



Director's Update

Dr. Deb Miller



Ah, the warmth of summer... and this summer is super warm! The last time we saw these temperatures in Tennessee was 10 years ago. Luckily, we have the Tennessee River to offer us relief in the form of swimming, water sports, fishing, and so much more. It definitely reminds us how

important it is to care for our water systems.

Our research highlight for this issue of the University of Tennessee One Health Initiative (UT OHI) newsletter focuses on controlling the emergent human pathogen, *Escherichia albertii*. This research team includes expertise in microbiology, epidemiology, animal health, food safety, and environmental science and investigates how the pathogen circulates in raccoons and chickens and the complex interaction of this pathogen with humans and animals within their shared environments.

We are excited to welcome back students in the coming months, especially those who will be minoring in One Health and taking the course 'Introduction to One Health' (AGNR 101), which will apply toward Vol Core requirements! Students should also be on the lookout for information regarding the formation of a student-led One Health group (check out this newsletter for a link to get involved). I know that I am super excited about this new venture!

One Health: A Transformative Change in Perspective and Approach

*Carole Myers, PhD, RN, FAAN,
Associate Director UT One Health Initiative*

The One Health Initiative was launched at the University of Tennessee (UT) over two years ago. As with any new endeavor, adjustments in thinking and approaches have been a hallmark of the initial phase of the initiative.

The One Health Initiative at UT encompasses the interconnected four domains depicted in the logo (below): animal, human, plant, and environment health. Since the initiative was introduced, there has been some pushback about the domains and what differentiates a One Health approach from the current established, interdisciplinary

I hope that each of you have been able to participate in at least some of the many activities hosted by the OHI. We have many more planned for this next quarter and want to inform you of those so that you can mark your calendars. Our Lunch and Learn series has returned to the last Thursday of each month, and you can keep track of these and many more activities through our [website](#). While you're there, check out our podcast series with comedian Shane Mauss! We also want you to be aware of resources for K-12 educators, information about the One Health minor, and various information on research and educational opportunities that you can access via our website. There is even a donation button for those who want to support OHI activities! So please check it out.

I hope that you enjoy this read and, as always, please join us in uniting disciplines to protect and promote the health of all life on Earth!



UT students enjoying the Tennessee River on kayaks and paddleboards; photo by Stephen Bridges.

alliances of many campus units. Some faculty and other stakeholders have dismissed the initiative as too focused on the agricultural aspects of plant and animal health and, on the flip-side of that coin, not sufficiently oriented on human health. These concerns clearly illustrate a starting point from which to measure change and progress and the transformation in perspectives and desired outcomes which is the aim of One Health.

Where or how you enter the circle depicted in the logo is immaterial compared to what happens within the circle. Within the circle is where a significant transformation that defines the One Health perspective takes place. The desired transformation is most simply understood as a change from a singular disciplinary or even interdisciplinary approach to

a transdisciplinary one that results in transformative change. Let us break this down.

The aim of One Health is transformation. Transformation connotes something beyond most change. Transformation is a “thorough or dramatic change” (Oxford Dictionary). Transformation related to One Health is best achieved through team science. Team science is a “collaborative effort to address a scientific challenge that leverages the strengths and expertise of professionals, oftentimes trained in different fields” (NCI, 2021). Team science is strategically well-suited to address complex, multi-factorial scientific and societal problems that are sometimes called wicked. One Health problems are wicked problems.

Teams of professionals from multiple disciplines are referred to as multidisciplinary, interdisciplinary, and transdisciplinary. These descriptors are not interchangeable. Instead, these terms represent a continuum of team work from additive, interactive, and holistic, respectively (Choi & Pak, 2006). Interdisciplinary endeavors “harmonize links between disciplines into a coordinated whole, while multidisciplinary work is characterized by viewing the same object from different disciplines (Krishnan, 2021). Transdisciplinary work

integrates the perspectives of multiple disciplines to create new knowledge and understanding.

A new interdisciplinary field of science has emerged that examines the science of team science. Using evidence about team science to foster the development of high-functioning transdisciplinary teams has been a major emphasis of the UT One Health Initiative. The science of team science is centered on “how teams connect and collaborate to achieve scientific breakthroughs that would not be attainable by either individual or simply additive efforts (NASEM, 2015).” We will look more at the science of team science in the next newsletter.

Full references available upon request.



ONE HEALTH
INITIATIVE

UTOHI Research

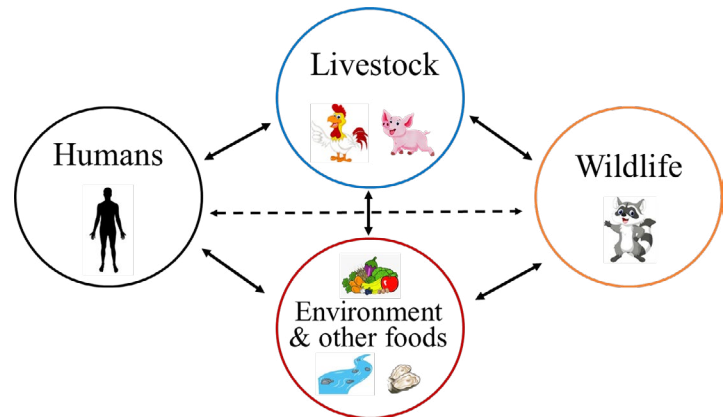
Controlling the Emergent Human Pathogen, *Escherichia albertii*

by Investigators Jun Lin and Qiang He

Bacterial pathogens can survive under many conditions. Figuring out when, where, and in which animal populations they are common is a complicated and difficult challenge. It gets even more difficult to then translate that knowledge into understanding how those bacteria can move among different animal populations, potentially threatening humans.

In this project, we are using a combination of microbiological and genomics approaches to figure out the way the pathogen *E. albertii* strains survive and circulate in both raccoons and chickens across Tennessee and Kentucky. These animals obviously have very different behaviors, live in very different places, and interact with very different sets of other species as part of their daily existence. Our goal is to elucidate the complex interaction of this emerging human pathogen, animals, humans, and their shared environment across our region and over time.

Understanding where different pathogens thrive in our surroundings and how they can infect wild animals, domestic agricultural populations, and ourselves is one of the foundational challenges in protecting animal and human health.



Transmission of the emerging *E. albertii* pathogen in complex ecosystem.

Our One Health team is comprised of six investigators with collective expertise in microbiology, epidemiology, animal health, food safety, and environmental science. We are working together using unified and cross-disciplinary approach to improve monitoring and mitigation efforts to control outbreak threats from this bacterial pathogen, no matter where they might arise.

You can learn more about this project on the [Seed Grant Program](#) page of our website, or check out Dr. Lin's appearance on our [Lunch and Learn Seminar Series](#)!

One Health in the News

- [Disease-causing Parasites Can Hitch a Ride on Plastics and Potentially Spread Through the Sea, New Research Suggests](#)**
Microplastics are tiny plastic particles that can form when larger materials break down in water. In a recent study, researchers found that “pathogens from land can hitch a ride to the beach on microscopic pieces of plastic, providing a new way for germs to concentrate along coastlines and travel to the deep sea.”
- [Tracking Coronavirus in Animals Takes on New Urgency](#)**
In year three of the coronavirus pandemic, scientists have confirmed that the virus has already spread to at least 20 other animal species; however, to date incidents of animals infecting humans are rare. A scattered but growing global effort aims to monitor pets, livestock, and wildlife for new and potentially dangerous variants.
- [Food Security and Medical Support: Animals Need it, Too](#)**
The Russian invasion of Ukraine during the worst pandemic in a century has brought attention to the pitfalls in food delivery and medication/vaccines. Lost in this is the focus on animals facing parallel risks of food security and medical support.
- [Study: Tennessee RiverLine Expected to Create Around \\$104 Million for Communities](#)**
The Tennessee RiverLine is a project that aims to connect trails and bring together river communities along the Tennessee River from Knoxville, TN to Paducah, KY. The University of Tennessee released an economic impact report for the project, suggesting the project could bring in over 800,000 new paddlers and add around \$104 million to the area’s GDP.

One Health Opportunities

One Health Student Leadership Summit Coming This Winter

Mariah Dee

In our spring newsletter, we introduced the One Health Student Leadership Summit that is being planned for this winter. We are very excited about this event and the building interest in One Health among the UT student body!

The University of Tennessee is home to many different disciplines and professions—veterinary, nursing, business, communications, environmental, ecology, public health, and so many more. Many of these either explicitly or obscurely influence the health of people, animals, plants, and the environment. Coming off of the coattails of the COVID-19 pandemic has brought personal and public health to the forefront of many of our minds—so as a student, what can you do now to address these health challenges using the skills you’re developing now in school?

Well, the first step you can take is to learn about the myriad of issues impacting health and how these issues can be effectively addressed through the One Health approach. The next step is to join the One Health Student Group! [Fill out this form](#) to indicate your interest in joining a collaborative space for students to engage in transdisciplinary conversations, health-based projects on campus, and develop the student voice for One Health. This will also put you in touch with the organizers of the One Health Student Leadership Summit being planned for this winter.

Any UT student (part or full time, undergraduate, graduate, professional, doctoral, etc.) is welcome to join this group! And faculty and advisors, please share this opportunity with your students.

Feel free to contact Mariah Dee (mfarring@vols.utk.edu) with questions or for more information.

Hiring Organization	Position
Brazoria County	Epidemiological Investigator
North Carolina State University	Assistant Professor in Veterinary Global and Public Health
The Ohio State University	Open Faculty Search: One Health
University of Connecticut	Associate Professor, Director of One Health Initiatives
Woods Hole Oceanographic Institution	Postdoctoral Investigator
Woodwell Climate Research Center	Research Associate / Postdoctoral Researcher - Carbon

One Health Events

OHI Lunch & Learn Seminar

July 28, 2022 | 12-1pm EST

TBA

Zoom: <https://tennessee.zoom.us/j/97180636434>

Passcode: onehealth

TN Farm Stress Summit

August 3-4, 2022 | Franklin, TN

Hosted by TN Dept. of Agriculture, UT Extension, UT Southern's Turner Center for Rural Vitality, and the TN Dept. of Mental Health and Substance Abuse Services

Register: <https://www.eventbrite.com/e/tennessee-farm-stress-summit-tickets-344286960567>

OHI Lunch & Learn Seminar

August 25, 2022 | 12-1pm EST

[Dr. Denita Hadziabdic Guerry](#)
[Entomology and Plant Pathology](#)
[University of Tennessee](#)

Zoom: <https://tennessee.zoom.us/j/96053359238>

Passcode: onehealth

USDA Antimicrobial Resistance Public Meeting

August 30, 2022 | 10am-4:30pm EST

Hosted by the USDA Animal and Plant Health Inspection Service

Register: https://www.zoomgov.com/webinar/register/WN_LFLkbcWuTdqGT0wxBZyuOQ

OHI Lunch & Learn Seminar

September 29, 2022 | 12-1pm EST

Endocrine Disruptors as Environmental Contaminants:
The Story of Parabens

[Dr. Ling Zhao](#)

[Department of Nutrition](#)
[University of Tennessee](#)

Zoom: <https://tennessee.zoom.us/j/99810757165>

Passcode: onehealth

OHI Lunch & Learn Seminar

October 27, 2022 | 12-1pm EST

Dr. Seth Magle
Dr. Maureen Murray

[Lincoln Park Zoo](#)
[Urban Wildlife Institute](#)

Zoom: <https://tennessee.zoom.us/j/93660178468>

Passcode: onehealth



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