

24TH ANNUAL ONE HEALTH SYMPOSIUM 11TH ANNUAL PHI ZETA RESEARCH DAY



THEME: Translation of One Health
Research to Policy, Practice and Action

HYBRID

September 18-19, 2023

Patterson Hall Auditorium

College of Veterinary Medicine | Tuskegee University





TUSKEGEE UNIVERSITY

OFFICE OF THE PRESIDENT



Greetings:

It is a pleasure to welcome all of you to the 24th Annual One Health Symposium and the 11th Annual Phi Zeta Research Day sponsored by the College of Veterinary Medicine on the campus of Tuskegee University. Your support of our programs and events is sincerely appreciated. We also applaud the efforts of our faculty and staff, who continue to assist this historic institution in remaining in the forefront of health and health care for both animals and humans. Their work and interdisciplinary approaches to ensure optimal health for animals, people, and the environment are making strides in the transformation of a relatively new era.

This year's conference theme: "Translation of One Health Research to Policy, Practice, and Action," dictates that the research completed here and with our collaborative partners is only the beginning. This theme speaks to our shared vision to improve lives through scientific discovery and by demonstrating an effective path forward for professionals seeking solutions. Our mission and vision in this regard cannot be achieved without the coordinated efforts of the entire community of workers. We believe in "One Tuskegee."

We eagerly look forward to your participation in these deliberations, whether in person or virtually. It is our hope that the information shared will result in policies, practices, and actions that will lead to a healthier community for all of us.

Again, thank you for sharing this transformative activity.

Sincerely,

Charlotte P. Morris, Ph.D.
President



COLLEGE OF VETERINARY MEDICINE
Office of the Dean



Welcome to the 24th Annual One Health Symposium (formerly the Biomedical Research Symposium) and the 11th Annual Phi Zeta Research Day being held on September 18 and September 19, 2023. The theme of the symposium **“Translation of One Health Research to Policy, Practice, and Action,”** acknowledges the continuous focus on the One Health Triad on healthy people, healthy environments, and healthy animals. It also aligns with the work of biomedical leaders in shaping future directions in advancing healthcare and biomedical research. We will continue with the format from last year with onsite and in-person events.

The annual symposium underscores our commitment to the overall strategy of providing a forum for advancing biomedical research and heightening awareness of global health disparities. Health disparities in our country are an ongoing problem in various populations and are characterized by limited access to healthcare and inequalities associated with economic factors, environmental issues, and social hazards. Even though it affects people across different racial, ethnic, and socioeconomic groups, individuals with special needs are particularly vulnerable to its impacts. Participants will have the opportunity to hear from dynamic speakers, engaged faculty, and motivated students across colleges and disciplines engaged in the quest for incremental reductions in such disparities and their eventual elimination. This symposium will not only be a forum for research collaboration but will also allow participants to learn about exciting new interventions in public health and biomedical research.

The Phi Zeta Research Day session will further highlight students’ contributions to research and public health as an opportunity for them to share their experiences through oral and poster presentations. We salute all the outstanding scientists and students making presentations.

I extend my appreciation to the One-Health Symposium Co-chairs Dr. Ehsan Abdalla, Assistant Professor & Director of Analytics in the Department of Graduate Public Health, and Dr. Athema Etzioni, Associate Professor & Section Chief of Clinical Pathology in the Department of Pathobiology. I also extend appreciation to the Phi Zeta Research Day Co-chairs Dr. Benjamin Adu-Addai, Assistant Professor and Dr. Dilip Gunturu, Assistant Professor, both in the Department of Biomedical Sciences.

Together as a community of researchers, educators, and supporters, we can make a difference by promoting best practices with interdisciplinary approaches of innovations and research that enhance healthcare access and delivery for a healthier nation. This annual event serves as another forum to promote and foster this mission. Thank you for attending and participating in the 2023 One Health Symposium and Phi Zeta Research Day.

Sincerely,

1200 West Montgomery Road | Patterson Hall, Rm # 201 | Tuskegee, Alabama 36088
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www.tuskegee.edu

Lawrence “Tony” Haygood, Jr.

Mayor, City of Tuskegee, Alabama



In August 2016, Lawrence “Tony” Haygood, Jr. was elected Mayor of the City of Tuskegee, Alabama. Prior to that time, he served four years on the Tuskegee City Council as Councilman-at-Large, Mayor Pro Tem. The previous Governor appointed Mayor Haygood to the Alabama Workforce Development Board in 2016 where he continues to serve to date. He also currently serves on the River Region United Way Board. In 2020, Mayor Haygood was selected as Chairman of the Board of the Alabama Municipal Funding Corporation (AmFund). In 2022, Mayor Haygood was elected to serve as President of the Alabama League of Municipalities.

Currently, Haygood serves as Chairman of at the Tuskegee-Macon County Community Development Corporation (TMCDC). As Economic/Business Development Specialist, he works closely with the Tuskegee University Cooperative Extension Program and TMCDC staff to promote business

and industrial development, launch improvement efforts for community corridors, coordinate housing rehabilitation projects, conduct entrepreneurial training, and manage a business incubator with a community revolving loan fund. As a grant writer, he also works with TUCEP and TMCDC staff to acquire substantial grant funding for community programs.

Haygood was Vice-Chairman of the Historically Black Colleges and Universities (HBCU) Community Development Action Coalition (CDAC) national board. Earlier, Haygood served as President of Southern Community College for more than 20 years.

Additionally, Haygood served as a local tour guide and planner for Tuskegee tourism. Haygood was selected as the Alabama State Tree Farmer of the Year in 1998 and received the Tuskegee University Merit Farm Family award in 2005 at the 113th Tuskegee University Annual Farmer’s Conference.

A member and past president of Alpha Nu Lambda Chapter of Alpha Phi Alpha Fraternity, Inc. Haygood was selected to receive the Alpha Man of the Year Award in 2017 by the Gamma Phi undergraduate chapter at Tuskegee University.

Haygood received his undergraduate degree at Rhodes College with a major in Political Science and a minor concentration in Economics. He received a Master of Business Administration degree from Auburn University Montgomery with additional studies in Management Science at Krannert School of Management at Purdue University in West Lafayette, Indiana and The Georgia Institute of Technology in Atlanta, Georgia. In the summer of 2011, Haygood completed the Intensive Economic Development Training Course at Auburn University in Auburn, Alabama.



COLLEGE OF VETERINARY MEDICINE
Office of the Dean



We are pleased to welcome you to the 24th Annual One Health Symposium and 11th Phi Zeta Research Day hosted by Tuskegee University, College of Veterinary Medicine. Our theme this year is ***“Translation of One Health Research to Policy, Practice and Action.”*** The One Health Symposium brings together biomedical and clinical researchers; graduate and veterinary students; and community leaders engaged in transforming health and healthcare systems.



This landmark annual symposium will include collaborative, multisectoral, and transdisciplinary approach with the goal of achieving optimal health outcomes recognizing the interconnection between people, animals, and our shared environment. We are delighted to have Lawrence F. "Tony" Haygood, Jr., Mayor, the City of Tuskegee give a welcome, greet our attendees, and encourage the community to attend and participate in this kind of event. We are also honored to have prominent speakers to address the selected topics. Ms. Roslyn Holliday Moore, Deputy Director for Programs for the Office of Minority Health (OMH) at the U.S. Department of Health and Human Services (HHS). Dr. Amber N. Clark-Brown, Medical Director Bureau of Health Provider Standards Bureau of Home and Community Services. Dr. Janeth Sanchez, Program Director for Health Equity Division of Medical and Scientific Research for the NIH All of Us Research Program. Dr. Sadeep Shrestha, Professor, Quetelet Endowed Professorship in Public Health, Department of Epidemiology, School of Public Health University of Alabama at Birmingham. Dr. Gary Pugh, Medical Officer, Alabama Department of Public (ADPH). Ms. Karen Henderson, RN, Senior Rx Coordinator, South Central Alabama Development Commission. Ms. Lisa Jones, RN, Assistant District Clinic Director, East Central District (ADPH).

Our community session will begin in the afternoon with 2 panel discussions. These fashioned conversations will be moderated by Dr. Torhonda Lee, Associate Professor and Department of

Graduate Public Health, College of Veterinary Medicine, Tuskegee University and Dr. Vivian Carter, Chair Department of Psychology and Sociology. We are honored to have prominent panelists and speakers to address the following topics ***“Building Organizational Capacity through Policy Change and Advocacy”*** and ***“Community-Level Strategies for Effective Advocacy and Policy Change.”***

We extend a very special welcome to our community members and partners who are a part of the symposium as participants and vendors. We invite you to engage in all that we discover and share through this annual event. Special thanks to the vendors and the Vendor Recruitment Committee from the Macon M.E.A.N.S For Cancer Support and Alabama Department of Public Health, City of Tuskegee, and others who played a major role in reaching out to the vendors and inviting them to take part in this great event.

We sincerely acknowledge Dr. Ruby Perry, Dean of the Tuskegee University College of Veterinary Medicine, and Dr. Temesgen Samuel, Associate Dean for Research and Advanced Studies, for their continuous support and guidance. We also extend our gratefulness to the Phi Zeta Committee members, for the oral and poster presentations. We look forward to a very successful event and hope that you will find it a valuable platform.

Sincerely,

Ehsan Abdalla, DVM, MSc, PhD
Co-chair, One Health Symposium
Assistant Professor of Public Health

Athema Etzioni, DVM, MS, Dipl. ACVP
Co-chair, One Health Symposium
Associate Professor of Pathobiology

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COLLEGE OF VETERINARY MEDICINE



We are excited to announce the much-anticipated 11th Phi Zeta Research Day, taking place on September 19, 2023, along with the 24th One Health Symposium on September 18, 2023, at the Tuskegee University College of Veterinary Medicine. This year's event marks a significant milestone in our journey as we continue to unite the academic and research community for the advancement of animal and human health.

The theme for this year's program, "Translation of One Health Research to Policy, Practice, and Action," aims to delve into the crucial intersection of research and its practical implications on policy and healthcare practices. Over the past decade, Phi Zeta Research Day has evolved into a platform that showcases the dedication and accomplishments of student investigators, seasoned researchers, and experts from various fields. It's truly a remarkable and long-awaited moment that Phi Zeta Research Day has returned to an in-person format on the beautiful campus of Tuskegee University after a hiatus since 2019 due to the COVID-19 pandemic. This significant milestone represents a return to a sense of normalcy and the opportunity to gather once again as a community to celebrate research, learning, and collaboration.

We extend a warm invitation to all members of the Tuskegee University family, as well as esteemed community members from near and far, to join us in this auspicious event. The day's agenda is enriched by the contributions of invited speakers who bring their valuable experiences and expertise to enrich our discussions. Integral to the spirit of Phi Zeta Research Day are the presentations from students and emerging researchers. These individuals embody the heart and soul of our event, representing a diverse array of colleges/ departments including Biology, Agriculture, Biomedical Sciences, and our partners from Auburn University. Their oral and poster presentations provide a glimpse into the promising future of scientific exploration.



Recognizing excellence remains a cornerstone of our event. Deserving participants will be honored with awards that highlight their contributions to their respective fields of study. We encourage all researchers within the College of Veterinary Medicine and beyond to actively engage, seizing this unique opportunity to share research in a supportive and instructive atmosphere. As we embark on this year's journey, we are indebted to the unwavering support of all involved. Our heartfelt gratitude extends to Dr. Ruby Perry, the dean of the veterinary college, whose visionary leadership gave life to the Phi Zeta Research Day a decade ago. Her continued guidance and endorsement have been instrumental in our ongoing success.

We also acknowledge the dedication of the Phi Zeta committee members, whose meticulous planning and execution have shaped this event into what it is today. Our judges deserve special mention for their invaluable time and expertise in evaluating our student participants and fostering an environment of constructive growth. Lastly, we express our sincere appreciation to the sponsors of the 11th Annual Phi Zeta Research Day. Your generosity and commitment are instrumental in empowering the endeavors of students at the College of Veterinary Medicine, enabling us to reach new heights of excellence.

In anticipation of enlightening scientific discussions and invaluable networking opportunities, we eagerly await your presence at the 11th Phi Zeta Research Day and the 24th One Health Symposium. Let's collectively pave the way for translating research into meaningful policies, practices, and actions that benefit our communities and beyond.

With warm regards,

Benjamin Adu-Addai, DVM, Ph.D.
Co-Chair, Phi-Zeta Research Day

Dilip Gunturu BVSc&AH, MVSc, Ph.D.
Co-Chair, Phi Zeta Research Day

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24th Annual One Health Symposium Theme: “Translation of One Health Research to Policy, Practice and Action” College of Veterinary Medicine, Tuskegee University	
<i>Hybrid – September 18, 2023 (9:00 a.m. – 5:00 p.m.)</i>	
9:00 – 9:05 a.m.	- Opening Session: Athema Etzioni, DVM, MS, Dipl. ACVP, Associate Professor, Department of Pathobiology, College of Veterinary Medicine, Tuskegee University - Moderator: Chastity Bradford, Ph.D., Head Department of Biology, Associate Professor, College of Arts and Sciences, Tuskegee University
9:05 – 9:15 a.m.	- Greetings: Charlotte Morris, Ph.D., President, Tuskegee University - Welcome: Ruby L. Perry, DVM, MS, Ph.D., Diplomate-ACVR, Dean, College of Veterinary Medicine, Tuskegee University
9:15 – 9:20 a.m.	Greetings: Lawrence F. "Tony" Haygood, Jr., MBA, Mayor, City of Tuskegee
9:20 – 10:10 a.m.	Virtual Keynote Speaker: Roslyn Holliday Moore, MS., Deputy Director, Office of Minority Health, U.S. Department of Health and Human Services <i>Pathways to Health Equity: Data, Policy and Practice</i>
10:10 a.m. – 10:25 a.m.	Vendors Introduction
10:25 a.m. – 10:45 a.m.	BREAK - VISIT VENDORS TABLES
10:45 a.m. – 11:35 a.m.	Keynote Speaker: Amber N. Clark-Brown, MD, Medical Officer, Bureaus of Health Provider Standards, Home and Community Services and Health Equity, Alabama Department of Public Health <i>Public Health: How Policy is a Root Influencer of Our Health</i>
11:35 a.m. – 12:10 a.m.	Speaker: Janeth Sanchez, MPH, Ph.D., Program Director, Health Equity, National Institutes of Health <i>Advancing Equity in Research and Precision Medicine</i>
12:10 a.m. – 12:45 p.m.	Speaker: Sadeep Shrestha, Ph.D., MHS, MS, Professor, Quetelet Endowed Professorship in Public Health, Department of Epidemiology, School of Public Health University of Alabama at Birmingham <i>Think Globally but Act Locally – Understanding HPV towards Eliminating Cervical Cancer</i>
12:45 p.m. – 1:15 p.m.	LUNCH BREAK - VISIT VENDORS TABLE
1:15 p.m. – 1:55 p.m.	Moderator: Athema Etzioni, DVM, MS, Dipl. ACVP, Associate Professor, Department of Pathobiology, College of Veterinary Medicine, Tuskegee University Speaker: Gary Pugh, DO, FACOG, Medical Officer, Family Health Services, Alabama Department of Public Health <i>HPV Vaccination and Cancer Relationship</i>
1:55 p.m. – 3:45 p.m.	COMMUNITY SESSIONS Moderator: Torhonda C. Lee, Ph.D., MCHES, Associate Professor, Public Health Program Director and Department Head, College of Veterinary Medicine, Tuskegee University <u>Panel Discussion Speakers Session I</u> <i>Topic: Building Organizational Capacity through Policy Change and Advocacy</i> - David Augustin Hodge, Sr., BA, MS, Ph.D., Director (Interim) National Center for Bioethics in Research and Healthcare, Tuskegee University - James Rich, JD, Project Attorney, Legal Services Alabama, Birmingham, AL - Florence A. Pace-Tyner, AS, BS, MS, Ph.D., Executive Director, Senior Service, City of Tuskegee, and Community Service Worker, South Central Alabama Development Commission (SCADC)

	- Kim R. Ortiz, EdS, MPA, MA, Project Director, Tuskegee Advancing Health Literacy (AHL), Coordinator, Community Development/Grants, City of Tuskegee Moderator: Vivian L. Carter, Ph.D., MHR, Chair, Department of Psychology and Sociology, College of Arts and Sciences, Tuskegee University <u>Panel Discussion Speakers Session II</u> <i>Topic: Community-Level Strategies for Effective Advocacy and Policy Change</i> - Mary Elizabeth Brooks, M.Ed., Southern Rural Black Women's Initiative (SRBWI), Alabama Community-based Advocate, Health Education Specialist and Social Justice Advocate, Independent Consultant - Guy Trammel, Trainer Community-based Group Therapy, and Family to Family SAMHSA, Director Macon, Co. Minister's Council Food Pantry, and other panelists speakers from Macon County Community Partners Task Force - Katrina Love, Assistant Pastor, Butler Chapel AME Zion Church, and President, Macon County Ministers' Council - Jatna Rivas Zarete, DVM, MS, Integrative Biosciences, Ph.D. Student, Tuskegee University
3:45 p.m. – 3:52 p.m.	BREAK
3:52 p.m. – 4:27 p.m.	Moderator: Athema Etzioni, DVM, MS, Dipl. ACVP, Associate Professor, Department of Pathobiology, College of Veterinary Medicine, Tuskegee University Speaker: Karen Henderson, MSM, RN, SenioRx Coordinator, South Central Alabama Development Commission <i>Winning with Inflammation: Joint Talk</i>
4:27 p.m. – 4:57 p.m.	Speaker: Lisa D. Jones, RN, Assistant District Clinic Director, East Central District, Alabama Department of Public Health <i>HPV Related Cancers and Prevention</i>
4:57 p.m. – 5:00 p.m.	Closing Remarks: Ehsan Abdalla, DVM, MSc (Hons) (Vet PATH), MSc & Ph.D., Assistant Professor of Public Health/Director of Analytics, Department of Graduate Public Health, College of Veterinary Medicine, Tuskegee University

Notes:

11th Annual Phi Zeta Research Day Theme: “Translation of One Health Research to Policy, Practice and Action” College of Veterinary Medicine, Tuskegee University	
<i>Hybrid – September 19, 2023 (9:00 a.m. – 4:30 p.m.)</i>	
9:00 – 9:05 a.m.	Welcome: Ruby L. Perry, DVM, MS, Ph.D., Diplomate-ACVR, Dean, College of Veterinary Medicine, Tuskegee University
9:05 – 9:15 a.m.	Occasion: Benjamin Adu-Addai, DVM, Ph.D., Assistant Professor, Department of Biomedical Sciences, College of Veterinary Medicine, Tuskegee University
9:15 – 10:00 a.m.	Moderator: Toufic Nashar, DVM, Ph.D., Associate Professor, Department of Pathobiology, College of Veterinary Medicine, Tuskegee University Keynote Speaker: Ahmedin Jemal, DVM, Ph.D., Senior Vice President, Surveillance & Health Equity Science, American Cancer Society <i>Using Surveillance Data to Promote Cancer Prevention and Control: Examples from the American Cancer Society</i>
10:00 a.m. – 10:25 a.m.	Virtual Speaker: Danielle Covington, DVM, Assistant Professor, Comparative Medicine, College of Veterinary Medicine, Penn State University <i>Using a One Health Approach to Explore the Use of Non-Human Primates as an Animal Model for Retained Placenta</i>
10:25 a.m. – 10:40 a.m.	BREAK
10:40 a.m. – 11:00 a.m.	Shandrell Miller, Second Year M.S. Public Health Student, College of Veterinary Medicine, Tuskegee University <i>Racial differences in 5-year relative survival rates of cervical cancer by age and stage at diagnosis, between African American (Black) and White women, living in the USA, from 2015-2020</i>
11:00 a.m. – 11:30 a.m.	Speaker: Aniruddha Belsare, BVSc & AH, Ph.D., Assistant Professor of Disease Ecology College of Forestry, Wildlife and Environment, College of Veterinary Medicine, Auburn University <i>Agents of Change: Individual-based Models to Investigate Complex Zoonotic Disease Systems</i>
11:30 a.m. – 11:50 a.m.	Jyoti Yadav, Third Year Graduate Student, Department of Pathobiology, College of Veterinary Medicine, Auburn University <i>Antibody Gene Therapy for Rabies Encephalitis</i>
11:55 a.m. – 1:15 p.m.	LUNCH BREAK and POSTER PRESENTATIONS Viewing: 12:15 – 12:45 p.m. (1 st yr. Veterinary Students) 12:45 – 1:15 p.m. (2 nd yr. Veterinary Students)
1:15 p.m. - 2:00 p.m.	Moderator: Dr. Gemechu Wirtu, DVM, Ph.D., Associate Professor and Head, Department of Biomedical Sciences, College of Veterinary Medicine, Tuskegee University Keynote Speaker: Deepa Bedi, MD, Ph.D., Associate Professor, Department of Biomedical Sciences, College of Veterinary Medicine, Tuskegee University <i>The Global Landscape of Breast Cancer Disparities: A Multi-Omics Approach</i>
2:00 p.m. – 2:20 p.m.	Amol Morrow, Third Year Veterinary Student, College of Veterinary Medicine, Tuskegee University <i>Irinotecan Loaded Chitosan-Nanoparticles: Synthesis, Characterization and Invitro Evaluation against Colorectal Cancer</i>
2:20 p.m. – 2:40 p.m.	Jamia Mason, Third Year Veterinary Student, College of Veterinary Medicine, Tuskegee University <i>Vitriification of Different Volumes of Canine Epididymal Spermatozoa in Semen Straws: Effects on Cryosurvival</i>

2:40 p.m. – 3:00 p.m.	Rachel Elder, Third Year Veterinary Student, College of Veterinary Medicine, Tuskegee University <i>Identification of the Gastric Mesenchymal Cell Types Derived from Six2 Expressing Embryonic Progenitors by Lineage Tracing</i>
3:00 p.m. – 3:20 p.m.	Sabria Wooten, Second Year Veterinary Student, College of Veterinary Medicine, Tuskegee University <i>Molecular Characterization of Listeria monocytogenes Isolated from the Cow-calf Farming System of Central Alabama</i>
3:20 p.m. – 3:40 p.m.	Savannah Simon, Third Year Veterinary Student, College of Veterinary Medicine, Tuskegee University <i>Evaluation of Palpation and Computed Tomography as Surrogates for Regional Lymph Node Cytology when Staging Dogs with Sinonasal Cancer</i>
3:40 p.m. – 4:05 p.m.	Speaker: Samina Akhter, MPH, MSc, CCSP, CS, Assistant Director of Analytics and Career Placement, College of Veterinary Medicine, Tuskegee University <i>The Relationship between Environmental Pollution and the Risk of Development of Breast Cancer in the Black Belt Counties of Alabama</i>
4:05 p.m. – 4:15 p.m.	BREAK
4:15 p.m. – 4:30 p.m.	Awards and Closing Remarks: Dilip Gunturu, BVSc&AH, MVSc, Ph.D., Assistant Professor, Department of Biomedical Sciences, College of Veterinary Medicine, Tuskegee University

Notes:

One Health Symposium Moderators



Chastity Bradford is Head of the Biology Department and a tenured Associate Professor of Biology at Tuskegee University. Bradford's career has focused on renin-angiotensin-system targets in cardiovascular disease, diversifying STEM, and community-targeted approaches to blood pressure monitoring and control. She holds a Ph.D. in Cellular and Molecular Physiology from University of Alabama at Birmingham and a BS in Biology from Spelman College in Atlanta, GA. She completed a Howard Hughes Faculty fellowship/post doctorate in Physiology and Functional Genomics at the University of Florida's College of Medicine. She joined Tuskegee University in 2012, and she completed the Morehouse School of Medicine/Tuskegee University/University of Alabama Health Disparities Research Training Program. She has trained Ph.D., master's students, undergraduates, and K-12 teachers. Bradford worked as a Visiting Professor at the Temple University Cardiovascular Research Center. As an All of Us Researcher, she is helping to increase diversity in large data sets and increase awareness of AI and ML initiatives in the local community.

Bradford has been leading research, community-targeted health initiatives and projects aimed at increasing diversity in STEM. She served as the assistant dean of the University of Texas at El Paso's (UTEP) graduate school and served on the university's presidential diversity board. She currently serves as the Project Director of a program aimed at training students to use Geographical Information Systems to solve real-world challenges, funded by the USDA/NIFA at TU. She is Co-PI for an HHMI Inclusive Excellence grant. She has worked to create course-based educational research experience that expands the exposure of undergraduates to authentic research in the classroom.

Bradford has made intentional efforts to prepare and retain the STEM workforce. Service is her passion!



Torhonda C. Lee, Ph.D. serves as Head of the Department of Graduate Public Health (DGPH) in the College of Veterinary Medicine at Tuskegee University. She earned a Ph.D. in Health Education and Health Promotion from the University of Alabama (Tuscaloosa) and earned a B.A. in Psychology and M.S. in Rehabilitation Counseling, both from Auburn University. Lee is a Master Certified Health Education Specialist (MCHES®) with nearly 20 years of experience in community health outreach.

In the past, she served the Black Belt counties of Alabama as a Regional Extension agent for Health. Prior to coming to Tuskegee, Lee was a tenured Associate Professor at Florida Agricultural and Mechanical University's Institute of Public Health where she served for 14 years. She has coordinated outreach programs and research to address disparities in infant mortality and prostate cancer in Alabama and in North Florida. Lee currently serves as the faculty advisor for the *All of Us* Delta Research and Educational Foundation

HBCU R.A.P. (Research Accelerates Possibilities) Initiative. A native of Brundidge, Alabama, Lee holds a lifelong commitment to serving rural areas and holds membership in civic and health organizations that hold service for equity as their mission. Lee's current research interests have expanded to include disparities in maternal mortality and mental health including the influence of adverse childhood experiences (ACEs) on health outcomes. She serves as a member of the Tuskegee University Human Participants Review Committee (Institutional Review Board).

One Health Symposium Moderator



Vivian Carter is the Chair of the Department of Psychology and Sociology. She is former Deputy Director for Community Engagement for the Tuskegee University Health Disparities Institute at Tuskegee University and Past-President of the National HBCU Research Network for Research and Health Disparities. Carter is also a former Assistant Director for Community Outreach with The Tuskegee University National Center for Bioethics.

Carter is an experienced social scientist with specialties in organizational development and transformation, medical sociology, race, and gender relations. Carter is an accomplished researcher specializing in Community-Based Participatory Research and serves as the Cancer Outreach Team leader and Tuskegee University Primary Investigator for the Cancer Outreach component of the U54

Cancer Research Partnership funded by the National Institute Health (NIH). She currently serves as the Co-MPI of the Cancer Research Partnership. In addition, she is the PI for two Vaccine Hesitancy studies one funded by NIH and the other by The Department of Defense (DoD). Carter has also been instrumental in establishing interdisciplinary courses and degree program in Data Science.

Carter has worked internationally with the United Nations Women's Coalition (UN Women) to address sexual assault and gender violence on African College Campuses. She has served on several community boards including the Alabama HIV Task Force on Children and Adults, the Alabama Battered Women's Taskforce, the Macon County Cancer Coalition (Co-Founder), and the Mayors Health Advisory Board and current is a member of the Macon County COVID-19 Community Taskforce. In her native state of Oklahoma, she served as the Lead Cultural Diversity Consultant for the Oklahoma Department of Rehabilitation Services strategic plan to increase minority participation in rehabilitation service programs. Carter is the co-author of three community-based cancer research studies that have had a dramatic impact on the health outcomes for women and men in Alabama. Carter has served as editor and journal reviewer for the *Journal of Health Care for the Poor and Underserved*, *Sage Publishing Journal of Best Practices*, *Journal of International Bioethics*, and *Health Quarterly*.



One Health Symposium Keynote Speaker

Roslyn Holliday Moore, MS

Deputy Director, Office of Minority Health
U.S. Department of Health and Human Services



Roslyn Holliday Moore, MS, is the Deputy Office Director for Programs for the Office of Minority Health (OMH) at the U.S. Department of Health and Human Services. Holliday Moore oversees all program development and implementation activities for OMH. Prior to joining OMH, Ms. Holliday Moore served as the Senior Public Health Analyst in the Office of Behavioral Health Equity for the Substance Abuse and Mental Health Services Administration. As senior staff, she provided guidance and direction on national policy, program and data initiatives that addressed health disparities and promoted health equity for underserved individuals and communities.

Prior to federal employment, Holliday Moore held leadership positions in children's mental health for the New York State Office of Mental Health's New York City region, including serving as Director of Community Services for the Bronx Children's Psychiatric Center.

Through her work for the NYS Research Foundation, she directed the Families Reaching in Ever New Directions system of care in the South Bronx. The project demonstrated cost benefits and improved health outcomes of community-based services for children.

Holliday Moore earned degrees in Speech-Language Pathology at Queens College, CUNY and Teachers College, Columbia University and is a licensed Speech-Language Pathologist.



One Health Symposium Keynote Speaker

Amber N. Clark-Brown, MD

Medical Officer, Bureaus of Health Provider Standards,
Home and Community Services and Health Equity
Alabama Department of Public Health



Amber N. Clark-Brown, MD, is a Board-Certified Physician specializing in Physical Medicine and Rehabilitation (PM&R). After graduating residency, she worked as an Assistant Professor in the Department of PM&R at the University of Alabama at Birmingham (UAB). There, she diagnosed and treated individuals with strokes, neuromuscular disease and spine and musculoskeletal disease/injury with the goal of restoring function, independence, and quality of life. Clark-Brown also served as Consult Director and began her research career with an overarching focus on healthcare systems science and the intersection of disabilities and healthcare disparities. In December of 2022 Clark-Brown transitioned from UAB and now works for the Alabama Department of Public Health as a Medical Officer in the Bureaus of Health Provider Standards, Home and Community Services and Health Equity. She

remains grateful and excited for this new opportunity to operate in her God given gifts as a physician priest and healer on a larger platform and thereby help many more people live higher qualities of life and achieve freedom in their health.



One Health Symposium Speaker

Janeth Sanchez, MPH, Ph.D.

Program Director, Health Equity, National Institutes of Health



Janeth Sanchez Ph.D. is the Program Director for Health Equity in the *All of Us* Research Program within the Office of the Director at the National Institutes of Health. As Program Director for Health Equity, she coordinates scientific and programmatic activities across the division, program, and NIH centered on advancing equity in precision medicine. She currently leads the *All of Us* program's health equity research agenda to advance our understanding of the impact of social determinants of health on disease development and the equitable delivery of high-quality care.

Prior to joining *All of Us*, Sanchez was Program Director in the Healthcare Delivery Research Program at the National Cancer Institute where she co-led the development and implementation of the *Addressing Social Risks in Cancer Care* initiative. She also managed a portfolio of research focused on promoting multidisciplinary cancer care coordination and multilevel interventions that mitigate the effects of social risks, especially among populations experiencing health disparities. She received her doctorate in Health Services with an emphasis in evaluative sciences & statistics from the University of Washington and holds a Master of Public Health in community health education from New Mexico State University.



One Health Symposium Speaker

Sadeep Shrestha, Ph.D. MHS MS

Professor of Epidemiology, School of Public Health
University of Alabama at Birmingham (UAB)



Sadeep Shrestha, Ph.D. MHS MS is a Professor of Epidemiology at the School of Public Health in the University of Alabama at Birmingham (UAB). He is a recipient of the *Quetelet Endowed Professorship in Public Health* that was awarded in 2018. He received his doctoral degree in epidemiology, with genetic epidemiology track, from Bloomberg School of Public Health, Johns Hopkins University in 2004, followed by a one year post-doctoral training in the Laboratory of Genomic Diversity at National Cancer Institute in Frederick. He joined UAB in 2005. He is the director of the Program in Epidemiology of Inflammation, Infection and Immunity (PEIII) and has

established epidemiology and genomic research programs in Kawasaki Disease, HIV, and STI, specifically HPV. He is also the co-director of the Basic Research in Infectious Disease and Genetic Epidemiology (BRIDGE) program that he initiated, which focusses on mentoring students with research. While his primary research is in understanding host genomics related to different disease outcomes, Dr. Shrestha has also initiated a cervical cancer screening program in Nepal, in collaboration with multiple stakeholders including local governments, academic institutes, and a local NGO with tremendous outreach access. The infrastructure and collaborations have provided research opportunities for MPH and PhD students and colleagues at UAB and other institutes, through the Nepal Health Research Initiative which he established and directs. He has a passion to mentor and help students and junior colleagues, as exemplified by the *Graduate Dean's Excellence in Mentorship Award* that he received. He has served on the editorial board of the *American Journal of Epidemiology* and *Human Immunology* and currently serves on the editorial board of *PLOS Global Public Health*, *Genes and Immunity* and *Kathmandu University Medical Journal* and as an associate editor for *BMC Infectious Diseases*.

One Health Symposium Speaker

Gary Pugh, DO, FACOG

Medical Officer, Family Health Services
Alabama Department of Public Health



Gary Pugh graduated from Florida State University with a bachelor's degree in Chemical Science in 1988. He then attended Kirksville College of Osteopathic Medicine from 1988-1992 where he served as class president and president of the medical school's chapter of ACGP (American College of General Practitioners). He also became the first national president of medical school chapters of ACGP. He did an OB/GYN residency at the University of Florida at Sacred Heart Hospital in Pensacola, Florida from 1992-1996 where he served as Chief Resident his final year in residency.

Pugh practiced General Obstetrics and Gynecology in rural South Alabama for 11 years. He then moved to New Mexico and practiced there for 8 years. During his time in New Mexico, he went to work with ACOG (American College of Obstetrics and Gynecology) on the VRQC (Voluntary Review of Quality of Care) program. He returned to Alabama in 2015 and helped start up the state's first OB/GYN Hospitalist Program in Huntsville, Alabama in

2016. He continued to work as an OB Hospitalist until January 2022 at which time he took on the role of Medical Officer for Family Health Services at Alabama Department of Public Health.

Pugh is a Board-Certified OB/GYN and Fellow of the American College of OB/GYN and continues to provide leadership and expertise to the state's colposcopy program as well as the other programs under Family Health Services.

One Health Symposium Panel Discussion Speaker

David Augustin Hodge, Sr., BA, MS, Ph.D.

Director (Interim), National Center for Bioethics in Research
and Healthcare, Tuskegee University



David Augustin Hodge Sr. currently serves as Director (Interim) of the National Center for Bioethics in Research and Healthcare at Tuskegee University.

Hodge serves Visiting Faculty-in-Residence, Center for Bioethics, Harvard Medical School, and adjunct Professor in the Department of Communications, Philosophy and Modern Languages, Tuskegee University, Director of the Bioethics Honors Program, and Editor of the Journal of Healthcare, Science, and the Humanities. Additionally, he is on the Board of Directors for Public Responsibility in Medicine and Research (PRIM&R).

Hodge is a native of St. Thomas, U.S. Virgin Islands his academic background includes a Bachelor of Arts degree in Bible, Theology and English from American Baptist College in Nashville, Tennessee; a Master of Education from Oral Roberts University in Tulsa, Oklahoma; a Master of Theological Studies degree from Candler School of Theology, Emory University, Atlanta, Georgia; a Doctor of Ministry degree from Columbia Theological Seminary in Atlanta, Georgia; and a Ph.D. in Philosophy from the University of Miami in Miami, Florida.

Hodge is presently in the research and writing stage of *Black Bioethics and Intersectionality* (Springer's Press) and *Jesus, Trust and Virtue Ethics: A Philosophical Theology of Trustworthiness* (Scholar's Press). He is married to Theresa Paula Hodge, an excited and passionate elementary school educator who teaches in Gwinnett County, Georgia. They have three children: David II (B.S. in Science from Florida Memorial University), Avia (B.S. in Neuroscience, Nova Southeastern University and MPH from Tuskegee University), and Jonathan (Political Science major at Tuskegee University).

One Health Symposium Panel Discussion Speakers

James Rich, JD

Project Attorney, Legal Services Alabama



James Rich serves as the Project Attorney for Legal Services Alabama's Legal Assistance Enhancement Project. He has been with Legal Services for five years. Rich previously served as a housing attorney with Legal Aid Society of Middle Tennessee. He is a resident of Birmingham, Alabama. In his spare time, Rich enjoys hosting live trivia and fostering dogs.

Florence A. Pace-Tyner, AS, BS, MS, Ph.D.

Executive Director, Senior Service, City of Tuskegee, and Community Service Worker, South Central Alabama Development Commission (SCADC)



Florence A. Pace-Tyner was born in Tuskegee, Alabama on April 25, 1956. She is the seventh of ten children born to the late Luster and Katherine Renfroe Pace. She is married to Franklin Carl Tyner and together they are the proud parents of five adult children.

Tyner is a member of Macedonia Missionary (MMBC) Baptist Church, where she serves as Associate Minister, Missionary President, Youth Advisor, Youth Sunday School Teacher, and Coordinator for the MMBC Women's Ministry.

She is the author of four short plays (unpublished), namely, *We Will Rise Above It All*, *Cotton Needs Pickin'*, *Loosed Woman* (inspired by Bishop T. D. Jakes), and *Last Night I Had A Dream*.

Tyner was employed with Macon County Commission, Retired and Senior Volunteer Program (RSVP) for 30 years, as Director. She is presently employed with the City of Tuskegee, as Executive Director of the Senior Citizens Program. Her educational background consists of an associate degree in medical Records Technology (Southern Community College); a Bachelor of Science Degree in Human Resource Management (Faulkner University); a Master of Science Degree in Clinical Counseling (Southern Christian University); a Master of Science Degree in Professional Counseling (Southern Christian University); and a Master of Divinity Degree (Southern Christian University). In 2010 Florence earned her Doctorate in Family Therapy from Amridge University where she graduated *Summa Cum Laude*. Tyner also received the Who's Who Among American Students Award.

One Health Symposium Panel Discussion Speakers

Kim R. Ortiz, EdS, MPA, MA

Project Director, Tuskegee Advancing Health Literacy (AHL),
Coordinator, Community Development/Grants, City of Tuskegee



Kim R. Ortiz serves as the Community Development/Grants Coordinator for the City of Tuskegee and the City's Project Director for the Tuskegee Advancing Health Literacy (AHL) Grant funded by the U.S. Department of Health and Human Services (HHS) Office of Minority Health (OMH). Ortiz brings over 25 years of coast-to-coast experiences in federal government grants management; community and economic development; training and professional development; corporate sales; community engagement and outreach; K-12 public education; and the Academy. Prior to joining the City of Tuskegee, she was an instructor for the two-part course, *Individual Growth and Development*, and held administrative positions in Continuing Education, Cooperative Extension, and Student Life and Development for Tuskegee University. Ortiz also served as the primary advisor to Mr. and Miss Tuskegee University and Court; Student Government Association Elections Committee; National Pan-Hellenic Council; and Alpha Kappa Alpha Sorority, Incorporated, Gamma Kappa Chapter.

Ortiz is a 1992 *Cum Laude* graduate of Tuskegee University, with a Bachelor of Science Degree in Finance and a minor in Economics. She earned a Master of Arts Degree in Counseling and Human Development, with a concentration in School Counseling, from Clark Atlanta University (Atlanta, Georgia) and a Master of Public Administration Degree, with a concentration in Public Human Resource Management, from Troy University (Troy Alabama). Ms. Ortiz earned a post-Master's, Educational Specialist Degree in Counseling from Old Dominion University (Norfolk, Virginia).

Ortiz is a graduate of the General Electric Capital Mortgage Corporation *Leadership Development Program* (Raleigh, North Carolina) and the Tuskegee University Continuing Education Program *Leadership Macon County—Class II*. She completed additional professional development in leadership from the Yale University Child Study Center School Development Program (New Haven, Connecticut). Most recently, she completed the Alabama Economic Development Association Leadership Institute; Alabama City County Management Association Local Government Professional Management Certificate Program; and the Auburn University Outreach Government and Economic Development Institute Intensive Economic Development Training Course, Parts I and II.

Professionally and academically, Ortiz is a member of the Alabama City County Management Association; Economic Development Association of Alabama; Associate Member of the Alabama Conference of Black Mayors; Kiwanis Club of Tuskegee; Alpha Kappa Mu National Honor Society; Delta Mu Delta International Honor Society in Business; *Who's Who Among Students in American Colleges and Universities*; The Honor Society of Phi Kappa Phi; Pi Alpha Alpha, The Global Honor Society for Public Affairs and Administration; Golden Key International Honor Society; and Chi Sigma Iota Counseling Academic and Professional Honor Society International. Ms. Ortiz was awarded the *Excellence in Service*

to *Students Award* by the Tuskegee University Chapter of the National Society of Leadership and Success, Sigma Alpha Pi.

Initiated at Tuskegee University, Ortiz is a tremendously proud Life Member of Alpha Kappa Alpha Sorority, Incorporated, with over 33 years of service. Locally, she is a recipient of the Sorority's *Spirit of Excellence Award* and *Community Service Award*. For leisure, Ortiz thoroughly enjoys reading, music, live theatre, and the art of *couture*. An adventurer at heart; her absolute favorite pastimes are traveling and sampling cuisines and sweets, especially chocolates.

Guy Trammell

Director Macon County Minister's Council Food Pantry



Guy Trammell is a trainer for Community-based Group Therapy and, for "Family to Family" the SAMHSA (Substance Abuse and Mental Health Services Administration) approved mental illness education program, under NAMI (National Alliance for Mental Illness). He is the director for the Macon County Ministers' Council Food Pantry. The bi-weekly race relations article, "Color Us Connected", he co-authors with Amy Miller, of South Berwick, ME, is published in three newspapers, and was featured on CBS News. Trammell is chair for The Collective 46 Inc., a community-based tele-health network provider. As a member of the Macon County Community Partners Task Force, he works with supplying resources to the community and pro-actively working to improve the health

of the community. He trains youth in constructing Corsi Rosenthal box air filters, that remove bacteria and viruses from a room at the rate of 700 cubic feet per minute. Trammell is the City of Tuskegee historian, a member of the Tuskegee Historic Preservation Commission, and a founding member of the Macon History Network. His book "Macon 365" is a calendar-based history of Macon County, Alabama. Trammell is founder and CEO of Macon Stories, an educational service interpreting the history of Macon County, Alabama to youth and tourists.



One Health Symposium Panel Discussion Speaker

Mary Elizabeth Brooks, M.Ed.

Southern Rural Black Women's Initiative (SRBWI), Alabama
Community-based Advocate, Health Education Specialist and
Social Justice Advocate, Independent Consultant



Mary Elizabeth Brooks' interest in advocating for others was born during her high school years at Bullock County Technical High School in the rural Alabama Black Belt of Inverness/Union Springs (Bullock County). The second oldest of eleven children, she learned early the significance of sharing and caring. Her understanding of the power of such virtues propelled her interest in advocacy work around social justice and thrust her knee deep—beyond self and family—through several organizations, including Tuskegee University's Center for Biomedical Research/Research Centers in Minority Institution (TU CBR/RCMI) Program. And now, it's what rewards her most in life.

Brooks has worked as a school social worker, educator, career and mental health counselor, coordinator of programs, board member of several

non-profits, and volunteer in many capacities. She worked for over 15 years in the education arena at Florida State University, Florida Agricultural and Mechanical University (FAMU), and Hillsborough Public School System. Her work involved advocacy and training of paraprofessionals residing in underserved communities across five counties.

She uses her 18-year membership with Delta Sigma Theta Sorority, Inc., whose mission is to provide support to those in need, while encouraging educational success through established programs offered in Bullock and Macon counties as a platform to raise awareness about preventable cervical cancer deaths in rural Alabama Black Belt.

Brooks commitment to the uplift of underrepresented communities through her previous work with the Morehouse School of Medicine's Cancer Health Equity Institute, Tuskegee University's Multidisciplinary Center for Biomedical Research, and the O'Neal Comprehensive Cancer Center U54 Cancer Partnership was yet another platform. And it continues in her current roles as an Alabama Community-based Advocate with the Southern Rural Black Women's Initiative (SRBWI), an active member of Alabama Arise and the Alabama Comprehensive Cancer Control Coalition, where she chaired the Access to Care committee for three consecutive terms, and currently serves as an active member.

Brooks is a daughter of the Alabama Black Belt and a two-time graduate of Tuskegee Institute/Tuskegee University. She finds joy in fishing, gardening, cooking, and spending quality time with family, friends, and sorority sisters.

One Health Symposium Panel Discussion Speakers

Katrina Love, BS, MS

Assistant Pastor, Butler Chapel AME Zion Church



Katrina Love was born in Tuskegee, Alabama – the home of the historic Tuskegee Airmen. Love graduated from Beauregard High School in Lee County, Alabama; holds a Bachelor of Science in Business Administration, Auburn University at Montgomery (1989); Master of Divinity, Hood Theological Seminary, Salisbury, North Carolina (2013); and received a Certificate of Graduation from the Dr. Cindy Trimm, Kingdom School of Ministry, a division of Trimm Institute for Global Leadership (2020).

Love serves as assistant pastor at Butler Chapel AME Zion Church, Tuskegee, AL; and the first woman elected as president of Macon County Ministers' Council, an organization that brings churches together to serve the community by fostering a commitment to unity and teamwork to address the issues in Macon County. She serves as co-chairperson on the Efficient Management Distribution of Resources committee for Macon County Community Partners Taskforce. Love writes weekly articles in the Tuskegee News Pastor's Corner. She is also a member of TM46.

She launched Let's PRAY Tuskegee dba B.A.A.D. K.I.D.D.S. (Blessed, Anointed, Awesome, Dreamers, Kingdom-minded, Inspired, Determined, Destined, Successful). Her goal is to introduce students to the original plan for Tuskegee Institute and the visions of Dr. Booker T. Washington, Dr. George Washington Carver, and Mr. Lewis Adams. Love strongly believes students will be inspired to rebuild the historic village in Tuskegee Institute and bring the wealth and prestige of Tuskegee back to its original purpose of training from the ground (agriculture) to the sky (aviation). When students understand the concepts of working with the hand, head and heart, they will be inspired to unite and lead. She is an advocate for under-served students and foster children and believes that every child is a gift from God, with proper training, a little child shall lead them. (Isaiah 11:6).

Jatna Rivas Zarete, DVM

Integrative Biosciences, Ph.D. Student, Tuskegee University



Jatna Isha Rivas Zarete is a veterinarian born and trained in the Dominican Republic. She got a master's degree in animal and Poultry Sciences at Tuskegee University, studying stress in broiler chickens. Zarete is a Ph.D. candidate of Integrative Biosciences, studying novel treatments for mastitis; she also assist in various research endeavors spanning from cancer experiments in live mice to in vitro functional gastrointestinal studies, and grant writing. Zarete participated in Phi Zeta in 2022 with a poster presenting a novel smooth-muscle specific GPER-KO mouse that our labs created. She lives in Tuskegee and is the leader of the Newman Club from St Joseph's Catholic Church. As such, they supported the local Stork's Nest, an organization managed by the Zeta Phi Beta Sorority countrywide, by collecting donations of clothing and food for pregnant women and children of Macon County. Stork's Nest helps women by giving them prenatal care training. As part of the donation collection effort, the group brought several guests to Tuskegee's local radio station, WUBZ, where experts would talk to the community about important facts about pregnancy, and related topics such as nutrition, blood pressure, and childcare. Occasionally, Zarete helps new international students settle as they become familiar with Tuskegee.

One Health Symposium Speakers

Karen Henderson MSM, RN

SenioRx Coordinator, South Central Alabama Development Commission



Karen Henderson was born and raised in Fort Deposit, Alabama. Her grandmother Pauline Tolliver raised her and four siblings. She attributes all her accomplishments to the good Lord above and her late grandmother. Henderson graduated from Calhoun High School, Letohatchee, Alabama in 1993. She currently holds four degrees from various institutions. She graduated from George Corley Wallace Community College Selma in 1999, with an Associate of Science degree; Faulkner University, Montgomery, Alabama in 2005 with a Bachelor of Science in Management of Human Resources and in 2010 with a Master of Science in Management. Henderson has a passion for helping others and pursued a degree in Registered Nursing. She graduated from Fortis College, Montgomery, Alabama in 2018 with a Associate of Science Degree in Nursing. She is a certified Secondary Education Biology Educator and obtained certification in biology education from Auburn University Montgomery in 2009. Henderson

taught secondary science for eleven years with Montgomery Public Schools. She is currently employed with South Central Alabama Development Commission as a SenioRx Coordinator. She loves serving others and the community and her goal is to be kind to everyone and to show love. Henderson is forever grateful to the Lord for the life that he is allowing her to live and to make a difference in the lives of others.

Lisa D. Jones, RN

Assistant District Clinical Director, East Central District
Alabama Department of Public Health



Lisa Jones assists in managing 12 county health departments in east central Alabama. Their primary goal is to promote, protect, and improve Alabama's health. She has been with the department for 17 years with much of that time spent in Lee, Macon, and Bullock counties. She grew up in the small town of Dadeville, Alabama and has a passion for helping people in rural areas, with limited resources, achieve optimal health care. Jones's goal is to educate and provide awareness to the communities she serves.

Phi Zeta Research Day Moderators



Toufic Nashar is Associate Professor of Virology and Immunology at Tuskegee University, College of Veterinary Medicine. He earned his bachelor's degree in veterinary medicine at Baghdad University, Ph.D. in Immunology at Bristol University, UK, postdoctoral studies at a few institutions including, University of Kent, UK, Harvard Medical School, USA, Albany Medical School, USA, New York State Department at David Axelrod Institute, USA. His interests are in immune modulation by bacterial toxins, and prevention of viral diseases. Nashar's recent research work looked at the mechanism some bacterial toxins use to disrupt immune cell-cell communication, screening of peptides against ZIKA virus E-protein by phage display, and use of peptides and bacterial toxins to prevent HIV infection *in vitro*.



Gemechu Wirtu attended Addis Ababa University, Ethiopia, Veterinary Medicine, Virginia Tech (MS), and Louisiana State University (Ph.D. Reproductive physiology). Since joining TUCVM in 2010, Wirtu has been active in teaching primarily veterinary physiology. With several graduate, veterinary and undergraduate students, he has conducted research on gametes and embryos to improve reproductive technologies in the areas of cryopreservation, maturation of oocytes and in vitro culture of embryos. Wirtu is currently the head of the Department of Biomedical Sciences.

History of Phi Zeta Research Day

Phi Zeta Research Day in the College of Veterinary Medicine at Tuskegee University was envisioned by Dr. Ruby L. Perry in September 2012 as part of the annual Biomedical Research Symposium, which is now known as the One Health Symposium. With Dr. Perry's vision, Phi Zeta Research Day has become an annual scientific event. Dr. Ebony Gilbreath chaired the first event. Each year, sessions are scheduled to highlight student accomplishments in research as a way for them to share their research experiences with other DVM students, undergraduate and graduate students, faculty, interns, community members, and other researchers through oral and poster presentations. Students will explore career prospects in research and post-graduate educational programs. Students benefit from learning about how the connectivity of healthy people, good environment, and healthy animals is critical in influencing the future direction of healthcare and biomedical research in conjunction with the One Health Symposium. The yearly event also serves as a forum for scientists and educators to interact and share information to advance translational research toward disease treatments and prevention in human and animal health. Phi Zeta Research Day is designed and integrated with the Phi Zeta Honor Society's goal, which is to “recognize and promote scholarship and research in matters pertaining to the welfare and diseases of animals”. The Rho Chapter of Phi Zeta Honor Society was established at Tuskegee University in 1967. Students at Phi Zeta Research Day are honored with research awards, research scholarship, and other recognitions. From 2012 through 2022, hundreds of students and guests participated, and many students presented their research work in the form of posters and oral presentations.

Objectives of the event are to:

1. Encourage students to share their research with scientific community
2. Enhance the pertinent skill of being able to present and translate research data to a diverse audience
3. Provide a forum for the presentation of research being performed at Tuskegee University College of Veterinary Medicine and facilitate collegial interactions and networks

We are excited and honored to present the 11th annual Phi Zeta Research Day at Tuskegee University College of Veterinary Medicine. It is our pleasure to present the research of TUCVM students. It is our hope that all the participants of the Biomedical Research Symposium will enjoy the scientific endeavors showcased by our students.



Phi Zeta Keynote Speaker

Ahmedin Jemal, DVM, PhD

Senior Vice President, Surveillance & Health Equity Science
American Cancer Society



Ahmedin Jemal is the Senior Vice President of the Surveillance and Health Equity Science Department at the American Cancer Society. Jemal has a broad research interest, including cancer disparities and the social determinants of health and health services and outcomes research, with a focus on major cancers and common risk factors. His main goal at ACS has been to build a strong interdisciplinary research team of cancer surveillance, tobacco control, health services, and disparities research to inform public health policies thereby promote equitable and broad application of evidence-based cancer prevention and control.

In addition to many chapters in primary reference books for cancer epidemiologists and oncologists, and editorials, Jemal has published over 500 scientific articles some of which have appeared in major clinical and epidemiology journals including the *New England Journal of Medicine*, *Journal of American Medical Association*, *Journal of Clinical Oncology*, and *Lancet Public Health*.

Jemal serves as Senior Editor of *Cancer Epidemiology Biomarkers & Prevention* and on editorial Board of *CA Cancer Journal for Clinicians*



Phi Zeta Virtual Speaker

Danielle Covington, BS, DVM

Assistant Professor, Comparative Medicine,
College of Veterinary Medicine, Penn State University



Danielle Covington is an Assistant Professor of Comparative Medicine at the Penn State University College of Medicine, where she provides veterinary care for the barrier rodent facilities and directs the Responsible Care and Use of Laboratory Animals Training Program.

In her previous position, Covington served as the Director of the Small Animal Services Division at BIOQUAL Inc., where she provided oversight and direction for studies utilizing small animals as *in vivo* models of human disease. Prior to her work at BIOQUAL, she provided veterinary care for studies involving animal models of disease and pre-clinical safety drug development while working as a Clinical Veterinarian at the Novartis Institutes for BioMedical Research.

She began her veterinary training at Tuskegee University where she obtained her bachelor's in Animal and Poultry Science, and a Doctorate in Veterinary Medicine. Following veterinary school, she completed her residency training in Laboratory Animal Medicine at the Cornell University Center for Animal Resources and Education (CARE), and became a Diplomate of the American College of Laboratory Animal Medicine (ACLAM) soon thereafter. Her emerging research interests include studies involving a One Health approach to translational

medicine, enhancements to the welfare and well-being of laboratory animals, and the implementation of Lean methodology in the laboratory animal vivaria. Covington has a Lean Six Sigma Yellow Belt and is currently working to obtain her Green Belt.

Abstract

Using a One Health Approach to Explore the Use of Non-Human Primates as an Animal Model for Retained Placenta

Danielle Covington DVM, DACLAM¹, Sona Jasani MD, FACOG²

¹ Penn State College of Medicine, Hershey, PA USA, ² Yale University School of Medicine, New Haven, CT USA

The One Health approach uses professionals from various fields of expertise to solve relevant problems that threaten humans, animals, and the environment. In this project, we are applying the One Health approach to the obstetric complication Retained placenta (RP), which is the second leading cause of postpartum hemorrhage. RP occurs when the placenta does not deliver within 30-60 minutes after the birth of the baby. In low resource settings RP is especially dangerous with a case mortality rate of up to 10%. Ultrasound, current biomarkers and scoring systems have not accurately detected mothers who will have RP and limitations with current research models have contributed to knowledge gaps. Using the non-human primate (NHP) as a potential animal model, we conducted RNA sequencing (RNA seq) to identify RP associated genes from a cross-species placenta set of humans and NHPs to both elucidate biological pathways and refine the use of this animal model system in RP research. Formalin-fixed paraffin-embedded archived placenta tissue blocks from 8 NHP samples (6 disease, 2 control provided by Yerkes Primate Center) and 12 human samples (11 disease, 1 control obtained from patients who underwent vaginal delivery at a single academic center) were used to isolate RNA and create RNA seq libraries. Our preliminary cross-species transcriptional analysis of the samples identified 35 significantly differentially expressed RP associated genes shared in humans and NHPs. Functional enrichment analysis of these genes show that possible RP pathways include immune mediation, cellular movement, extracellular remodeling, cell signaling and transcriptional regulation. Further research exploring protein interactions and cell specific transcriptional differences is needed. The clinical and genetic similarities between humans and NHP however, provides a promising avenue to advance RP translational research in order to address this health challenge that impacts both humans and animals alike.

Phi Zeta Speaker

Aniruddha Belsare, BVSc, AH, Ph.D.

Assistant Professor of Disease Ecology
College of Forestry, Wildlife & Environment,
College of Veterinary Medicine Auburn University



Aniruddha Belsare is a disease ecologist with a background in veterinary medicine, pathogen modeling, and conservation research. He is currently an Assistant Professor of Disease Ecology at the College of Forestry, Wildlife and Environment. Belsare obtained his B.V.Sc. & A.H. degree from the Bombay Veterinary College in India, and his Ph.D. in Wildlife Science from the University of Missouri, Columbia, USA. He uses an interdisciplinary approach that combines ecologic, epidemiologic and model-based investigations to study disease systems that have conservation and/or public health implications.



Phi Zeta Keynote Speaker

Deepa Bedi, MD, Ph.D.

Associate Professor, Department of Biomedical Sciences
College of Veterinary Medicine, Tuskegee University



Deepa Bedi holds the position of Associate Professor at the College of Veterinary Medicine, Tuskegee University. She earned her MD degree from Tashkent State Medical Institute (TASHMI) in Tashkent, Uzbekistan, and completed her Ph.D. at Auburn University. Renowned for her expertise and dedication, she stands as an exceptionally well-funded researcher specializing in health disparity research. Bedi has emerged as a national leader in the field of cancer health disparities, boasting an extensive history of mentoring and collaborations with fellow researchers at Tuskegee University, along with her steadfast commitment to guiding and nurturing minority trainees. With an unwavering passion, Bedi has been at the forefront of breast cancer disparity research at Tuskegee University for over nine years. Her pioneering work has garnered substantial funding from a diverse array of organizations, including NIH, NIGMS and BCRFA. Dr. Bedi's influence extends beyond her institutional commitments. She proudly serves as a Principal Investigator of the Research Centers at Minority Institutions (RCMI), distinguished member of the Medical Advisory Board for the Breast Cancer Research Foundation of Alabama, Associate Scientist for the Center for Women's Reproductive Health as well as

the Scientific Advisory Board of the Forge Ahead Center. Through these roles, she continues to shape and drive advancements in breast cancer research and health disparities on a broader scale.

Research: Her research focuses mainly on breast cancer, particularly triple-negative breast cancer (TNBC), one of the highly aggressive subtypes with no targeted therapy. The scientific focus of her laboratory is to identify mechanisms and develop targeted therapies that enable tumors to induce intrinsic immune response and modulate immune microenvironment. Her innovative work extends into the realm of multi-omic analysis, where she leverages cutting-edge technologies to simultaneously scrutinize various biological layers, including genomics, transcriptomics, proteomics, and epigenomics. By harmonizing these multi-dimensional datasets, she seeks to unveil previously obscured molecular signatures driving TNBC progression and immune interactions. This holistic perspective enables her to identify potential therapeutic targets and novel strategies to enhance immune-mediated tumor control. Furthermore, a key facet of her research portfolio is dedicated to unraveling the complex biological mechanisms contributing to racial disparities in breast cancer. Through integrative genomic analyses, she examines genetic variations, mutational landscapes, and epigenetic alterations that may underlie differential disease outcomes across diverse populations. By merging genomic insights with clinical data, she aims to pave the way for personalized interventions for breast cancer that consider genetic and racial factors.

Phi Zeta Oral Presenter

Shandrell Miller

Second Year M.S. Public Health Student
College of Veterinary Medicine, Tuskegee University



Racial differences in 5-year relative survival rates of cervical cancer by age and stage at diagnosis, between African American (Black) and White women, living in the USA, from 2015-2020

Shandrell Miller¹, Ehsan Abdalla²

¹Department of Graduate Public Health, College of Veterinary Medicine, Tuskegee University, 1200 W Montgomery Rd, Tuskegee, AL, 36088, USA; ²Department of Graduate Public Health, College of Veterinary Medicine, Tuskegee University Research Centers in Minority Institutions (RCMI), Tuskegee University, 1200 W Montgomery Rd, Tuskegee, AL, 36088, USA

According to recent cancer statistics, in the USA, Cervical Cancer (CerCancer) five-year relative survival rate (RSR) is 66%. The objective was to assess racial differences in CerCancer RSRs by age and stage at diagnosis, between Blacks and Whites, living in the USA. Data for 2389 Blacks and 13386 Whites diagnosed with CerCancer were extracted from the 2015 to 2020 Surveillance, Epidemiology, and End Results (SEER) database. We incorporated age groups, stages, and years of diagnosis to compare the RSRs between Blacks and Whites, using SEER*Stat software. Whites diagnosed with the localized stage of CerCancer always had better chances of survival because their RSRs were always more than 68%, compared to Blacks. The only exception was in Blacks aged 45-54, who had a higher RSR of 89.5% (95% CI, 80.3-94.5). Which was almost the same as in Whites in the same age group and aged 55-64 (89.4% (95% CI, 85.8-92.2). This was because of the precision of the statistics, which depended on their sample size and variability. Whites diagnosed with regional stage CerCancer had better chances at survival than Blacks. Their RSRs decreased as age increased for both Black and White. However, Whites aged 15-44 had a higher RSR of 66% (95% CI, 62.3-68.8) compared to Blacks aged 75 and older who had the lowest RSR of 37.2% (95% CI, 15.5-59.1). Whites 15-44 aged diagnosed with the distant stage of CerCancer had an RSR of 25% (95% CI, 19.8-30.1) compared to Blacks aged 75 and older who had no survival. Their RSRs decreased as age increased for both Blacks and Whites of any age group that's diagnosed with distant stage. Blacks aged 15-44 diagnosed with the unknown stage had an RSR of 74% (95% CI, 39.2-90.5) compared to Whites who had a slightly higher RSR of 77% (95% CI, 69.2-83.7) among the same age group. Blacks aged 45 and older had significantly low RSRs compared to Whites in any age group excluding 75 and older. There were significant racial differences in the RSRs of CerCancer. Remarkably, Black women experienced the worst RSRs compared to their White counterparts.

Keywords: Cervical cancer, 5-year relative survival rates (RSRs), age, racial differences, stage.

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Phi Zeta Oral and Poster Presenter

Jyoti Yadv

Third Year Graduate Student, Department of Pathobiology
College of Veterinary Medicine, Auburn University



Jyoti Yadv is a third-year graduate student and a Presidential Graduate Research Fellow (PGRF), who is currently pursuing her doctoral research under the supervision of Dr. Douglas R. Martin at Scott-Ritchey Research Center, Auburn University-College of Veterinary Medicine. She received her Bachelor of Technology (B.Tech) from Kurukshetra University (in India) in 2016 before completing her Master of Technology (M.Tech) in Biotechnology from Indian Institute of Technology, Guwahati in 2019. Her doctoral research primarily focuses on developing potential treatment for symptomatic rabies encephalitis using antibody gene therapy.

Antibody Gene Therapy for Rabies Encephalitis

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Baker^{1,3} and Douglas R. Martin^{1,2} ¹Scott-Ritchey Research Center, ²Department of Anatomy, Physiology, & Pharmacology, ³Department of Pathobiology, College of Veterinary Medicine, Auburn University, Auburn, AL; ⁴Centers for Disease Control and Prevention, Atlanta, GA; ⁵The Van Kampen Group, Payson, UT; ⁶Horae Gene Therapy Center, ⁷Department of Neurology, University of Massachusetts Medical School, Worcester, MA

Rabies virus is one of the most crippling neurotrophic viruses with almost 100% fatality rate worldwide. Vaccination strategies that are currently used to prevent rabies infection primarily rely on the generation of the host serum neutralizing antibodies against rabies virus. The major caveat of serum neutralizing antibodies-based therapy is that while the rabies virus can easily breach blood-brain barrier, the antibodies cannot, making them largely ineffective in the treatment of symptomatic brain encephalitis. We propose to use the recombinant AAV9 (rAAV9) viral vector to traverse the blood-brain barrier and express a neutralizing human immunoglobulin against rabies glycoprotein in the brain. Hence, rAAV9 vector expressing a broadly neutralizing human antibody against rabies (CR57) was used to treat C57BL/6J mice intravenously for dose escalation and longitudinal study. Additionally, 4-month-old cats were treated with low and high doses of rAAV9 intravenously and tissues were further analyzed. We observed that the rabies neutralizing antibody level in mouse serum was >200 times higher than the protective titer suggested by the World Health Organization (WHO; 0.5 IU/ml) 1-3 months after the administration of rAAV9 vector. The level of CR57 was persistent in mouse serum for 60 days post-injection. In rAAV9-treated cats, the high-dose treatment group showed significant levels of rabies neutralizing antibodies in serum for at least 15 months and in CSF for 3 months post-administration. The expression of rabies neutralizing antibodies was further confirmed in neurons and brain endothelial cells by IHC in both cat and mouse brain. In conclusion, an AAV9 vector injected intravenously in two species expresses broadly neutralizing antibodies in brain cells and thereby may provide protection against, or treatment of, viral encephalitis.

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Phi Zeta Oral Presenter

Amol Morrow

Third Year Veterinary Student
College of Veterinary Medicine, Tuskegee University



Irinotecan Loaded Chitosan-Nanoparticles: Synthesis, Characterization and Invitro Evaluation against Colorectal Cancer

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Department of Biomedical Sciences (Morrow, Gunturu); Pathobiology (Samuel), College of Veterinary Medicine, Tuskegee University, AL 36088

We investigated the effect of irinotecan, a topoisomerase-I inhibitor, on colorectal cancer cells using chitosan nanoparticles. Colorectal cancer is a common and deadly disease that requires effective treatment. Topoisomerase inhibitors are drugs that induce cell death by interfering with DNA replication. However, they have serious side effects

and limited efficacy. Nanoparticle drug delivery systems can enhance the performance of anticancer drugs by improving their bioavailability, biodegradability, and safety. We prepared irinotecan-loaded nanoparticles using chitosan-sodium tripolyphosphate and chitosan-polyethylene glycol-sodium tripolyphosphate. Chitosan is a biocompatible muco-adhesive polymer. We characterized the nanoparticles for their size, shape, and loading efficiency. We also evaluated their cytotoxicity and cell cycle arrest on colorectal cancer cells. Our results showed that chitosan encapsulated irinotecan nanoparticles reduced cell viability more effectively than standard irinotecan. Our study suggests that chitosan nanoparticles can be a promising carrier for irinotecan delivery in colorectal cancer treatment.

Research Grants: NIH T35OD010432, DHHS/HRSA D34HP00001-35-00, and NIH/NIMHD RCMI grant # U54MD007585

Phi Zeta Oral Presenter

Jamia Mason

Third Year Veterinary Student
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Vitrification of Different Volumes of Canine Epididymal Spermatozoa in Semen Straws: Effects on Cryosurvival

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Vitrification, a method of cryopreservation, has advantages over conventional slow freezing including the reduction of intracellular ice crystallization. In our previous study (Mason et al, NVSS 2022), the cryosurvival of canine spermatozoa was better when vitrification pellet size was larger (~10 μ l vs ~20 μ l). The present study examined the effects of packaging different volumes in semen straws on the post-thaw cryosurvival. Sperm

samples were extracted from cauda epididymis of dogs using PBS, centrifuged, and transferred to an extender containing 20% egg yolk. In Experiment 1, we tested 4 treatments: 20 μ l, 60 μ l, 100 μ l, and 140 μ l. In Experiment 2, because of improved sperm parameters in the 60 μ l of experiment 1, more refined volumes of 30 μ l, 40 μ l, 50 μ l, 60 μ l, and 70 μ l were evaluated. Resuspend samples were cooled to 4 degrees for 2 hours, specific volumes were loaded into 0.25 ml straws which were then sealed and placed in 0.5 ml straws. The samples were vitrified by directly plunging the straws in liquid nitrogen. We tested eight testes per experiment. Post-thaw total motility (TM) and total progressive motility (TPM) were evaluated by computer-assisted sperm analysis and data analyzed using one-way ANOVA. In experiment 1, the highest post-thaw motility was observed in the 60 μ l with a moderate treatment effect ($P=0.07$). In experiment 2, volume had little effect on the post-thaw parameters ($P>0.7$). Our observations indicate that vitrification of spermatozoa in 0.25 ml straws in volumes greater than 30 μ l supports better post-thaw motility than vitrification in smaller pellets. This counteracts the dogma that vitrification of cells in the smallest volumes supports better cryosurvival.

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Phi Zeta Oral Presenter

Rachel Elder

Third Year Veterinary Student
College of Veterinary Medicine, Tuskegee University



Identification of the Gastric Mesenchymal Cell Types Derived from Six2 Expressing Embryonic Progenitors by Lineage Tracing

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Fentahun Abate, Pawan Puri

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Mesenchymal epithelial crosstalk (MEC) is indispensable for gastric homeostasis. Mis-regulation of the MEC can cause gastric pathologies such as polyposis and cancer. Although mesenchyme is known to be a key player in gastric pathologies, the origin and identity of different mesenchymal cell types remain unknown. We recently characterized a novel conditional mutant mouse $Six2^{Cre^{+/-}}PKA\alpha R^{fl/wt}$ (CA-PKA) model in which single allele-mediated expression of constitutively active (CA) PKA ($PKA\alpha R$) was induced in the gastric mesenchyme using Six2-Cre transgenic mice. CA-

PKA mice showed multiple gastric preneoplastic lesions such as marked inflammation, oxyntic atrophy, metaplasia, and invasive glands. The goal of the current study was to identify gastric mesenchymal cells derived from $Six2^{+ve}$ progenitors that may contribute towards the preneoplastic lesions in CA-PKA mice. We hypothesized that Six2 progenitors generate a subset of mesenchymal cells that are altered in CA-PKA mice. Lineage tracing in Six2-Cre;CAG-tdTomato mice along with co-immunofluorescence (Co-IF) were used to identify Six2-progenitor-derived cells. We found that Six2 progenitor-derived cells include $ACTA2^{+ve}$ cells of lamina propria, muscularis mucosae, muscularis externa as well as vascular smooth muscle cells. Gastric endothelial cells ($CD31^{+ve}$) are not Six2-progenitor-derived. Six2 progenitor-derived cells include a small subset of $FSP1^{+ve}$ stromal fibroblasts. Further Co-IF analysis showed that all these cell types are markedly altered in $Six2^{Cre^{+/-}};CAG-tdtomato;PKA\alpha R^{fl/wt}$ mice. Our results identify Six2 progenitor-derived cells in the gastric mesenchyme that may be directly or indirectly involved in causing preneoplasia in CA-PKA mice.

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Phi Zeta Oral Presenter

Sabria Wooten

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Molecular Characterization of *Listeria monocytogenes* Isolated from the Cow-calf Farming System of Central Alabama

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Listeria monocytogenes is a ubiquitous microorganism and the causative agent of Listeriosis. *L. monocytogenes* can be found in moist environments, soil, water, and animals. This study analyzed (50) fecal samples collected from cow-calf farming systems between May 2023 and July 2023 from different farms in central Alabama, USA. We examined the prevalence, virulence factors, and phylogenetic distribution of the *hlyA* gene of *L. monocytogenes* isolated from the cow-calf farming system. The prevalence of contamination with *L. monocytogenes* was 11 (22%) out of 50 fecal samples. Serotypes and virulence genes of all *L. monocytogenes* positive samples were characterized using multiplex PCR. All isolates were positive for *inlA*, *inlB*, *plcB*, *prfA*, *iap*, *actA*, *hly*, *hlyA*, and *Lmo0733* genes. PCR-based serotyping showed the isolates belonged to serotype 4d (4/11, 36%), 1/2b (2/11, 18%), 4a (3/11, 27%), and 1/2a (2/11, 18%). The presence of variations of the *hlyA* genes among the isolates was analyzed using geneious prime software. The results of *hlyA* gene alignment from all isolates revealed high similarity with strains reported from different parts of the world (GenBank Database). This gene will be used to understand the evolutionary distance of the current *L. monocytogenes* isolates with respect to those available in public domains. The high percentage of *L. monocytogenes* isolation in this study may reflect an increased risk of infection through direct or indirect contact with cow fecal samples. Regular screening of animals for *L. monocytogenes* is beneficial for preventing listeriosis in farms and, subsequently, the food system.

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Phi Zeta Oral Presenter

Savannah S. Simon

Third Year Veterinary Student
College of Veterinary Medicine, Tuskegee University



Evaluation of Palpation and Computed Tomography as Surrogates for Regional Lymph Node Cytology when Staging Dogs with Sinonasal Cancer

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In canine sinonasal cancer, prognosis and treatment approach can be impacted by lymph node (LN) metastasis. Hence, despite uncertain cost effectiveness, staging plans often include aspiration and cytology of the regional LNs. This retrospective study evaluates how well physical examination and computed tomography (CT) perform as surrogates for LN cytology in dogs with sinonasal carcinomas or sarcomas. Dogs were included if they underwent radiotherapy between 2013 and 2023, after staging with physical examination, CT, and cytology of at

least one regional LN. Physical exam parameters and tomographic appearance of the LN were compared with cytologic descriptions to enable calculation of sensitivity and specificity, plus positive and negative predictive values (PPV and NPV). A total of 150 dogs were included (108 carcinomas, 42 sarcomas). Fourteen dogs had cytologically confirmed LN metastasis. Metastases were detected ipsilaterally in 12 dogs (10 mandibular, 1 medial retropharyngeal [MRP], 1 mandibular and MRP); 1 dog had bilateral mandibular LN metastases, and 1 had bilateral mandibular and MRP LN metastases. The sensitivity, specificity, PPV and NPV of LN palpation alone were 71.4%, 64%, 17%, and 96%, respectively; for CT alone, these were 100%, 46.3%, 16.1%, and 100%; and for the combination of palpation and CT, these were 100%, 59.5%, 23.8%, and 100%. Based on these results, detection of a palpably and tomographically normal LN in a dog with sinonasal carcinoma or sarcoma appears sufficient to confidently rule out cytologically detectable metastasis, thus obviating the need for LN aspiration and cytology.

Phi Zeta Oral and Poster Presenter

Samina Akhter, MPH, MSc, CCSP, CS

Department of Graduate Public Health Alumni,
Assistant Director of Analytics and Career Placement
College of Veterinary Medicine, Tuskegee University



Samina Akhter, currently works as an assistant director of analytics and career placement at the department of graduate public health, College of Veterinary Medicine, Tuskegee University. She served as a System Analyst and Database Manager at the College of Veterinary Medicine (CVM), Tuskegee University for the past 20 years. She earned her Bachelor of Sciences degree in Biology honors (pre-medicine) and her master's honors degree in Analytical Chemistry from the University of Punjab, Lahore Pakistan. Her research was on the topic "Thermal Decomposition Study of Cobalt Chloride Acetone Pyridine Complex". Akhter earned a computer programming certification (C++, COBOL Advanced, RPG, Q-Basics, Visual Basics, HTML) from Southern Union Community College, Opelika, Alabama in 1997. In May 2019, she graduated from the Department of Graduate Public Health at the CVM with a Master of Public Health honors degree. Her practicum was on "Correlation between Environmental Pollution and the Risk of Development of Breast Cancer in the Black Belt Counties of Alabama". Akhter was selected for membership in the Golden Key International Honor Society. Akhter has earned certification in career service provider (CCSP) from

National Career Development Association (NCDA) USA in 2021. Her responsibilities are to collect and analyze outcome data in relation to department goals and objectives and transmit to the program director. Akhter also provides stakeholder identification and maintains effective stakeholder communication to develop experiential learning and career placement opportunities for MPH students and alumni. She also provides effective management and utilization of career resources across department projects. Furthermore, her skills include preparing competencies accountability tracking for the Department of Graduate Public Health; community advocacy; health education; process improvement and evaluation; data manipulation and analysis; health surveillance and monitoring; wellness and health promotion; public speaking; assessment and testing; and cultural competence. She is actively involved in community outreach programs. She presented her research findings at the Macon County Diabetic Association at the Greenwood Baptist Church in Tuskegee as well as to attendees at a conference sponsored by the community organization, Students for Education and Economic Development (SEED) Inc., as well as at the University of Alabama at Birmingham (UAB) Minority Health and Health Disparity Research Center in Birmingham, Alabama.

Besides this, Akhter also has expertise in web and graphic designing, instructional designing, computer programming, and Mediasite webcasting. She served as an Administrator and Editor for Distance Education for teaching and learning programs using Mediasite Recorder, creating, transcoding, organizing, searching, and managing classrooms on-demand video recordings, publishing them to Mediasite Catalogs, and analyzing semester analytics reports. Additionally, she has expertise and skills in using Blackboard E-learning technology, hardware, software support, and training/teaching faculty, staff, and students. Akhter serves as the webmaster for the College of Veterinary Medicine at Tuskegee University.

Abstract

The Relationship Between Environmental Pollution and the Risk of Development of Breast Cancer in the Black Belt Counties of Alabama

Samina Akhter, Crystal M. James, David Nganwa, John Heath, Hafiz Anwar Ahmad, Lloyd Webb, Ehsan Abdalla

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Background: The study objective, is to determine whether certain known single and/or combinations of carcinogenic environmental toxicants released in the Black Belt Counties (BBC) of Alabama are correlated to greater racial disparity in incidence and mortality of breast cancer between Blacks and Whites. **Methods:** 2018 EPA TRI Explore data, based on carcinogenic rating and breast cancer-causing potential, nine chemicals, and eight metals were selected in BBC 2011-2015. Breast cancer incidence data extracted from Surveillance Epidemiology, and End Result (SEER) and calculated using SEER*Stat and joint point regression for two groups: Age-Adjusted Whites and Blacks, from 12 BBC, 2011 – 2015. Linear Regression Model using SAS 9.4 to analyze the relationship between race, selected chemicals, and Metals. **Results:** 34 % [(Coefficient of determination (R^2) = 0.34)] of Blacks in BBC were mostly affected by selected toxicants released with 66% of variance remaining unexplained. 74% (R^2 = 0.74) of Whites were most likely affected by the same toxicants with 26% variance unexplained. **Conclusion:** The lack of data from (Bullock, Macon, and Perry Counties) made it difficult to correctly establish a relationship between toxicants and the risk of development of breast cancer among Blacks in BBC. The lack of data highlights the need for advocacy for better monitoring and assessment systems providing evidence-based research.

Keywords: Breast cancer; BBC; disparities; Blacks; Whites; carcinogenic environmental toxicants; SAS software; SEER*Stat



Phi Zeta Poster Presenter

Briana Arceneaux

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Hookworms and Roundworms in Dogs: a Retrospective Study of Comorbidities, Awareness, and Prevention

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Hookworms and roundworms are two helminths commonly affecting many dogs around the world. These intestinal worms can cause inflammation in the dog's gastrointestinal system and hookworms can cause life-threatening anemia. When co-infection occurs with either of the helminths or other parasites, treatment may need to be more aggressive, and recovery may take longer. Performing diagnostic testing is important to assure the proper diagnosis is elucidated and the appropriate treatment is administered. The age range of dogs infected can vary, but helminth infections are more commonly seen in puppies. Over the years, pet owners have minimized the importance of intestinal worms, and many are not aware of methods of prevention or that zoonoses may occur. This study analyses current knowledge of ascarids and ancylostomatids, focusing on the awareness, importance of diagnostics, control methods and to prevent infection by good owner education and compliance.

Research Grant: TUCVM Veterinary Scholars Program & Mississippi State CVM
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Phi Zeta Poster Presenter

Kierney Burks

Second Year Veterinary Student
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Qualitative and quantitative assay of *Salmonella* serovars from poultry products using Genovar and Nano biosensors

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Outbreaks by *Salmonella* have not declined in the past fifteen years, and even worse, different *Salmonella* serotypes have emerged every year as the causative agents of foodborne illnesses. This study investigated the use of Magnetic Nanoparticles (MNPs) and Gold Nanoparticles (GNPs) to aid in the early detection of *Salmonella* in retail

poultry products. Genovar microplate PCR assay was also used to qualitatively and quantitatively determine the level of *Salmonella* serovars. Out of a total of 24 poultry products tested, 12 highly contaminated samples comprising chicken necks (5), turkey necks (5), and ground turkeys (2) were selected for further analysis. Briefly, 10gm of each sample was enriched in Tryptic Soy Broth, incubated overnight at 37°C, and then serially diluted 10^{-1} - 10^{-8} for MNPs capture and direct plating (DP) of total *Salmonella* count. Similarly, total DNA was extracted from the RV broth of each sample for quantitative and qualitative analysis using Genovar assay. Results showed that MNPs efficiently captured *Salmonella* when the level of contaminating *Salmonella* was higher than the overall bacteria contamination. This is due to the nonspecific binding of MNPs to any bacteria in the sample. Observed by 18/13, 5/0, 20/45, 1/0, MNP CFU versus DP CFUs, respectively. However, GNPs can specifically detect *Salmonella*'s presence in the abundance of other organisms. The abundance of *Salmonella* contamination with DP was recorded between 2×10^7 - 4.24×10^9 per 10 gm of the sample. In all samples analyzed, chicken neck carried the most variable serovars, about 13 different salmonella serovars, followed by turkey neck with seven different serovars. Overall, the Genovar analysis revealed that serovars Montevideo, Infantis, Newport, Typhimurium, Saintpaul, and Hadar are the most abundant serovar from high to low ranging 3.5×10^5 - 2.36×10^6 GE/ μ l. A combination of MNP and GNPs will aid in the early detection of *Salmonella*. Nano-biosensors and an assay like Genovar will cut the time needed to know the serovar involved in the outbreak.

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Phi Zeta Poster Presenter

Shahjalal Chowdhury

Graduate Student, Department of Biology,
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Role of Ubiquitin Receptor ADRM1 (Rpn13) in Prostate Cancer

Shahjalal Chowdhury¹, Dr. Chitra Nayak²,
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ADRM1 is a component of the 19S regulatory subunit of the 26S proteasome, which plays a crucial role in recognizing and selecting proteins for degradation by the proteasome. Proteasomes are involved in breaking down not only misfolded or damaged proteins, but also numerous proteins that regulate processes such as development, differentiation, cell proliferation, signal

transduction, and apoptosis. In many types of cancer, there is an increase in proteasomes activity and upregulation of ADRM1. While androgen receptor (AR) protein levels may increase during the early stages of prostate cancer, they may decrease in advanced stages such as castration-resistant prostate cancer (CRPC). In this study, we investigated the expression of ADRM1 in different stages of diseases through the lens of health disparity and its association with AR expression. We also explore the role of proteasome inhibitor UP 284 on aggressive prostate cancer cell line PC3. TCGA-PRAD 2015 dataset was used for this study. Large data was downloaded using R programming and then cleaned and prepared for further downstream analysis. To normalize gene expression count data, we utilized the deseq2 package in R. For comparisons between ADRM1 and AR expression, we used the wilcoxon test/mann-whitney U test. The linear relationship between ADRM1 and AR expression was determined by using the pearson correlation method. The aggressive prostate cancer cell line underwent biological assessment through the application of MTT assay and flow cytometry to evaluate the impact of the proteasome inhibitor. Our study suggested that ADRM1 and AR expression is significantly different in African American Men (AAM) than European American Men (EAM) at the intermediate stage (Gleason score 7) of diseases and significantly negatively correlated. Our study also reveals the role of proteasome inhibitor UP284 in the progression of prostate cancer through induction of apoptosis. This finding gives us new insight into ADRM1 expression patterns in prostate cancer patients as well as offers the possibility of utilizing ADRM1 inhibitors as a potential treatment strategy for prostate cancer.

Research Support: U54-MD007585-26 (NIH/NIMHD) (BK)

Phi Zeta Poster Presenter

Nina Davis

Third Year Veterinary Student
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Development of an Immunohistochemical Multiplex to Elucidate the Immune Landscape of Influenza-A Virus

Nina Davis, Adrienne Shircliff, Bailey Arruda

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Swine are an increasingly important biomedical model including for influenza A virus (IAV) infection. IAV is a significant pathogen of humans and swine. Infection of either host results in a necrotizing bronchiolitis with infiltration of leukocytes. Flow cytometry is commonly used to investigate the immune response; however, the spatial context of leukocytes is lost. Immunohistochemistry (IHC) provides this spatial context as well as providing the response of native cells. Yet, IHC is hindered in swine due to limited swine-specific antibodies and challenges of multiplexing due to species-restricted secondary antibodies. We posited that the use of a commercial platform and reagents that are primary antibody-species independent would facilitate the simultaneous detection of multiple markers using IAV infection in swine as a model. Antibody targets were evaluated via manual protocols that included four antigen retrievals and various primary antibody concentrations, incubation times and temperatures. Antibody targets included PAX5, CD79 α , CD163, SLA Class II DQ, HLA Class I, HLA-DR + HLA-DP, Ki67, CD3, CD4, CD8 and IAV nucleoprotein. Antibodies were then evaluated using a commercial platform across multiple protocols. We successfully developed a manual protocol for six of the eleven antibodies; a subset were incorporated into a semi-automated multiplex that required four to 40 times more primary antibody. In conclusion, we developed a novel IHC multiplex that provides spatial context of a complex microenvironment at high resolution. Further optimization to increase the robustness of the multiplex is needed. However, our multiplex can be refined to generate similar immune landscapes across physiologic states in swine.

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Phi Zeta Poster Presenter

Yumna Elsobky

Visiting Scholar, University of Sadat City, Egypt



A quantitative risk assessment to evaluate the efficacy of mitigation strategies to reduce highly pathogenic avian influenza virus, subtype H5N1 (HPAI H5N1) in the Menoufia governorate, Egypt

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Background: The poultry industry in Egypt has been suffering from endemic highly pathogenic avian influenza (HPAI) virus, subtype H5N1 since 2006. However, the emergence of H9N2, H5N8, and H5N2 in 2011, 2016, and 2019 respectively, has aggravated the situation. Our objective was to evaluate how effective are the mitigation strategies by a Quantitative Risk Assessment (QRA) model which used daily outbreak data of HPAI-H5N1 subtype in Egypt, stratified by different successive epidemic waves from 2006 to 2016.

Results: By applying the epidemiologic problem-oriented approach methodology, a conceptual scenario tree was drawn based on the knowledgebase. Monte Carlo simulations of QRA parameters based on outbreak data were performed using @Risk software based on a scenario-driven decision tree. In poultry farms, the expected probability of HPAI H5N1 prevalence is 48% due to failure of mitigation strategies in 90% of the time during Monte Carlo simulations. Failure of efficacy of these mitigations will raise prevalence to 70% with missed vaccination, while failure in detection by surveillance activities will raise it to 99%. In backyard poultry farms, the likelihood of still having a high HPAI-H5N1 prevalence in different poultry types due to failure of passive and active surveillance varies between domestic, mixed and reservoir. In mixed poultry, the probability of HPAI-H5N1 not detected by surveillance was the highest with a mean and a SD of 16.8×10^{-3} and 3.26×10^{-01} respectively. The sensitivity analysis ranking for the likelihood of HPAI-H5N1 in poultry farms due to missed vaccination, failure to be detected by passive and active surveillance was examined. Among poultry farms, increasing vaccination by 1 SD will decrease the prevalence by 14%, while active and passive surveillance decreases prevalence by 12, and 6%, respectively. In backyard, the active surveillance had high impact in decreasing the prevalence by 16% in domestic chicken. Whereas the passive surveillance had less impact in decreasing prevalence by 14% in mixed poultry and 3% in domestic chicken.

Conclusion: It could be concluded that the applied strategies were not effective in controlling the spread of the HPAI-H5N1 virus. Public health officials should take into consideration the evaluation of their control strategies in their response.

Keywords: Egypt, HPAI-H5N1, Menoufia governorate, Monte Carlo simulations, Prevalence, Quantitative risk assessment, Sensitivity analysis

Phi Zeta Poster Presenter

Stephanie Hall

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Effect of Maternal *Staphylococcus Aureus* Mastitis Immunomodulatory Treatments on the Health of Nursing Mouse Pups

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AL

Mastitis is a disease that affects the mammary gland of lactating mothers. Mothers with infectious mastitis are recommended to breastfeed while on antibiotic treatment. However, exposure to antibiotics can affect both the mother and the child, therefore the need for an alternate treatment is necessary. IgY, an antibody naturally derived from egg yolk is reported as a safer alternative to antibiotics because of its efficacy, specificity, and safety for oral consumption. One of the indicators of infant health is normal gastrointestinal (G.I.) motility. GI motility can be compromised with poor treatment outcomes. The objectives of this study are to: (1) Compare the health outcome (growth and weight) of pups nursed from *Staphylococcus aureus* infected dams and treated with anti-SpA IgY, anti-SpA IgY+Vitamin D3, or anti-SpA IgY+Vitamin D3+RP. (2) Evaluate the degree of gastrointestinal motility of pups nursed from *Staphylococcus aureus* infected dams and treated with each therapy. Fifty pups (five males and five females per treatment) were collected. The litter size and growth rate of these were determined during treatment until they were weaned. Colon samples were collected from each for Angiotensin II receptor analysis via qPCR.

Research Grant: TUCVM Veterinary Scholars Program

Student Support: Boehringer Ingelheim and HHS-COE

Phi Zeta Poster Presenter

Mark Harden

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Increasing Next Generation Sequencing detectability of Newcastle or Avian Influenza through Host Depletion

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Avian Influenza (AI) is an Orthomyxovirus that utilize wild aquatic birds as its reservoir host and is capable of transmission to domestic poultry through direct contact, infected equipment, contaminated water, or respiratory droplets. Newcastle disease shares many characteristics to systemic AI in both transmissibility and pathological signs to a point where they're indistinguishable. To combat the spread of AI and Newcastle within the United States' poultry industry understanding gene sequences of current outbreaks is paramount to management and elimination. Next Generation Sequencing (NGS) has the capability to produce rapid, specific results with the goal of identify whole viral genome sequences, however, test sensitivity can decline based on host and bacterial RNA concentrations and viral degradation while samples are in transport. Host depletion is a viable solution to these obstacles by removing host and bacterial RNA that mask sequencing of target viral RNA. In this paper, we develop and investigate various RNA extraction and host depletion methods that significantly reduce chicken host RNA post treatment compared to their pretreated counterpart. Multiple RNA extraction methods were conducted on samples obtained from euthanized specific pathogen free (SPF) birds after addition of Newcastle disease virus to evaluate virus retention. Alteration in host depletion protocols looking at combinations of primer sets, incubation times, and types of DNase/RNase enzymes for degradation are evaluated for greatest depletion of bacterial and host RNA. Post extraction and host depletion treatments are validated using reverse transcriptase real time PCR (RT-PCR), producing significantly increased cycle threshold (CT) values.

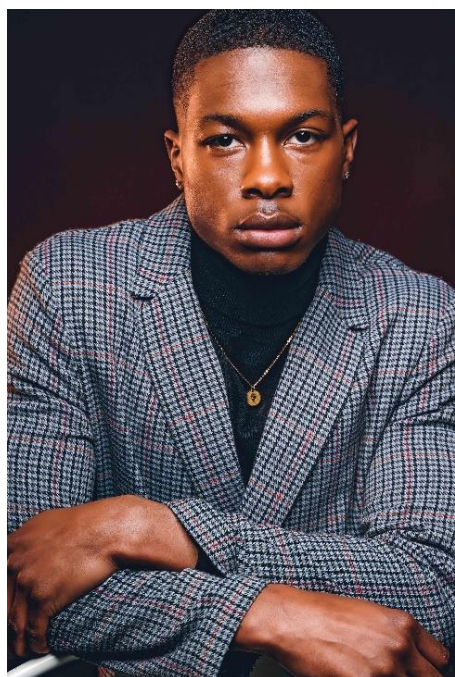
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Phi Zeta Poster Presenter

Tyric V. James

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Biosensor, an Alternative and Rapid Approach to Test the Antimicrobial Effect of Biodegradable Packaging Material

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We studied the effect of biodegradable packaging material to limit the growth of STEC *Escherichia coli* O157 and *Listeria monocytogenes* 19117. Biodegradable packaging material from fermented plant starch (PLA) amounting to a total of 30 g was added at various concentrations (PLA/ZnO/C 1.5%, 1%, and 0.25%) and mixed with 15 grams of Carbon (biochar) and ZnO. Extrudable blow film machine, Thermo Gravimetric Analysis (TGA), and Differential Scanning Calorimetry (DSC) were used to prepare the films.

The antimicrobial activities of the films were evaluated by direct placement of the films on spots of known concentrations of bacteria (1.5×10^8 - 15 CFU/ml). Films were removed after 24 hrs, and plates were re-incubated for 24 hrs for any pathogen growth. In addition, the presence of live bacteria after exposure to packaging materials was evaluated using functionalized Magnetic Nanoparticles (MNPs). MNPs allow the detection of pathogenic bacteria through the intrinsic surface negative charge of bacterial pathogens.

The result shows that direct contact with PLA/ZnO/C 1.5%, 1%, and 0.25% films resulted in no growth of STEC *E. coli* (1.5×10^3 - 1.5×10^2). However, neither bactericidal nor bacteriostatic effects were observed with *L. monocytogenes* 19117 exposed to PLA/ZnO/C 1.5%, 1%, and 0.25% films. Removal of this film, re-incubation, and subjecting media under the film with MNPs and plating revealed the re-growth of STEC *E. coli* at a concentration of 1.5%, giving evidence of bacteriostatic activity at 1.5% PLA/ZnO/C. Remarkably lower concentrations (1 %, 0.25 %) of PLA/ZnO/C gave evidence of bactericidal activity, which was corroborated by lack of growth after MNPs extraction and plating of STEC *E. coli* (1.5×10^3 - 1.5×10^2 CFU/ml). Relative to *E. coli*, *L. monocytogenes* has the greatest inherent acid tolerance. This intrinsic nature could explain why we were not able to limit the growth of *L. monocytogenes* using biodegradable material made out of fermented plant starch (PLA).

This research highlights the need for non-chemical ways to preserve food longer by efficiently killing or inhibiting the growth of pathogenic bacterial contaminants from food surfaces. In addition, this experiment validated the use of MNPs as an alternative method to test viable pathogens before and after applying biodegradable packaging material. Keywords: Antimicrobial, Biodegradable, Magnetic Nanoparticles, Packaging material

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Phi Zeta Poster Presenter

Sydney Johnson

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Exploring the Combination of Carboplatin with Stimulator of Interferon Genes (STING) Agonist in Canine Osteosarcoma

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Being the most common bone cancer in dogs, osteosarcoma is a highly malignant bone tumor with high metastasis capability. Due to its aggressive nature, we very much need treatment methods outside of cytotoxic chemotherapy and surgery. Carboplatin is the drug of choice to treat canine osteosarcoma. Stimulator of interferon genes (STING) agonist is a molecule with potential immune-activating and antineoplastic properties. Previous analysis of the STING agonist-treated tumors showed increased myeloid cell infiltration. We hypothesized that carboplatin along with neoadjuvant intra-tumoral delivery of STING agonist will have an overall greater effect of treating canine osteosarcoma and decrease its recurrence rate by recruiting an increased number of myeloid cell infiltrates. Using a murine model as the host, we performed a Colorimetric Method (MTS) for determining cell proliferation after dosing with carboplatin and STING agonist, polymerase chain reaction (PCR) for evaluating the presence of STING agonist expression, immunohistochemistry (IHC) to identify the CD11b (myeloid cells) and CD8 (T-cells) markers, and tumor challenges in vivo to assess tumor-infiltrating lymphocytes (TILs). We found that intra-tumoral injection of STING agonist increased the number of myeloid cell infiltrates, suggesting activation of the immune system against the tumor.

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Phi Zeta Poster Presenter

Mallika Kumar

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Feline Aging Project: Elevated Alkaline Phosphatase in Dementia-Related Disorders in Humans and Companion Animals

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Identifying an appropriate model species to study human aging is crucial to advance medical knowledge, enhance quality of life, and to improve medical care for humans and animals. While traditional models, such as mice and rats, are commonly used to study age-related diseases they do not encompass several biological

parallels with humans. However, companion animal models, including felines, exhibit many similarities with human aging. Some of the notable examples include cognitive dysfunction syndrome, the presence of plaques and tangles, brain atrophy, and cataracts, among others. Apart from parallel occurrences of these diseases, felines share the same environment with humans and have relatively lengthened lifespans. Data was collected from partnering institutions, but to account for variations within the feline population (indoor/outdoor cats, age disparities, and breed distinctions) we engaged the public, requesting blood profiles. Initial data analysis revealed temporal variation in Alkaline Phosphatase (ALP) levels in humans and felines. Consequently, ALP can serve as a marker for correlating time between the two species. ALP decreases with age, remains relatively stable for a significant portion of the lifespan but demonstrates variation towards later stages in both species. Leveraging this parameter along with other indicators, we intend to use machine learning to predict ages in felines. Therefore, translating time between felines and humans and determining the practicality of using felines as models. Implementing a One Health approach, which recognizes the importance of both human and animal health, we can illustrate how felines could offer a more effective model compared to traditional models.

Research Support: Scott Fund, Scott-Ritchey Research Center, Auburn College of Veterinary Medicine; Animal Health and Disease Research Program, Auburn College of Veterinary Medicine

Phi Zeta Poster Presenter

McCoy Williams

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Investigation Into False Positive Single Intradermal Tuberculin Testing in Ungulate Species at the San Diego Zoo Wildlife Alliance

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Medicine, San Diego Zoo Wildlife Alliance, Zoo
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Currently, single intradermal bovine tuberculin testing is the standard means for screening for Tuberculosis (TB) in zoo ungulates. Physical or chemical restraint is required for test placement and subsequent reading at 72 hours. For individuals that react to the initial single tuberculin test, a comparative bovine and mammalian tuberculin test is performed, which again requires reading at 72 hours.

Bovine tuberculosis has not been diagnosed at the San Diego Zoo Wildlife Alliance; however a number of species are recognized to regularly respond to the single tuberculin test. These false positive responses result in a second round of testing, requiring additional immobilizations, increased medical expenses, delays in an accurate diagnosis, and more stress on the animal. Identifying which species are likely to falsely react may help to reduce many of the previously stated issues. Analysis of ten-years of medical records from San Diego Zoo and San Diego Zoo Safari Park (N~1000), indicates that the strongest predictor for false positive results is the species, as opposed to the age or sex of the animal. Future work will help to establish recommendations for efficient TB screening in these species.

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