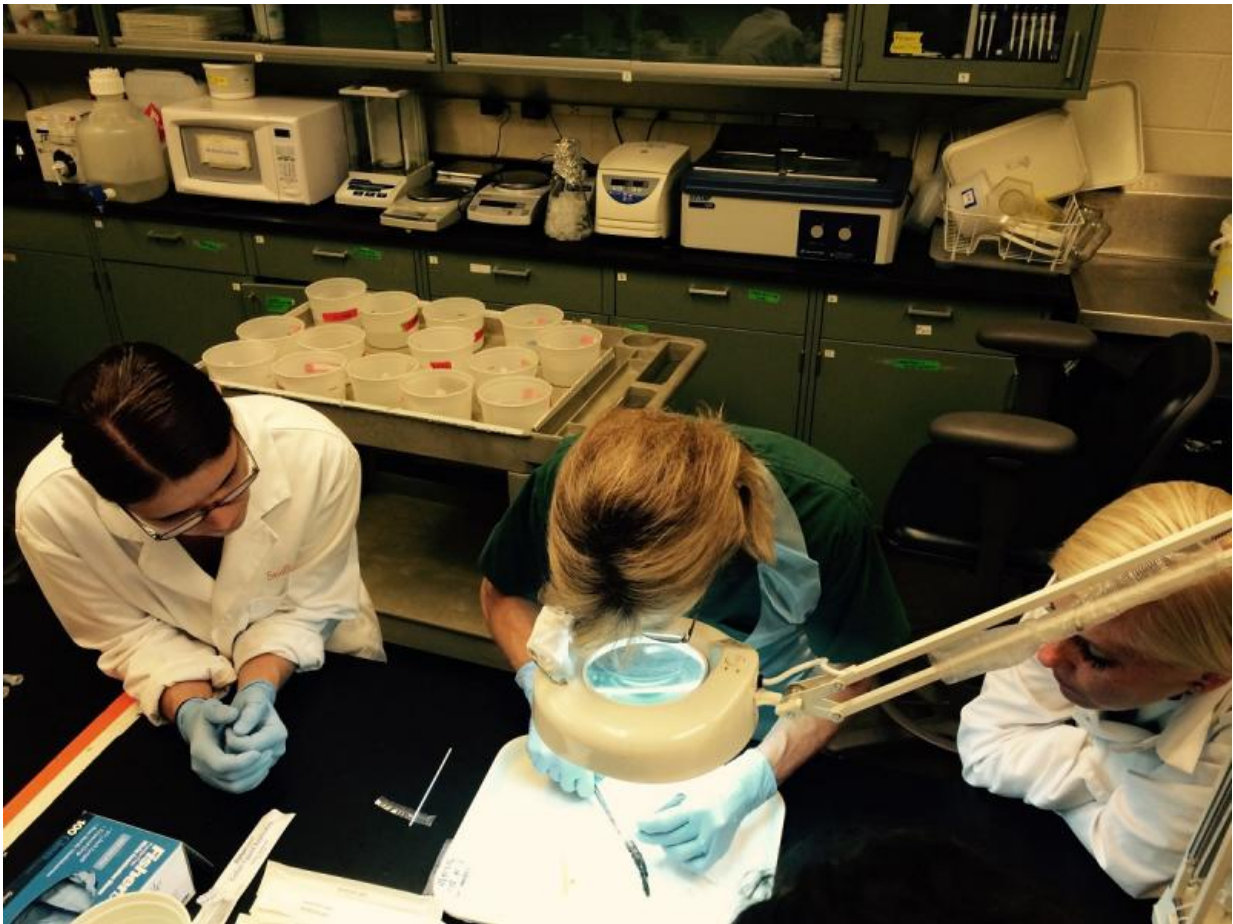


Researchers launch new online wildlife disease reporting system

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Dr. Debra Miller (shown center) demonstrates necropsy techniques for amphibians to UT veterinary students. Miller serves as director of the University of Tennessee Institute of Agriculture Center for Wildlife Health. Credit: M. Gray, courtesy UTIA.

Two researchers with the University of Tennessee Institute of Agriculture (UTIA) were instrumental in creating a new online portal for scientists studying a disease that is threatening the global populations of amphibians, reptiles and fish.

The new portal is called the Global Ranavirus Reporting System (GRRS) and it can be found online at mantle.io/grrs. Ranaviruses are emerging pathogens capable of causing systemic hemorrhaging in amphibians, reptiles and fish that has been characterized as the "Ebola of ectothermic vertebrate species." Experts believe the GRRS will become a model for infectious disease reporting and biosurveillance.

Professors Debra Miller, DVM and Ph.D., and Matthew Gray, Ph.D., with the UTIA Center for Wildlife Health, began conceptualizing the GRRS more than six years ago. Working with scientists in the Global Ranavirus Consortium, a non-profit organization that helps facilitate collaborative research on ranaviruses, the team drafted the structure of the GRRS. Armed with this blueprint, Miller and Gray helped form a partnership between the U.S. Forest Service and the EcoHealth Alliance who ultimately funded the project and performed the necessary programming.

The GRRS is an open-source web platform designed for the storage, sharing and visualization of global ranavirus surveillance data, including diagnostics and genetic isolate differences. Ranavirus scientists in the field or the lab can upload datasets in multiple formats to the system, where they will be stored for easy download and analysis. GRRS users have fine-grained access controls to protect and share their uploaded datasets and to examine datasets in multiple views appropriate to their content, for example as tables, maps or charts.

The GRRS is designed to meet the needs of a variety of users, including natural resource managers, veterinarians and epidemiologists and other

researchers.

The scientific community is impressed with the capabilities of the GRRS. "The GRRS fills a critical gap in ranavirus research by providing a user friendly platform for data entry and extraction that will be invaluable for researchers and managers seeking to understand ranavirus epidemiology at multiple scales," explains former UTIA post-doc Jason Hoverman, who is currently an assistant professor at Purdue University. Post-doctoral scientist and ranavirus expert Stephen Price, of University College London, adds, "Ranaviruses can have severe impacts on amphibians at the community level. The GRRS provides a great tool to share surveillance data. The GRRS has the potential to provide a stronger link between research and wildlife management."

The GRRS represents a new generation of disease mapping and analysis, with its geospatial references linked to critical case data. Gray indicates, "The GRRS will rapidly advance the scientific community's understanding of ranavirus epidemiology and help natural resource agencies and other organizations respond intelligently to new outbreaks. I am certain the GRRS will become a model for future infectious disease reporting and biosurveillance."

Miller, who serves as director of the UTIA Center for Wildlife Health, adds, "Because diagnostic results and images of ranavirus lesions can be uploaded, the GRRS will be a useful tool for veterinarians, too. It is great to see the GRRS launch after many years of hard work and collaboration!"

Scientists and veterinarians are encouraged to upload records of ranavirus cases. "As more records are added," Gray states, "the full potential of the GRRS will be recognized." He and Miller also invite colleagues to contribute to discussions on the GRRS on Twitter at @EcoHealthNYC, @mantle_io and @RanavirusGRC.

Both Miller and Gray are internationally recognized ranavirus experts. Gray is a founding director of the Global Ranavirus Consortium. He co-edited the first book on ranaviruses, *Ranaviruses: Lethal Pathogens of Ectothermic Vertebrates*, which was recently published as an open access eBook by Springer. This book represents the collective effort of 26 professionals from around the globe, including Dr. Miller. She is first author on the chapter about ranavirus pathology and disease diagnostics.

The UTIA Center for Wildlife Health is part of the UT Department of Forestry, Wildlife and Fisheries. The UT Institute of Agriculture provides instruction, research and public service through the UT College of Agricultural Sciences and Natural Resources, the UT College of Veterinary Medicine and UT Extension offices in every county in the state.

Provided by University of Tennessee at Knoxville

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