



Director's Update

Dr. Deb Miller



I hope this finds everyone winding down a successful semester and enjoying the holiday season! If your household is like mine, you are also hoping for some of that beautiful fluffy white stuff for adventurous sledding, creative fort and snowman building, and action-packed snowball challenges! Indeed, great fun for the young and the young-at-heart! Of course, I also hope that this finds everyone healthy and avoiding the new omicron variant that is circulating. We must continue to stay vigilant so that all can remain safe.

Inside this issue of the University of Tennessee One Health Initiative newsletter, we feature the One Health Scholar and 2021 seed awardee Dr. Chunlei Su and his team. They are working to develop a system for molecular detection and identification of zoonotic pathogens of most concern in the USA. Their system will use metagenome sequencing and multiplex genotyping to detect both known and unknown pathogens from animals and the environment. Indeed, this is very exciting work with great promise for being highly scalable for surveillance of a large number of pathogens. We have also decided to use this venue to provide updates on other projects. First up this quarter is an update from Heather Sedges on her expanding program on Farmer and Rancher mental health. Heather is truly putting some amazing plans into motion!

We have several events and activities to highlight for this quarter. First, we want to make certain that everyone is aware of the call for [2022 Seed Awards](#). Remember that proposals must have a One Health approach. We are offering two additional awards this year—one in partnership with the [Tennessee RiverLine](#) exploring healthy, living shorelines on the Tennessee River; and another award, which is globally-focused, will be available in partnership with UT's [Smith Center for International Sustainable Agriculture](#) and the [Center for Global Engagement](#) to address one or more of the [United Nations Sustainable Development Goals](#). Proposals will be due February 1st, so start building your team and planning your topic today!

Next, we want to bring your attention to the fact that our Lunch and Learn series will return to the last Thursday of each month. The next one will be on January 27th, featuring Roan Balas McNab and Dr. Luis Guerra of the Wildlife Conservation Society of Guatemala. Then in March, mark your calendars on the 10th for a virtual Team Science workshop featuring a dialogue with Dr. Stephen Porges and Dr. Steve Fiore, breakthrough leaders in the fields of human traumatic stress and the science of team science respectively. The dialogue will cover ways the human nervous system supports and/or hinders interdisciplinary teams in attaining consilient solutions to the world's social messes. Registration for this event will be coming soon.

Lastly, we invite you to join us in celebrating National One Health Awareness Month in January! All month long, we'll be highlighting #OneHealth around the world. Follow along on Twitter at [@UTOneHealth](#) and help spread the word!

You can keep track of these and many more activities through our website: [onehealth.tennessee.edu](#). We especially think you will enjoy the podcast series with comedian Shane Mauss. We also want you to be aware of the available past Lunch and Learn recordings, resources for K-12 educators, information on 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.

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

Research Updates

Developing a System for Molecular Detection and Identification of Zoonotic Pathogens of Most Concern in the USA

Investigators: Drs. Chunlei Su, Richard Gerhold, Michelle Dennis, and Sree Rajeev

The natural world is constantly under threat from new outbreaks of infectious diseases. New disease threats can come from a variety of sources. They can result from mutations in strains of existing pathogens, or existing pathogens can start infecting new



populations of hosts (whether jumping to infect an entirely new species, or infecting a species it has infected before, but in a new location that might change how the disease behaves or spreads). Detecting the presence of a new disease threat early is critical in being able to respond to limit the damage it can cause. However, detecting a new pathogen, or a pathogen in a new host environment, means constantly searching for “something different.” It’s a lot easier to search when you know what you’re looking for, and where to look for it!



In this project, we are building a new and better system to detect new disease threats and identify the pathogens causing them. We are building a tracking system and shared database so that if a researcher or practitioner collects an infected biological sample (like blood or tissue), they can check to see whether similar samples have been collected in those places or species before, or if it’s a new potential threat. We are also developing new techniques to identify the pathogen infecting the samples. This uses well-established methods that use targeted gene sequencing and exciting new methods from metagenomics. From this we can analyze patterns of detection in time and space to reveal sources of infection and how pathogens might be transmitting through an environment. We are also working to build a reference repository of pathogen samples, so that when an infection is detected, it’s easier to identify in the future. We’re starting by focusing on pathogens listed by the US CDC as being of ‘high priority’ for zoonotic disease (i.e., spreading from animals to humans), but by building this generalizable system, we will provide a framework for surveillance and detection of all novel pathogen threats.

Our One Health team is a collaboration between a microbiologist (Chunlei Su), a disease ecologist/parasitologist (Richard Gerhold), a comparative wildlife pathologist (Michelle Dennis), and a veterinarian specializing in infectious diseases (Sree Rajeev). We are working together to build a surveillance system that can keep watch over populations of animals, plants, humans, and the environment to help notice any worrisome changes as early as possible and give us the best chance to prevent destructive outbreaks.

Farm and Ranch Stress Assistance Network Update

Project Director: Dr. Heather Sedges

In 2020, the USDA created the Farm and Ranch Stress Assistance Network (FRSAN) to provide stress management assistance to people in farming, ranching, and other agriculture-related occupations, as well as their families. The University of Tennessee leads the Southern Region (SR) of the program under the direction of Dr. Heather Sedges.

During its first year, the FRSAN-SR has expanded from 5 founding states to 13 states and 2 US territories, making it the only one of the four regions in the program to have 100% engagement from all eligible states and territories. This was particularly important when the USDA offered each state and territory \$500,000 to further the efforts of the program, resulting in an additional \$1.5 million leveraged directly to the University of Tennessee (UT). In addition to the new states, the following national organizations have joined the FRSAN-SR network: Rural Advancement Foundation International (RAFI), Intertribal Agriculture Council, Migrant Clinicians Network, the Federation of Southern Cooperatives, and Latino Farmers Outreach Initiative.



By the end of 2021, over 100 participants will engage in an inaugural (virtual) working meeting and conference, a few highlights of which include: unveiling options for official branding, welcoming speakers from the USDA and Farm Service Agency, sharing the plans and procedures for the official network-based hotline before its launch in spring 2022, and providing a network-based approach to a collective evaluation plan, along with data management and sharing practices.

Interwoven into the event are countless presentations about farmers’ stress throughout the region, increased capacity via evidence-based trainings to respond to farmers mental health concerns, and ongoing research dedicated to uncovering the nuances of farmers’ stress and effective interventions.



One Health Opportunities

Table with 3 columns: Organization, Position, and Deadline. Rows include University of Georgia, EcoHealth Alliance, London Natural Environment Research Council, Harris County Texas, University of Maine, and University of South Carolina.

One Health in the News

- Hospitals Want to go Green, but Sustainability Data is Scarce
The Emerging Field of Pollution and Mental Health Research
In Harm's Way: Our Actions Put People and Wildlife at Risk of Disease
Uganda's 'Dr. Gladys' Honored by U.N. for Work Linking Conservation and Health



One Health Events

Event information and previous seminars
can be viewed on our website:
onehealth.tennessee.edu/events

One Health Lunch & Learn Seminar

January 27, 2022 | 12-1pm EST

Roan Balas McNab
& Dr. Luis Guerra

[Wildlife Conservation Society Guatemala](#)

Zoom: <https://tennessee.zoom.us/j/99416439628>

Passcode: onehealth

One Health Lunch & Learn Seminar

February 24, 2022 | 12-1pm EST

Dr. Jun Lin

University of Tennessee

Zoom: <https://tennessee.zoom.us/j/93303963721>

Passcode: onehealth

Science of Team Science Workshop

March 10, 2022 | 10am-3pm EST

*Polyvagal Theory and the Science of Team Science:
A Virtual Dialogue and Liberating Structures Experience*

with special guests Dr. Stephen Porges and Dr. Steve Fiore

Registration coming soon!

One Health Lunch & Learn Seminar

March 31, 2022 | 12-1pm EST

Dr. Gladys Kalema-Zikusoka

[Conservation Through Public Health](#)

Zoom: <https://tennessee.zoom.us/j/98367581161>

Passcode: onehealth

One Health Lunch & Learn Seminar

April 28, 2022 | 12-1pm EST

Dr. Chunlei Su

University of Tennessee

Zoom: <https://tennessee.zoom.us/j/95358653714>

Passcode: onehealth

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