL) in patients with PAD. Current AHA recommendations support supervised exercise therapy (SET) as the primary NIT for these individuals, although barriers to SET include transportation and pain associated with activity. Recent studies exploring the efficacy of home-based exercise, variations in exercise intensity and non-traditional exercise regimens, have yielded equivocal results, suggesting the need for ongoing research in this area. Recently, investigators utilizing heat therapy in patients with PAD have found that full body and lower limb heating have each induced improved hemodynamics and ambulation. Both acute and long-term hot water submersion protocols have yielded convincing data showing positive effects on limb blood flow and 6-minute walk distance (6MWD) in this population. Electrotherapy has emerged as another potential NIT in the management of PAD. Effects of neuromuscular electrical stimulation, functional electrical stimulation, and transcutaneous electrical stimulation (TENS) have been examined. Although electrotherapy research is ongoing, thus far, the most compelling data have shown TENS to be effective in improving limb blood flow and exercise capacity in patients with PAD. The effect of compression therapy, including intermittent pneumatic compression (IPC), intermittent negative pressure therapy (INP), and graduated compression stockings have also been studied in patients with PAD. Administration of IPC has been shown to evoke susta-

dined improvements in initial claudication distance, absolute claudication distance, and walking distance comparable to supervised exercise. In addition, 24 weeks of INP improved pain-free walking distance and maximal walking distance (MWD) in this population. Finally, several investigators have examined the impact of various dietary interventions on functional capacity in patients with PAD. For instance, acute beetroot supplementation has induced improvements in claudication onset time and MWD, whereas 6 months of daily cocoa consumption has led to an increase in 6MWD in this population. In conclusion, various safe and affordable NIT show promise for improving QOL in patients with PAD.

Optimizing Resin Extraction of Phenolic Antioxidants from Aronia mitschurinii: Enhancing Efficiency and Sustainability through Resin Reusability

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Aronia mitschurinii, known for having a high concentration of antioxidants and low concentration of sugars, provides a wide range of health benefits, from anti-inflammatory properties to possible anti-cancer effects. However, customers often find Aronia mitschurinii challenging to consume due to having a high tannin concentration. Despite this, the fruit is still marketed to both the pharmaceutical and food industries due to the health benefits. Moreover, while technology to produce palatable juice and products from aronia exists, technology to improve unpalatable pulp does not. This pulp contains about half of the total antioxidant capacity of aronia fruit, making it extremely valuable to health-conscious consumers. The aim of this project is to provide an efficient and safe method to extract frequently lost phenolic antioxidants from any part of Aronia mitschurinii fruit using polymeric resins. Our previous research indicated successful antioxidant extraction with Daw chemical resins. Recently we have examined more effective Mitsubishi Chemicals LLC resins and compared them to Daw resins. Thus, eight selected resins were activated in three different solvents, and three methods were compared based on adsorption, desorption, and total recovery ratios of phenolic compounds. The analysis of extracted phenolic compounds, including anthocyanins, polyphenols, and flavonoids, will be compared, along with considerations for the reusability of resin in antioxidant extraction.

PI3Kδ-S Splice Isoform as an Oncogenic Driver for Tumor Aggressiveness and Drug Resistance in Lymphoma and Leukemia

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The PI3K pathway has been shown to be upregulated in various cancers. Especially, of the PI3K isoforms (PI3Kα/β/δ), PI3Kδ is implicated in hematologic malignancies, such as lymphoma and leukemia. Previous research has revealed aberrant RNA splicing of PIK3CD as a critical mechanism that drives tumor growth and drug resistance in prostate cancer. In this study, we hypothesized that the aberrant PI3Kδ splice isoform may lead to hyperactivation of PI3K/AKT/mTOR signaling, potentially promoting cancer aggressiveness and drug resistance in lymphoma and leukemia. To test this hypothesis and evaluate whether PIK3CD-S splice variant or PI3Kδ-S splice isoform can serve as a precision biomarker and/or potential therapeutic target for lymphoma and leukemia, several experiments were conducted. First, a series of lymphoma and leukemia cell lines (including JeKo-1, Ramos, SU-DHL-5, and Hs 505.T) were examined for their PIK3CD-S/PIK3CD-L and PI3Kδ-S/PI3Kδ-L expression profiles using RT-PCR and immunofluorescence assays, respectively. Second, western blot analysis of PI3K/AKT/mTOR signaling molecules were performed in lymphoma and leukemia cell lines in the absence or presence of Idelalisib, a PI3Kδ specific inhibitor. Third, in-vitro functional assays (MTT and apoptosis assay) were further employed to assess the inhibitory capacities of Idelalisib in lymphoma/leukemia cells with differential PIK3CD-S/PIK3CD-L expression profiles. Our results indicated that Idelalisib was able to effectively inhibit PI3K/AKT/mTOR pathway, reducing cancer cell viability, and inducing cell apoptosis in the cell lines expressing low PIK3CD-S/PIK3CD-L ratios. In contrast, Idelalisib was less effective in inhibiting cell viability and inducing cell apoptosis in cancer cell lines that expressed high PIK3CD-S/PIK3CD-L ratio (such as Hs 505.T). Our results suggest that PI3Kδ-S is a more oncogenic isoform that contributes to hyperactivation of PI3K/AKT/mTOR signaling and confers resistance to Idelalisib in Lymphoma/leukemia cells. PI3Kδ-S, therefore, may represent as a potential therapeutic target and prognostic biomarker for aggressive forms of hematologic cancer.

Phytochemical Properties, Processing, and Applications of Juvenile Zingiber Officinale

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Zingiber Officinale, commonly known as ginger, has a long-standing history as a natural remedy for ailments and disease, and adult rhizomes have been used in medicine, food, and beverages for generations. It has been shown that juvenile ginger harvested between nine and eleven weeks of maturity has strong anti-obesity and antioxidant properties, while typically, mature ginger is not as potent in these qualities. This project aims to explore the capabilities of young ginger rhizomes, with the intent of determining whether or not young ginger is more phytochemically potent than its adult form. Young ginger has the advantage of being easier to grow in a variety of conditions, and easier to use in culinary applications. We have studied the ripening process of ginger supported by phytochemical analysis of samples and found that behind its tender flesh, young ginger is a host to many bioactive compounds such as gingerol, shogaol, and zingerone essential oils. Moreover, we have found that phenolics and flavonoids are present in significantly higher quantities in young ginger compared to mature rhizomes. Quantitative analysis of these ginger extracts created from high-tunnel cultivars reported an increase of up to 60% (mg GAE/g) in total phenolics, 87% (mg QE/g) in flavonoid content, and 67% (mg TAE/g) in tannin content between ginger grown within the first nine weeks of maturity and ginger older than eleven weeks. A comparison of fresh-frozen and freeze-dried ginger, the influence of different ginger varieties on phytochemical process, have also been explored in this research.

Phytochemicals as Active Ingredients in Antifouling Formulations

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Since the 15th century, marine and later interdisciplinary groups of scientists have been trying to solve one major economic and environmental problem – the accumulation of biofilm on submerged surfaces. Biofouling is the adhesion and accumulation of bacteria and other marine microorganisms and their polymerized metabolites on submerged surfaces like military ships, cargo ships, fishery boats, buoys, and platforms. Biofouling also targets water purification systems, medical devices, military smart vision helmets, and dentistry. The biofouling process includes several stages, of which two majors are bacteria precipitation and radical polymerization of bacteria's metabolites. Biofouling has been and currently is globally important due to its environmental and significant economic impact. Along with corrosion and extended fuel consumption by ships, biofilm also contributes to ecological changes by spreading invasive bacterial species across the world when segments of biofilm are detached from moving ships. Attempts to prevent biofouling have centuries of history, particularly those that employ specialized coatings to defend against biofilm formation. These coatings, however, result in a negative impact on marine ecosystems. TBT (tributyltin) and other biocides in antifouling paints are currently banned in many countries including the US, due to their high toxicity. While recently developed highly hydrophobic polymers have promise, their synthesis has multiple steps and makes this solution very expensive and hard for technology transfer. As an alternative solution, we study formulations for antifouling coatings that are non-toxic and utilize organic renewable super-fruits and medicinal herbs, renowned for their antibacterial and antioxidant properties, combined with biocompatible polymers. Our hypothesis is that antibacterial essential oils and terpenes would prevent precipitation and growth of bacteria on the protected surfaces, while antioxidants, which are natural free radical scavengers, would significantly slow down polymerization processes in the biofilms, which is a radical-catalyzed reaction. Here we focus on antifouling formulations created with extracts of several specialty crops. Phytochemical characterization, procedures for incorporating extracts, sample preparation and preparation of antifouling formulations, antifouling tests, and post-test surface analysis are discussed.

Phytochemicals Contents and Antioxidant Capacities in Different Cultivars of Industrial Hemp

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Industrial hemp (Cannabis sativa L.) is a versatile crop known for its phytochemical diversity and potential health benefits and has been used as medicine and dietary supplement for humans and animals since ancient days. The antioxidant capacities and health benefits of the plant are closely related to the cannabinoid contents of the plant. It is therefore essential to assess the quality of the plants in terms of the amount of psychoactive cannabinoid contents. The phytochemical profile and antioxidant capacities are greatly influenced by various genetic factors such as cultivars. The objective of this study was to determine phytochemical contents, antioxidant capacities, and cannabinoid profiles and concentrations in different cultivars of industrial hemp whose flowers were harvested at different maturation stages. Ten cultivars were grown at the UMES research farm in 2021: Abacus (Ab), NC/VA (NC), AC/DC Otto II (ADO), Cucumber Diesel (CuD), Mountain Ras (MoR), Valley Kush D (VKD), Mountain Diesel (MoD), West Slope Orange (WSO), Suzy Kush (SK), and White X Bliss (WXB). The inflorescences were collected at three different flower maturation stages: 1) MS1, harvested right after flowering, 2) MS2, harvested at 2-3 weeks after MS1, 3) MS3, harvested at full maturity. The flower samples were extracted using 80% methanol and the extracts were analyzed to determine phytochemical contents (Total Phenolic Content (TPC) and Total Flavonoid Content (TFC)), antioxidant capacities (Diphenyl-1-Picrylhydrazyl Radical Scavenging Capacities (DPPH) and Oxygen Radical Absorbance Capacity (ORAC)), and cannabionoid profiles and concentrations. The phytochemical contents, antioxidant capacities, and cannabinoid concentrations increased gradually as the flowers matured ($p<0.05$). Cannabidolic Acid (CBDA) was the predominant cannabinoid followed by Cannabidiol (CBD), Tetrahydrocannabinolic Acid (THCA), Cannabigerolic acid (CBGA), and THC in 9 cultivars. Notably, WXB was the sole cultivar containing Cannabigerol (CBG) and displayed significantly higher CBGA (121.54 mg/g DW) and no CBD and CBDA. Cultivar MOD, AB, and NC exhibited higher phytochemical contents, antioxidant capacities, and cannabinoid concentrations while WXB and ADO contained lower ones. The results suggested that MOD, AB, and NC could be better cultivars suitable to produce more cannabinoids in this region.

Pinus Taeda (Loblolly Pine) Cell Density Response to Saltwater Intrusion

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Sea level rise and salinization have and will continue to drive substantial changes to coastal land cover and ecosystem services as these systems are exposed to higher water levels, increased salinity, and more extreme storm surges. Coastal forests undergo a series of complex changes and interactions as they transition from upland woods to salt marsh, triggering a variety of feedback mechanisms to system processes. Wood density may play a role in forest response to salinization conditions, as increased salt levels drive morphological changes that mimic drought response. This study compares wood density and morphology of Pinus taeda (loblolly pine), a prevalent species of the Mid-Atlantic Coastal Plain with moderate salt tolerance, from salt impacted forests and upland forests on the Delmarva Peninsula using resistograph and physical mapping of wood morphology. At the Monie Bay site in Maryland resistograph data from the high forest and low forest was collected and examined. Using R densitr package, differences between the two forest levels was analyzed and years with higher density profiles were examined to determine if there was a cellular difference in the tree morphology.

Puff, Puff...Puke?...Study the prevalence of Hyperemesis among Chronic Cannabinoid Users

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In emergency rooms, frequent cannabis users often suffer from chronic cyclic vomiting, leading to higher healthcare costs and repeat visits. This condition is closely linked to cannabis use and may become more common withmarijuana legalization. This study aims to explore Cannabinoid Hyperemesis Syndrome (CHS) frequency among chronic cannabis users, Examining demographic variations including age, gender, ethnicity, duration, and frequency use of cannabis. Methods: A public anonymous survey was conducted via social media platforms to gather data on CHS. Following completion, the collected data was analyzed using StatView software, and a Chi-Square test was employed to analyze numerical data. Fifty-seven participants completed the surveys. Over 55% fall within the age range of 25 to 35 years, with approximately 25% aged between 18 and 24. Most participants (74%) exhibited no symptoms of CHS, while 26% experienced CHS symptoms. Statistical analysis revealed no significant variations among ethnic groups (White, African American/Black, Hispanic/Latino, Native American, other), (p-value 0.46). Examine the differences across age groups (18 - > 55 years), findings indicate that there were no significant differences in CHS prevalence among most age groups (p-value 0.11). This study found no statistically significant variances among genders (male, female, non-binary, prefer not to say), (p-value 0.8). By investigating the influence of duration use (@;1 year, 1-3 years, 4-6 years, 7-10 years, @;10 years), this study revealed no statistically significant variances among individuals categorized based on their duration of cannabis use (p-value 0.49). However, when examining the impact of cannabis frequency use on CHS, the data revealed that participants who use cannabis daily showed a significant increase in CHS occurrence (50%) compared to other groups: 2-3 times per week (0.0%), 4 – 6 times per week (0.0%), and once per week (17%), (p-value 0.0007). This study found no significant associations between CHS and demographic factors such as age, gender, ethnicity, or duration of marijuana use. But it highlights higher occurrence of CHS among participants who used cannabis daily compared to those who less frequently used. These findings suggest that CHS may not be strongly influenced by these demographic variables in this population. Further research is needed to better understand the underlying factors contributing to CHS development.

Survival and Transfer of Foodborne Pathogens in Biologically-Amended Soils on Integrated Crop-Livestock Farms Located on the Maryland Eastern Shore.

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To reduce contamination risks associated with biological soils amendments (BSAs) on integrated crop-livestock farms (ICLFs), the USDA National Organic Program (NOP) stipulates a withholding-period of 120- and 90-days for high- and low-risk produce, respectively. However, previous studies isolated pathogens from soils and produce 120-days post-BSA. The purpose of this study was to investigate the effectiveness of the NOP withholding-period by evaluating ICLF-soils and vegetables post-BSA for foodborne pathogen contamination. Following standard protocols, 410 manure/compost, soil, and untreated produce samples were collected pre- and post-BSA and monthly until day-180. Samples were assessed for Aerobic plate count (APC), generic Escherichia coli (gEC), Salmonella, Listeria monocytogenes (Lm), Shiga toxin-producing Escherichia coli (STEC), and virulence factor (VF) genes using standard culture methods and PCR. Before incorporation (D0A), manures/composts were positive for Lm (6.7%) and STEC/VF-genes (66.7%). Post-amendment (D0B), all pathogens were isolated from soils with significant (p>0.05) increases in APC and gEC populations. Regarding withholding-period, Lm (D90), Salmonella (D120), and STEC/VF-genes (D90/D120) were isolated from ICLF-soils. Overall, Lm, Salmonella, and STEC/VF-genes were prevalent in 4.3%, 0.8%, and 24.0% of soils, respectively, with an increased incidence when total coliforms were 4-5 log CFU/g. For produce, 3.5%, 0.7%, and 14.2% were positive for Lm, Salmonella, and STEC/VF-genes with each pathogen detected on D180. Consumer demand for ICLF-foods and microbiological contamination associated with ICLF practices increase the risk of foodborne illness cases/outbreaks. This study evaluated pathogen persistence in terms of the NOP withholding-period and indicated a need for further research regarding application intervals and mitigation strategies.

The Comparative Prevalence of Obesity Among African Americans and Caucasian Populations

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Obesity affects 69% of US adults, with higher rates observed in black women (82%) and black men (69%). This disparity is attributed to factors such as low socioeconomic status and increased exposure to psychosocial stress, particularly prevalent in African American communities. While individual stressors are often studied, combined stressors may better explain the increased obesity risk in this population. African Americans have a 51% higher likelihood of obesity compared to non-Hispanic Whites, exacerbated by food insecurity and environmental factors such as easy access to high-calorie foods, limited physical activity spaces, and high-stress environments. These findings underscore the multifaceted nature of obesity disparities among racial and ethnic groups in the US. How does Socioeconomic Status, Access to Healthy Foods, Psychosocial Factors, food security contribute to an increase in obesity among African American populations versus Caucasian populations? Multiple research studies contribute to the comprehension of obesity disparities and associated elements. One prior investigation examined the correlation between food insecurity

and overweight/obesity in adults aged 18–59. A second study employed Oaxaca-Blinder decomposition analysis to explore racial/ethnic disparities in obesity. Another article delved into the impact of stress factors on overweight/obesity among adults in Chicago. A separate study utilized national survey data to examine the relationship between various factors and obesity. Additionally, there is research focused on food insecurity, psychosocial factors, and food behaviors within low-income African Americans families in Baltimore City, specifically exploring the connection between food insecurity and overweight/obesity. The NHANES (2013-2014) data offer insights into the health and nutrition status of diverse populations. Results: These studies consistently underscore the existence of disparities, particularly among African American populations, where higher rates of obesity are coupled with increased levels of food insecurity and stressors like financial income. Socioeconomic status appears pivotal in influencing these disparities. The overlap of economic gaps, stress, food access, and racial aspects highlights how complex obesity rates are, especially among African American communities. Understanding the importance of income, stress control, and good food availability becomes crucial in dealing with these disparities.

The Effect of Delayed Cord Cutting on Pediatric Development
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Anemia in neonates is primarily attributed to reduced erythropoietic activity in the bone marrow, heightened hemolysis rates, and rapid blood volume expansion leading to hemodilution. Premature infants, low birth weight, and familial history contribute to its prevalence. Umbilical cord management post-birth, specifically delayed clamping or milking has been associated with lower rates of neonatal anemia. To determine the effects of delayed cord cutting on pediatric patients such as increased hematocrit, prolactin, beta-endorphin, and hemoglobin levels. Several studies were conducted to investigate the impact of different cord-clamping approaches on neonatal outcomes. One randomized control trial in a Turkish maternity hospital involved 107 pregnant women, with 55 women in the delayed cord clamping (experimental) group and 52 in the early cord clamping (control) group. Another trial at MGM Hospital in India included 50 full-term neonates delivered vaginally, with 25 in the control group and 25 women in the interventional group. In Cairo, Egypt, a randomized control trial with 250 pregnant women ≥ 37 weeks gestational age compared delayed cord clamping and umbilical cord milking. Additionally, a study at Women and Infants' Hospital in Rhode Island involved 24 women undergoing elective cesarean section, randomized into immediate clamping or umbilical cord milking groups. A retrospective cohort study at Dartmouth Hitchcock Medical Center in the USA analyzed data on delayed cord cutting in 447 inborn infants < 35 weeks gestation admitted to the neonatal intensive care unit from June 2016 to June 2019. The outcomes reveal varied effects on hormonal levels, placental residual blood volume, and hematocrit (HCT) levels in different groups. Delayed cord clamping and umbilical cord milking exhibit positive correlations with hemoglobin, hematocrit, and hormonal levels, particularly beta-endorphin and prolactin. Successful breastfeeding is associated with higher prolactin levels. The findings suggest that both delayed cord clamping and umbilical cord milking positively influence hematological parameters, placental transfusion, and hormonal levels in newborns. The benefits include increased hemoglobin, hematocrit, beta-endorphins, and enhanced mother-infant attachment. Umbilical cord milking after clamping appears to be particularly advantageous for improving neonatal outcomes.

The Effect of Early ADHD Intervention in Pediatric Populations
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ADHD is a well-known disorder that can cause problems with children's performance in school and may affect some of their skills in life. It is one of the most commonly diagnosed pediatric mental health disorders worldwide (Kollins 2021). It can negatively affect how children function in day-to-day life and navigate through our society. There is little research and few sources that compare the efficacy of medication or behavioral treatment for ADHD in youth. In our research we aim to improve knowledge about the best treatment and the possible downsides of delayed or no ADHD treatment among this population. Demographic variables, such as age, gender, race, and socioeconomic status, were analyzed as potential modifiers of treatment outcomes. Statistical methods, including regression analysis, were applied to explore the interactions between these demographic factors and treatment responses.The majority of our research showed results of decreased baseline in symptoms of ADHD such as inattention, hyperactivity, and disorganization. It was found that pharmacologic intervention resulted in significant symptoms reduction. Behavioral treatments showed a positive trend in social skills, cooperation, and engagement. We were able to conclude that whether intervention was pharmacological or behavioral it was best to occur during early primary years in the pediatric population preferably before adolescence or young adulthood. It becomes more challenging to identify and manage as children age and many adults with ADHD are undiagnosed and deal with difficulties in academics, employment, or relationships.

The Effect of Finerenone on Renal and Cardiovascular System: Outcomes in Patients with Hypertension
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Type 2 Diabetes, defined as elevated serum glucose levels, often contributing to chronic kidney diseases globally, is closely associated with hypertension, a prevalent cardiovascular condition. The combination significantly heightens the risk of chronic kidney disease. Finerenone, a nonsteroidal selective mineralocorticoid receptor antagonist, emerges as a promising therapeutic option for managing hypertension in patients with type 2 diabetes and chronic kidney disease. This research aims to evaluate Finerenone efficacy in treating hypertension in this population, considering glomerular filtration rate, A1C, and creatinine levels across different ethnic groups. In a systematic review of peer-reviewed articles conducted from 2020 to 2023, five studies were identified, all of which employed a double-blind study method or a rand-

omized control trial design. These articles focused on individuals with chronic kidney disease, diabetes mellitus type 2, and hypertension. The primary intervention investigated across these studies was the treatment of hypertension using Finerenone. The studies investigated the effectiveness of Finerenone in treating hypertension, comparing it with a placebo. They measured its impact on kidney function and explored its potential to reduce cardiovascular events. Overall, the findings highlighted the efficacy of Finerenone in managing hypertension, preserving kidney function, and lowering cardiovascular risks. Finerenone was statistically effective in treating hypertension, whilst maintaining kidney function by maintaining glomerular filtration rate and creatinine level and reducing adverse cardiovascular events. Results indicate a 40-60% improvement in estimated glomerular filtration rate, a lower hazard ratio (0.75-0.99) suggesting reduced cardiovascular events, and statistical effectiveness in treating hypertension with Finerenone. The findings underscore Finerenone importance in preserving kidney function and reducing adverse cardiovascular events in patients with concurrent hypertension and diabetes.

The Effect of Pelvic Positioning and Shoewear on Gluteus Medius Activation

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The importance of optimal gluteus medius recruitment during functional weight-bearing activities is well established. This muscle has a clear role in maintaining proper pelvic alignment during single limb stance and lower extremity weight shifting. While studies have examined specific exercises for optimal recruitment, evidence is limited regarding the influence of pelvic positioning (anterior or posterior pelvic postures) on activation of this muscle, especially during unilateral stance. Therefore, the aim of this descriptive cross-sectional study was to determine the influence of pelvic positioning and shoewear (shoes-on or shoes-off) on activation of the gluteus medius during single leg stance. Surface electromyography was used to evaluate muscle activation in 20 active, asymptomatic volunteers during 3 pelvic variations of the single leg stance exercise, with shoes on and off. Electromyographic signals were recorded from the gluteus medius of the dominant lower extremity and normalized data were examined using a 2-way, repeated-measures analyses of variance with factors of pelvic positioning and shoewear. No significant shoewear × pelvic angle interaction ($p>0.05$) was observed. However, shoewear had significant main effects on muscle activation ($p<0.001$). Post hoc analyses showed that while there were no significant differences between pelvic positions, significant differences were identified between wearing and not wearing shoes. The shoewear factor significantly ($p<0.001$) increased gluteus medius activation (Shoes-On to Shoes-Off: Neutral Pelvis 14.8 ± 7.4 to 20 ± 3.9; Δ%:35.2, Anterior Pelvis 12.5 ± 6.2 to 19.3 ± 8; Δ%:54.4; Posterior Pelvis 11.7 ± 4.7 to 21.3 ± 13.4; Δ%:82.1). In all pelvic positions, the magnitude of gluteus medius activation in single limb stance was significantly greater when the shoes were off. Also, a posterior pelvic position is advocated to optimize recruitment of the gluteus medius during unilateral weight bearing exercises. These findings encourage clinicians to consider pelvic mobility as well as the interaction between the ground and the foot when designing optimal exercise programs for the gluteus medius.

The Impact of Corn Earworm Damage on the Expression Level of Cannabinoid Synthesis Genes in Hemp Plant

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Following the legalization of industrial hemp with THC levels below 0.3% by dry weight, there has been a substantial increase in hemp production due to its diverse applications and therapeutic potential. Hemp growers face several challenges growing hemp. One of the challenges is the availability of feasible pest management solutions. Insect pests such as corn earworms emerged as one of the key pest problems in hemp production. Several studies revealed that heavy insect herbivory can change the chemistry of plants. It has been widely hypothesized that insect herbivory might increase the concentration of THC to surpass the legally permitted limit, posing challenges for hemp growers. While research suggests hemp extracts containing cannabinoids like THC and CBD may repel insects, the specific mechanisms and effectiveness for resistance require further investigation. Corn Earworm (CEW) is a key insect pest for hemp in the Delmarva region. However, the impact of CEW on the genes responsible for cannabinoid synthesis in hemp is not well studied. This study investigated the impact of CEW infestation on the expression of CBDAS and THCAS genes, responsible for CBD and THC production, in the 'Boax' hemp variety. 10 Seedlings were grown in a growth chamber. At the early flowering stage, five hemp plants were exposed to CEW; the remaining five were used as a control. Flower buds with leaves were collected in liquid nitrogen, and RNA was extracted following the manufacturer's protocol. The gene expression of four genes that are involved in the biosynthesis of cannabinoids will be quantified using quantitative real-time PCR. Previous research from our lab demonstrated that CEW-damaged plants showed a high increase in cannabinoids. We expect the gene expression skim will follow the same trend. This research could inform future CEW management strategies, improve understanding of hemp-CEW interactions, and potentially contribute to the development of insect-resistant hemp varieties.

The Impact of Postpartum Depression on the Developmental Progress of Children

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The Prevalence of postpartum depression has steadily been increasing in the most recent years, inside and outside of the U.S. Postpartum depression is now recently being studied as the disease has been becoming more common in multiple populations. It is characterized by feelings of sadness over 14 days and may be coupled with a mother having feelings wanting to harm themselves or their newborn child. What is the impact of postpartum depression on the deve-

lopmental progress of children? The study comprised a literature review of five articles investigating the impact of postpartum depression on developmental delays, incorporating data from the United States, the United Kingdom, and Turkey. The information was compiled in an Excel spreadsheet to analyze the nature and prevalence of postpartum depression's effects on child development. Specific studies explored diverse demographic backgrounds, such as South African mothers, low-income households, employed and housewife participants, and the longitudinal impact of perinatal depression on children's social-emotional development. The findings demonstrate that postpartum depression does have an effect on developmental delays, however it is not the only factor that can increase the prevalence of developmental delays in children of postpartum mothers. Socioeconomic status was another big indicator coupled with postpartum depression that predisposed children to developmental delays. Some of the developmental delays that the children experienced such as a delay in relating in play and social/emotional development. It was also found that some mothers with depression had difficulties giving attention to their children and communicating with their children verbally and nonverbally. Our research revealed that although maternal depression significantly affects the developmental outcomes of children, other factors such as socioeconomic status and literacy play a crucial role in determining the severity of these developmental outcomes for the children.

The Impact of Pre-Rehabilitation on the Recovery and Outcomes of Total Knee Replacement
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Total knee replacement (TKR), also known as total knee arthroplasty (TKA), is a surgical procedure in which a damaged or diseased knee joint is replaced with an artificial joint or prosthesis. This procedure is commonly performed to relieve pain and improve the function of a knee joint that has been severely damaged by arthritis, injury, or other conditions. Between 2012 and 2020, the American Joint Replacement Registry (AJRR) reported 2.2M hip and knee arthroplasties. Primary Total Knee replacement being most commonly performed. The most common reason for knee replacement surgery is arthritis. Osteoarthritis affects over 32.5 million US adults. The influence of pre-rehabilitation interventions on postoperative outcomes in individuals undergoing total knee arthroplasty is complex. Numerous studies have explored the impact of pre-rehabilitation on various aspects of the postoperative period, including recovery time, pain management, functional outcomes, and patient satisfaction. This study aims to systematically evaluate the impact of pre-rehabilitation interventions on postoperative outcomes in individuals undergoing total knee arthroplasty (TKA).This study utilized a systematic review to investigate the impact of pre-rehabilitation on adults undergoing total knee replacement. A comprehensive search of PubMed was conducted to identify studies comparing knee functioning in individuals after total knee replacement with pre-rehabilitation therapy versus standard care. The inclusion criteria encompassed Systematic Reviews, Meta Analyses, and Randomized Control Trials. A total of five selected studies were analyzed to provide a thorough assessment of the influence of pre-rehabilitation interventions on postoperative outcomes in the context of total knee arthroplasty. Individuals who underwent pre-rehabilitation exhibited improvements in knee flexion, reduced inflammatory pain and stiffness, enhanced muscle strength, and reported higher levels of quality of life. This approach was associated with a reduction in hospital stay duration, increased knee functioning, and a diminished rate of deterioration during the waiting period leading up to TKA. The evidence on pre-rehabilitation before total knee replacement is mixed. While some studies suggest potential short-term benefits, such as improved knee functioning, others find no impact on functional outcomes. The overall quality of evidence is affected by biases and heterogeneity, highlighting the need for more high-quality trials to assess the effectiveness of pre-rehabilitation in total knee replacement.

The Impact of Social Media Use on Mental Health
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Social media use is increasing every year and its effects on mental health are still debated/unknown (Karim et al., 2020). The effect of social media is a newer category of study that is rapidly growing and gaining popularity. There are many unexplored and unexpected constructive answers associated with this topic (Karim et al., 2020). Social media use (Facebook, Instagram, Twitter, Snapchat, LinkedIn) was measured as mental health/mood disorders such as anxiety, depression, and suicidal ideation (Berryman et. al., 2018). What is the impact of social media use on mental health, specifically in terms of anxiety, depression, addiction, and suicidal ideation? To comprehensively understand the connection between social media use and mental health, we employed careful criteria to select relevant studies peer-reviewed and critically appraised articles published in the last seven years (2016-2021). Participants, irrespective of age, were included, comparing active social media users against non-users. We examined platforms like Facebook, Instagram, Twitter, and LinkedIn. The main focus was on understanding how excessive social media use correlates with higher rates of mental health disorders, particularly anxiety and depression. These approaches seek to illuminate the complex connection between mental well-being and social media. Graphs demonstrate that four social media platforms were the most popular use which include Facebook, Instagram, Twitter (X now), and LinkedIn. Males were more using social media (52% - 63%) than females (37% - 48%).The average effects of social media on mental health derived from the literature review showed that four mental health disorders have been linked to social media including anxiety (9% - 33%, average 25%), depression 8% - 30%, average 21%), addiction (1% 15%, average 7), suicidal ideation (0 – 3% average 1). Excessive social media use has been associated with a higher prevalence of mental health disorders. Further research is necessary to determine the full impact of social media on mental health. To counteract social media's negative effects, limit usage, uninstall apps, and promote a balanced digital lifestyle through education and mindfulness.

Poster Abstracts - Graduate
(Titles in Alphabetical Order)

Time Series Analysis and ARIMA Modeling of the Unemployment Rate in the USA

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The unemployment rate represents the number of unemployed as a percentage of the labor force. Based on the data from FRED, the unemployment rate for the past 10 years has been on the decrease with an upward spiral in 2020 due to covid-19 pandemic. For the past two years there has been a steady rate as evidenced by the return to business normalcy in most parts of the country. This project aims to utilize the ARIMA model which is commonly applied in time series analysis to model and forecast various economic and financial indicators, including unemployment rates. The data was obtained from Federal Reserve Economic data and following the Box Jenkins methodology the R Studio software was used to model the unemployment rate in USA from 2013 to January, 2024. The results fit model ARIMA (0,1,0). Overall, the study offers insight to the USA national labor force on the unemployment rate by providing the patterns observed in the past ten years and can be utilized for better outcomes in the future.

Time Series Analysis of the Global Price of Poultry: SARIMA model

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Poultry is a globally important agricultural commodity, whose supply has rapidly increased to match the increasing demand. Price is interwoven into both the supply and demand for poultry. The objective of the study is to demonstrate the utility of price forecasting of the global price of poultry using a time series of data ranging from 1990 to 2023. The data was collected from the Federal Reserve database and processed in R. The ARIMA model was completed following the Box-Jenkins methodology and with R software. The model autofit to ARIMA (2, 1, 3) x (0, 0, 1) [12]. Which means that it is a seasonal moving average model. The results were obtained from the application of univariate SARIMA techniques to produce price forecasts for the global price of poultry and precision of the forecasts was evaluated using the standard criteria of RMSE and MAPE. Which were found to be 4.50394 and 2.395138 respectively. Further work could try other time series models to see if they are more accurate or find trends in the data.

Time-series Analysis for Global Wheat Price Prediction

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The global wheat market stands as a pivotal cornerstone of the world economy, exerting profound influence over food security and trade dynamics on a global scale. Given the importance of wheat in the world, the necessity for accurate prediction models becomes paramount for effective decision-making. This study undertakes a meticulous exploration of the multifaceted dynamics in the global wheat market, drawing upon a thorough analysis of historical data. Employing advanced time-series analysis techniques, the research endeavors to forecast forthcoming wheat prices with precision. Specifically, the Autoregressive Integrated Moving Averages (ARIMA) model is used to adeptly capture the intricate temporal patterns within the dataset. The culmination of these findings not only enriches our understanding of the global wheat market but also contributes to the employment of existing methodologies for wheat price prediction. Such insights serve to empower stakeholders across the agricultural and food industries, enabling them to make informed decisions in a landscape characterized by volatility and uncertainty.

Using machine learning to investigate the health effects of traffic related PM2.5 air pollution on Chronic Disease Prevalence in the Georgetown Community of Salisbury, Maryland

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Research has established that PM2.5 air pollution is a major environmental health concern and a key driver of cardiovascular disease, diabetes, and hypertension. PM2.5 contains contaminants such as CO_2, lead, arsenic, NOx, among others that penetrate the air-blood barrier to internal organs, affecting gene expression, cell formation, and fetal development in utero. Although predominant medical theory espouses genetic causes of these chronic diseases, recent research has begun to consider cumulative and environmental exposures like poor air quality as contributors to chronic pathologies (Wild, 2012). These nonmedical factors, referred to as social determinants of health (SDOH), fall under an emerging branch of 'omics' known as Exposomics (Neufcourt, et al, 2022). The purpose of this research is to investigate the environmental and nonmedical relationships between prolonged exposure to vehicular PM2.5 and chronic disease mortality (e.g., cardiovascular disease, diabetes, and hypertension) within the Eastern Shore region community of Georgetown located in Salisbury, Maryland, pre- and post-installation of U. S. Routes 50 and 13. For this analysis, machine learning algorithms will be used to extract geographic, demographic, and mortality data from digitized certificates of death (CODs) - 1911 to 1922 (n ≈ 1716) and 1973 to 1979 (n ≈ 1716) – obtained from the Maryland State Archives. Consistent with prevailing studies, we anticipate that our results will evidence an upward trend in the incidence of chronic disease mortality related to fine particulate air pollution exposure given the residential proximity to major roadways and higher traffic volume driven by expansion of population and industry in the area.

Understanding wave-current-ice interaction to tackle shoreline erosion in Lake Michigan

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Lake Michigan's abundant freshwater provided a backbone for the region's economy and shaped the culture and history of communities. But the climate is changing lately -the lake water is getting warmer, wave height and energy have increased and the ice cover that usually forms in the winter has been depleted. As a result, shoreline erosion has become a constant threat. Therefore, understanding the impact of climate change on Lake Michigan's coastal wave-current and ice interaction is crucial to developing adaptation strategies to protect shorelines.

Abundance and Diversity of Mosquitoes in Somerset and Wicomico Counties

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Mosquitoes pause a major threat to health of human and livestock in Maryland and other places of the US. The purpose of our study was to investigate the ecology of mosquito vectors of human and animal diseases, as a prelude to designing effective programs for their control.A field study was conducted in July- September 2023 to compare the abundance of different mosquito species in Somerset and Wicomico Counties, Maryland.Mosquitoes were collected by BG (Biogent) and CDC light traps operated simultaneously on biweekly basis in 12 sites representing different microhabitats of the two counties.Mosquitoes captured in the traps were killed by deep freezing and identified using relevant taxonomic keys.The results showed that the BG trap collected a significantly smaller number of female mosquitoes (213 individuals) as compared to the CDC light trap (1,174 individuals). However, the diversity of mosquitoes captured in the BG trap was much higher than in the CDC traps. Throughout the experiment 6 genera and 19 species of mosquitoes were identified. The most prevalent genera in the area were Aedes, Anopheles and the Culex mosquitoes. The species most abundant mosquito species in both trap types were Ae. Taeniorhychus, Ae. Vexans, An. Crucians, and Cx. Spp. The most important mosquito captured in the study was Aedes albopictus, which is a major vector of several arboviruses, including Zeka and dengue. Future studies will utilize CO2 baited CDC traps and gravid traps to target the mosquito species of special medical and veterinary importance.

Designing an Aquarium to Test the Effectiveness of Nontoxic Polymer Formulations at Preventing the Accumulation of Biofilms.

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Biofouling is a muti-stage process driven by marine bacteria and free radicals in water, that happens on any submerged surfaces, such as bottoms of ships, boats, mining platforms and more. Along with tremendous economic loss caused by excessive use of fuel, corrosion, and a need to clean surfaces, biofouling also has a negative ecological effect caused by spreading bacteria from one marine environment to another where it may be invasive. Most current solutions to biofouling are very toxic and are even banned in many countries. Recently, we have developed a non-toxic antifouling formulation, which consisted of polymethyl methacrylate (PMMA) and extracts of specialty crops, medical herbs, and algae enriched with antioxidants and essential oils. Several crops have shown promising results in short term tests. However, conducting more insightful long-term tests requires engineering design of special aquariums where the properties of water samples from local natural sources can be maintained, while slides covered by the antifouling formulation can move in water in conditions close to those in oceans, bays, and rivers. Two aquariums, one for fresh and one for salt water, were designed, built, and tested, where 3D printed boats primed with the solution bear slides with coating on their sides. The boats move slowly back and forth through the water for a set period of time, and the drug precipitated would be measured to determine the effectiveness of the films. This presentation is devoted to engineering design, building, and testing of aquariums along with the system to preserve the water in it. The building process, 3D printing, and principle of operation will be presented.

Financial Ratio Analysis of Deere & Company

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The John Deere Company is one of the world's largest producers of agricultural equipment. Started in 1837 with the creation of the self-scouring plow (Deere). Today they are recognizable by their signature green and yellow color scheme. They are also known for their focus on quality of equipment produced and the improvement of agriculture through technology. The John Deere company also produces other equipment which is not necessarily used for agriculture. This Financial Ratio analysis will discuss the recent trends and growth of the company by looking at a series of data including but not limited to: current ratio, profits, and return on investment. With this data predictions and observations will be made for the company.

Highly Nutraceutical Aronia Berry-Based Power Aid Drinks: Unleashing the Synergy of Antioxidants, Terpenes, and Essential Oils

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Aronia mitschurinii, a deciduous shrub indigenous to North America, is one of new generation of super fruits, alongside hascaps, elderberries, and mulberries, boasting significantly higher levels of phenolic antioxidants than the renowned açaí berries. Despite their inherent tannic taste, which may deter some palates, these berries can be processed into palatable juices, jams, and sweetened products. However, their consumption is limited by a high sorbitol content. This study focuses on the development of all-natural, colorant-free, preservative-free, and sugar-free organic power aid drinks utilizing aronia juice, which is now under the patent application. Traditional power aid drinks often contain excessive sugar, leading to calorie overload and posing risks to cardiovascular health. Along with it, most have no real fruits, none claim antioxidant or any microelements other than sodium and potassium. Aronia juice offers a natural abundance of essential minerals such as potassium, magnesium, selenium, iron, and zinc, complemented by organic mineral drops. By incorporating young ginger, freeze-dried organic berries, earl grey and/or medicinal herbal infusions, sweetened with organic stevia, the harsh taste of tannins is mitigated, offering a diverse range of flavors and additional health benefits. Here we present drinks formulations, the phytochemical profiling of all developed drinks, coupled with optimal processing techniques following thermal decomposition of antioxidants experiments. Qualitative screenings have identified the presence of flavonoids, glycosides,

Optimization of Attraction Media of Mosquito Gravid Traps

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Mosquitoes are the most dangerous animals confronting mankind; placing more than half of the world's population in tropical and subtropical regions in risk of acquiring devastating diseases. The problem is spreading into temperate climate, as a result of climate change. With such threat, there is a need for standardized trapping methods that allow comparison between mosquito populations at different locations. The presented study was designed to optimize the performance of the mosquito Gravid Trap (GT) by comparing the efficacy of traps baited by different of infusions. Gravid traps baited with hay infusion, hay and chicken manure infusion and untreated water control were tested side by side in two locations in Somerset and Wicomico counties, Maryland, USA. Chemical and physical characteristics of the three types of media were recorded throughout the experiment. The results indicated that the combination of chicken manure and hay infusion attracted higher numbers of female mosquitoes as compared to hay infusion and water media. Most mosquito attracted to the traps were Culex spp, primarily Cx. pipiens and Cx. restuans. Preliminary data indicated that the differential attraction to different media may be related to changes in pH, dissolved oxygen content, conductivity and salinity of water. Future research should determine specific microbial composition and odors that are responsible for mediating the attractancy of different infusions and use them develop standard GT medium.

Phytochemicals as Active Ingredients in Antifouling Formulations

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Since the 15th century, marine and later interdisciplinary groups of scientists have been trying to solve one major economic and environmental problem – the accumulation of biofilm on submerged surfaces. Biofouling is the adhesion and accumulation of bacteria and other marine microorganisms and their polymerized metabolites on submerged surfaces like military ships, cargo ships, fishery boats, buoys, and platforms. Biofouling also targets water purification systems, medical devices, military smart vision helmets, and dentistry. The biofouling process includes several stages, of which two majors are bacteria precipitation and radical polymerization of bacteria's metabolites. Biofouling has been and currently is globally important due to its environmental and significant economic impact. Along with corrosion and extended fuel consumption by ships, biofilm also contributes to ecological changes by spreading invasive bacterial species across the world when segments of biofilm are detached from moving ships. Attempts to prevent biofouling have centuries of history, particularly those that employ specialized coatings to defend against biofilm formation. These coatings, however, result in a negative impact on marine ecosystems. TBT (tributyltin) and other biocides in antifouling paints are currently banned in many countries including the US, due to their high toxicity. While recently developed highly hydrophobic polymers have promise, their synthesis has multiple steps and makes this solution very expensive and hard for technology transfer. As an alternative solution, we study formulations for antifouling coatings that are non-toxic and utilize organic renewable super-fruits and medicinal herbs, renowned for their antibacterial and antioxidant properties, combined with biocompatible polymers. Our hypothesis is that antibacterial essential oils and terpenes would prevent precipitation and growth of bacteria on the protected surfaces, while antioxidants, which are natural free radical scavengers, would significantly slow down polymerization processes in the biofilms, which is a radical-catalyzed reaction. Here we focus on antifouling formulations created with extracts of several specialty crops. Phytochemical characterization, procedures for incorporating extracts, sample preparation and preparation of antifouling formulations, antifouling tests, and post-test surface analysis are discussed.

Predicting Social Loafing Behavior with the Big Five Inventory – 10

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The BFI-10 instrument is a concise measure comprising 10 items that evaluate the principal dimensions of personality, namely Extraversion, Agreeableness, Conscientiousness, Neuroticism (emotional stability), and Openness. This instrument is an abridged version of the original 44-item Big Five Inventory, tailored for situations where time constraints are significant for respondents. Social loafing refers to the phenomenon where individuals exert less effort when working collectively in a group compared to when they work individually. Research has identified two personality traits that influence the likelihood for social loafing. Notably, individuals with high levels of conscientiousness, characterized by a strong work ethic, attention to detail, and a strong sense of responsibility, are less inclined to engage in social loafing. Similarly, those who score high on agreeableness, which encompasses traits such as adaptability, cooperation, and a desire to accommodate others, are also less prone towards social loafing behavior. To investigate the validity of the BFI-10, specifically regarding conscientiousness and agreeableness, University of Maryland Eastern Shore students, enrolled in Introduction to Psychology, were concurrently given the BFI-10 and a self-assessment questionnaire to measure their propensity to engage in social loafing. Results of this study indicated a significant negative relationship between BFI-10 scores of consciousness and agreeableness with scores of social loafing. That is, higher scores of conscientiousness and agreeableness correlated with scores indicating less tendency toward social loafing. These results provide evidence that the BFI-10 is a valid assessment tool to use in situations such as classroom demonstrations, where time is limited.

Sodium Hydrogen Exchanger Isoform 3 Gene ExpressioniIn the Kidney of a Zebrafish Hyperglycemia Model

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Diabetes mellitus (DM) is a chronic metabolic disease characterized by high levels of blood glucose termed hyperglycemia that affects 10% of the global population. Elevated blood pressure or hypertension is a common finding in patients with diabetes, and the Na+-H+ exchanger isoform 3 (NHE3) may be at least in part responsible for hypertension. Furthermore, studies have shown that hyperinsulinemia (often seen in type 2 diabetes), increases nhe3 activity. However, the mechanisms involved are not certain. Therefore, the goals of this study were to 1) establish a type 2 diabetic model using zebrafish and 2) determine the effect of hyperglycemia on nhe3 expression in the kidney of zebrafish. Adult zebrafish were randomly divided into two groups: control and glucose treatment (3 biological replicates/group, 9 fish per replicate). The control and treatment groups were immersed in system water (1 ppt), and 111 mM of glucose dissolved in system water, respectively, for 14 days. Treatment solutions were changed every two days. Following the 14 days, the fish were anesthetized in an ice-water bath (12C), blood glucose was measured, and the kidneys were excised and pooled together by groups for real-time quantitative PCR analysis. The immersion in 111mM glucose caused a significant increase in blood glucose compared to the control group (6.06 +/-0.05 mM v.s. 8.2 +/-0.07 mM), however, the probability of survival was not different (100% v.s. 92.6%). Real-time quantitative PCR analysis revealed a significant increase in nhe3a expression in the kidney following glucose exposure (p<0.0336) compared to the control group. However, there was no statistical difference in nhe3b gene expression. Together, these data suggest that chronic exposure of zebrafish to glucose does elevate blood glucose levels and serves as a non-invasive method to induce symptoms related to diabetes. Furthermore, this model can be used to investigate the mechanisms involved in nhe3 regulation during diabetes.

Studying Thermal Decomposition of Aronia mitschurinii Based Power Aid Drinks as a Key for preservation of Phenolic Antioxidants.

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Aronia mitschurinii is a cultivated species resulted from crossbreeding of a wild species Aronia melanocarpa, also known as the black chokeberry, and Mounting Ashe. Aronia contains very high concentrations of essential vitamins, minerals, microelements, and antioxidants in extremely high concentrations, while offering a variety of health benefits including anti-obesity, anti-cancer, anti-inflammatory, and anti-diabetic properties. Our team has developed alternative sugar-free, all organic, colorants and preservatives free power aid drinks from aronia with incorporated ginger, black and herbal teas, and other freeze-dried organic fruits. The extremely high content of phenolic antioxidants in our drinks would allow claiming it on the labels for the first time on the market. However, food applications of any fruit require high temperature pasteurization as a major step during the fruit processing while some also require cooking. There are some major destructive effects higher temperatures can have on antioxidants, such as isomerization and decomposition, and both would result in the loss of valuable antioxidants. Here we present the detailed investigation into the effect of temperature and heating time on the antioxidant content of Aronia mitschurinii based drinks. By destroying spoilage microorganisms, pasteurization helps to extend the shelf life of the beverage. This means that the product can be stored for a longer period without spoiling, reducing waste and enabling wider distribution. On the other hand, with specialty crops, pasteurization should be done at conditions that help preserving the natural flavors and phytochemical characteristics of the drink, ensuring that it maintains its desired taste profile throughout its shelf life. The major goal of this research is to determine the ideal pasteurization temperature and time to minimize loss of antioxidants. UV/Vis methods were used for determination of total concentrations of anthocyanins, flavonoids, tannins, and polyphenols, with the aim to determine the optimal pasteurization and heating conditions that would prevent significant loss in the antioxidant capacity in aronia products. We additionally measured brix, pH, and mineral content through ICP/MS.

SWOT Analysis on FarmBot

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There is an ongoing problem the world faces. The increasing world population, food supply, and the environment, scientists, researchers, and farmers are developing ways and means to satisfy this developing issue the world and the agriculture industry faces, hence the innovative and groundbreaking agricultural technology of Farmbot by Rory Anderson of California Polytechnic State University. This robotic system combines precision agriculture, automation, and sustainability principles to address the challenges of modern food production. This abstract provides an overview of the FarmBot system and its key features. FarmBot utilizes advanced technology, including computer vision, GPS, and automated machinery, to precisely manage farming tasks. By customizing planting, watering, and weeding processes, it optimizes resource usage, reduces waste, and maximizes crop yields. The FarmBot system operates autonomously, reducing the need for extensive manual labor. This not only saves time and labor costs but also enables farmers to focus on higher-level decision-making and crop management. FarmBot promotes sustainable farming practices by minimizing the use of water, pesticides, and fertilizers. The system's precise application of resources reduces environmental impact, making it an eco-friendly alternative to conventional farming. FarmBot's modular design allows for scalability and adaptability to various farming operations, from small backyard gardens to large commercial farms. This technology can potentially make advanced farming techniques accessible to a wide range of users. FarmBot collects extensive data on crop growth and environmental conditions, providing valuable insights for farmers. By monitoring and analyzing this data, farmers can make informed decisions to improve crop quality and yield.

The Impact of Beauveria bassiana on Squash Bugs Mortality.

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Beauveria bassiana is a an entomopathogenic fungus naturally found in soils and causes a disease known as the white muscadine disease in insects. The spores of this fungus invade the cuticle (skin) of insects first, then then moves to the inner body of their host insect. The fungs produces toxins and draining the insect of nutrients and eventually kill the insect. This research aims to evaluate the efficacy of field-collected entomopathogenic fungi against squash bug. The field-collected fungi are isolated from cadavers of insects and identified based on their colony color, as White and Pink, until further identification takes place using molecular techniques. Squash bugs were dipped into a fungal suspension, and then placed into a petri dish that has squash leaf. For comparison, control groups were treated with sterilized water, and data on mortality was collected daily. A Dip assay of the squash bugs showed that within three days, there was a 50% mortality rate in the pink and white strains. The study of the squash bug is at its preliminary stage, so dip and spray assay will be conducted in the upcoming season. This fungus shows its potential as a biological control agent in controlling the insect pest population.

The Investigation of Universal Robots with Multiple Degrees of Freedom

Oreoluwa Emmanuel Olajide*, and Dr. Payam Matin
Department of Engineering, University of Maryland Eastern Shore, Princess Anne, MD 21853

Robotic Arms have wide applications in today's industry especially in manufacturing. It is crucial for engineering students to gain knowledge on how a Robotic Arm is designed and fabricated. The purpose of this undergraduate research is to engage an undergraduate engineering student with preliminary design stages of a Robotic Arm. The focus of the research is to design the geometry of the robot. The student has utilized Reverse Engineering to gain basic knowledge about the geometry of a UR5 robotics Arm. Considering the knowledge gained, the student has implemented Computer-Aided-Design (CAD) techniques to design the geometry of a 5 degree-of-freedom robotic arm using SolidWorks CAD software. The design process included making several rough sketches of the parts, and improving them to build solid models of the components, which have been eventually combined into a final assembly.

Video summary of the study abroad experience of University of Maryland Eastern Shore students under The Richard A. Henson Honors Program at Sunyani Technical University and Ghana

Joshua Williams1*
Department of English and Modern Languages, University of Maryland Eastern Shore, Princess Anne, MD 21853

From January 3-13, 2024 University of Maryland Eastern Shore (UMES) studnets took an experiential study abroad experience at Sunyani Technical University in Ghana. Students participated in service learning projects and an academic project related to Ghana. This project will be composed of a video documentation of the time UMES Students had throughout the trip to experience Ghana's culture. This video presentation will recount students' time in Ghana visiting Sunyani, Kumasi, Cape Coast, and Accra of their experiences. Additionally, this video has the intention of serving potential study abroad students to encourage them to take advantage of the study abroad opportunities during University. The goal is to have students to see the type of experiences one can have by taking advantage of study-abroad opportunities when made available and aware of by the University of Maryland Eastern Shore.

Voices Unveiled: Exploring Therapy Attitudes Among African American Baby Boomers (Ages 59-68)

Te'Andra Evans*, Charlize Williams*, and Dr. Lisa Zheng
Department of Rehabilitation Psychology University of Maryland Eastern Shore, Princess Anne, MD 21853

The exploration of therapy attitudes among African American Baby Boomers (Ages 59-68) is a nuanced inquiry into a demographic that has experienced profound societal shifts, marked by both historical challenges and contemporary changes. This lit review delves into the unique cultural and historical context of African American Baby Boomers, providing a demographic overview and tracing the evolution of mental health perceptions within their community. Significantly, the study seeks to identify gaps in the existing literature and underscores the importance of comprehending therapy attitudes within this demographic. The review systematically examines cultural factors shaping therapy attitudes, including the historical mistrust of mental health systems, the influence of cultural norms, and the stigma surrounding mental health in the African American community. Additionally, the experiences with mental health services, generational perspectives, and the intersectionality of gender and socioeconomic factors are scrutinized, offering a comprehensive understanding of the multifaceted dynamics at play. By delving into the research methodologies employed in existing studies, this literature review aims to critically evaluate and consolidate knowledge on therapy attitudes among African American Baby Boomers.

JUDGES' SCHEDULE - ORAL AND POSTER SESSIONS

JUDGES' COMMITTEE
Dr. Jackson-Ayotunde and Uchenna Nwonye

	NAME	SESSION	TIME	LOCATION
		ORAL SESSIONS		
1	Priscilla Okyere	OU2-OU5	9:00am-10:00am	2149
2	Cy'Anna Scott	OU2-OU5	9:00am-10:00am	2149
3	Sherene Black	OU2-OU5	9:00am-10:00am	2149
4	Andrea Taylor	OU6-OU9	9:00am-10:00am	2144
5	Iram Elamin	OU6-OU9	9:00am-10:00am	2144
6	Feyisetan Beke	OU6-OU9	9:00am-10:00am	2144
7	Ms. Amelia Potter	OU1, OU10	9:30am-10:00am	Ballroom
8	Dr. Kelsie Endicot	OU1, OU10	9:30am-10:00am	Ballroom
9	Dr. Antonio Junior	OU1, OU10	9:30am-10:00am	Ballroom
10	Dr. Ejiogu Kingsley	OF1-OF8	10:00am-12:00pm	Theater
11	Dr. Victoria Volkis	OF1-OF8	10:00am-12:00pm	Theater
12	Dr. Monisha Das	OF1-OF8	10:00am-12:00pm	Theater
13	Dr. Janak Dhakal	OG1-OG8	10:00am-12:00pm	2149
14	Dr. Chelsea Richardson	OG1-OG8	10:00am-12:00pm	2149
15	Dr. Abhijit Nagchaudhuri	OG1-OG8	10:00am-12:00pm	2149
16	Dr. Tao Gong	OG9-OG16	10:00am-12:00pm	2147
17	Dr. Bryan Gere	OG9-OG16	10:00am-12:00pm	2147
18	Dr. Ahmed Elnabawi	OG9-OG16	10:00am-12:00pm	2147
19	Dr. Madhumi Mitra	OG17-OG24	10:00am-12:00pm	2144
20	Dr. Kausik Das	OG17-OG24	10:00am-12:00pm	2144
21	Dr. Nicole Hollywood	OG17-OG24	10:00am-12:00pm	2144
22	Dr. Wayne Omagamre	OG25-OG32	10:00am-12:00pm	MPR
23	Dr. Mohammad Ali	OG25-OG32	10:00am-12:00pm	MPR
24	Dr. Carol Champagne	OG25-OG32	10:00am-12:00pm	MPR
		POSTER SESSIONS - UNDERGRADUATE		
	Rhashanda Haywood	PU1 - PU5	1:30 pm - 3:00 pm	Ballroom
	Esther Dabipi	PU1 - PU5	1:30 pm - 3:00 pm	Ballroom
	Ms Tysha Palmer	PU1 - PU5	1:30 pm - 3:00 pm	Ballroom
	John Ithiru	PU6 - PU10	1:30 pm - 3:00 pm	Ballroom
	Mary Twumasi	PU6 - PU10	1:30 pm - 3:00 pm	Ballroom
	Tahirah Johnson	PU6 - PU10	1:30 pm - 3:00 pm	Ballroom
	Priscilla Kini	PU11 - PU15	1:30 pm - 3:00 pm	Ballroom
	Chibunkem Asuzu	PU11 - PU15	1:30 pm - 3:00 pm	Ballroom
	Fritz Woloua	PU11 - PU15	1:30 pm - 3:00 pm	Ballroom

JUDGES' SCHEDULE - POSTER SESSIONS

JUDGES' COMMITTEE
Dr. Jackson-Ayotunde and Uchenna Nwonye

	JUDGE	SESSION	TIME	LOCATION
POSTER SESSIONS - GRADUATE AND FACULTY
25	Dr. Khaled M. Hasan	PG1 - PG5	1:30 pm - 3:00 pm	Ballroom
26	Dr. Kathryn Barrett-Gaines	PG1 - PG5	1:30 pm - 3:00 pm	Ballroom
27	Dr. Jiabing Fan	PG1 - PG5	1:30 pm - 3:00 pm	Ballroom
28	Dr. Tao Gong	PG6 - PG10	1:30 pm - 3:00 pm	Ballroom
29	Dr. Mohammad Ali	PG6 - PG10	1:30 pm - 3:00 pm	Ballroom
30	Dr. Carol Champagne	PG6 - PG10	1:30 pm - 3:00 pm	Ballroom
31	Dr. Mark Williams	PG11 - PG15	1:30 pm - 3:00 pm	Ballroom
32	Dr. Preeti Sharma	PG11 - PG15	1:30 pm - 3:00 pm	Ballroom
33	Dr. Madan Kharel	PG11 - PG15	1:30 pm - 3:00 pm	Ballroom
34	Dr. Dannise Ruiz	PG16 - PG20	1:30 pm - 3:00 pm	Ballroom
35	Ozioma Okiehelem	PG16 - PG20	1:30 pm - 3:00 pm	Ballroom
36	Dr. Naveen Dixit	PG16 - PG20	1:30 pm - 3:00 pm	Ballroom
37	Dr. Biswadeep Dhar	PG21 - PG25	1:30 pm - 3:00 pm	Ballroom
38	Dr. Antonio Junior	PG21 - PG25	1:30 pm - 3:00 pm	Ballroom
39	Dr. Mohammad Waseem	PG21 - PG25	1:30 pm - 3:00 pm	Ballroom
40	Dr. Kadeem Turnbull	PG26 - PG30	1:30 pm - 3:00 pm	Ballroom
41	Dr. Khadidra Washington	PG26 - PG30	1:30 pm - 3:00 pm	Ballroom
42	Dr. Etahe Johnson	PG26 - PG30	1:30 pm - 3:00 pm	Ballroom
43	Dr. Aaron Persad	PG31 - PG35	1:30 pm - 3:00 pm	Ballroom
44	Dr. Cynthia Cravens	PG31 - PG35	1:30 pm - 3:00 pm	Ballroom
45	Dr. Rob Richerson	PG31 - PG35	1:30 pm - 3:00 pm	Ballroom
46	Dr. Jennifer Timmons	PG36 - PG40	1:30 pm - 3:00 pm	Ballroom
47	Jamila Johnson	PG36 - PG40	1:30 pm - 3:00 pm	Ballroom
48	Dr. Bernadette Ezeabikwa	PG36 - PG40	1:30 pm - 3:00 pm	Ballroom
49	Dr. Anuradha Punchihewage D.	PG41 - PG45	1:30 pm - 3:00 pm	Ballroom
50	Chris Hartman	PG41 - PG45	1:30 pm - 3:00 pm	Ballroom
51	Dr. Papaiah Sardaru	PG41 - PG45	1:30 pm - 3:00 pm	Ballroom
52	Dr. Lisa Zheng	PF1-PF2, PG46 - PG48	1:30 pm - 3:00 pm	Ballroom
53	Dr. Jennifer Keane-Dawes	PF1-PF2, PG46 - PG48	1:30 pm - 3:00 pm	Ballroom
54	Dr. Lila Karki	PF1-PF2, PG46 - PG48	1:30 pm - 3:00 pm	Ballroom
	ALTERNATES			
	Dr. LaKeisha Harris			
	Dr. Wele Elangwe			

MODERATORS' SCHEDULE - POSTER & ORAL SESSIONS

	MODERATOR	SESSION	TIME	LOCATION
	ALL SESSIONS			
1	Tahirah Johnson	Poster	1:30 pm - 3:00 pm	Ballroom
2	Ian Kalema	Poster	1:30 pm - 3:00pm	Ballroom
3	Ozioma Okiehelem	Oral (OF1 - OF8)	10:00am-12:00pm	Theater
4	Benjamin Komolafe	Oral (OG1 - OG8)	10:00am-12:00pm	2149
5	Charity Akpovino	Oral (OG9 - OG16)	10:00am-12:00pm	2147
6	Samata Bhetwal	Oral (OG17 - OG24)	10:00am-12:00pm	2144
7	Zelma Haywood	Oral (OG25 - OG32)	10:00am-12:00pm	MPR
8	Keith Bucca	Oral (OU2 - OU5)	9:00am-10:00am	2149
9	Albert Ofosu	Oral (OU6 - OU9)	9:00am-10:00am	2144
10	Katrina Kelly	Digital Media (OU1-OU10)	9:30am-10:00am	Ballroom

Graduate Programs & Directors

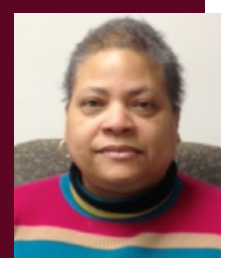**Dr. Asad Azemi**
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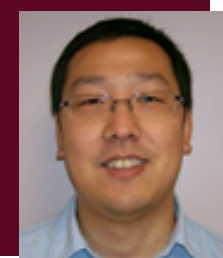Ph.D. Food and Agricultural Sciences

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P.S.M. Quantitative Fisheries & Resource Economics
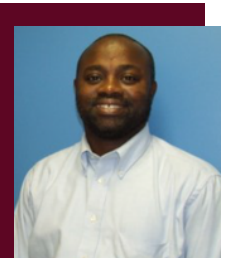
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Rural Health Disparities (Post-Baccalaureate Certificate)

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