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Downtown Grill and Brewery

Smoky Mountain Brewery

Keynote Address

Professor Rick Speare has done applied research for 35 years on control of communicable diseases in humans and other animals. In 1989, Rick discovered the Bohle Iridiovirus, the first amphibian ranavirus found in Australia. In 1998, he was part of the team that proposed that amphibian declines in tropical Australia and in Central America were due to a strange novel pathogen, the amphibian chytrid fungus. Rick continues doing research on amphibian diseases along with projects on tuberculosis, soil transmitted helminths, head lice, veterinary infection control, and flying foxes. He is actively involved in research capacity strengthening in the Pacific, particularly Solomon Islands and Papua New Guinea.



Opposite leaf: Mass die-off of L. sylvaticus tadpoles near Brunswick, Maine, USA, July 2013 (photo by: Nathaniel Wheelwright).

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The Global Ranavirus Consortium and Symposium organizers welcome you to the Second International Symposium on Ranaviruses!

After the success of the first symposium in 2011, organizers began planning for the **Second International Symposium on Ranaviruses**. This event features more than 25 presentations delivered by researchers, veterinarians, postdoctoral research associates and students from Asia, Australia, North America, South America and Europe, totaling 11 countries. Each day will end with breakout sessions, where participants have the opportunity to discuss relevant issues or topics raised during the preceding sessions. The goal of these sessions is to identify urgent research directions, reoccurring issues with ranavirus research and diagnostic cases, and immediate outreach education needs. In addition, a poster session will be held during the social on Saturday evening; there will be more than 35 poster presentations from 10 countries. Light hors d'oeuvres and refreshments will be provided.

Ranaviruses: An emerging threat to ectothermic vertebrates

The scientific community is increasingly aware that emerging infectious diseases pose a significant threat to global biodiversity. A group of viruses in the genus *Ranavirus* (Family Iridoviridae) cause disease in amphibians, reptiles, and fish, and appear to be an emerging threat in some populations. Widespread die-offs have sparked a diversity of research programs addressing the ecology and evolution of ranavirus-host interactions, potential reservoirs and transmission dynamics, molecular techniques for identifying and characterizing ranaviruses, immunological and histopathological responses to infection, hypothesized causes for emergence, and potential conservation strategies to thwart outbreaks. The goal of this symposium is to share current knowledge, forge new collaborations, and provide direction on future research and outreach education needs. We thank you for participating!



- 1:45 p.m. **Transmission of ranavirus between ectothermic vertebrate hosts**
Roberto Brenes (University of Tennessee)
- 2 p.m. **Stress effects on susceptibility and transmission of ranavirus infection in amphibians**
Robin Warne (Southern Illinois University)
- 2:15 p.m. **Temperature affects anuran susceptibility to ranavirus**
Mabre Brand (University of Tennessee)
- 2:30 p.m. Coffee Break
- 2:45 p.m. **DISCUSSIONS ON SYMPOSIUM OVERVIEW TOPICS**
- Diagnosis, Treatment and Management – Led by Allan Pessier – Location: Parlor 2**
- Ecology and Epidemiology – Led by Matthew Gray – Location: Medallion Room**
- 3:45 p.m. **SUMMARY FROM THE DISCUSSIONS ON THE OVERVIEW TOPICS**
Led by – Trent Garner, Debra Miller, Jacques Robert, Allan Pessier, and Matthew Gray
- 4:45 p.m. **Synthesis of Meeting and the Role of the GRC**
Matthew Gray
Director of the Global Ranavirus Consortium (University of Tennessee)

Field Trips – July 29, 2013 (7 a.m. – 4 p.m.)

Using dogs for ranavirus surveillance and box turtle health assessments

Leader: Matthew Allender, DVM, MS, PhD, Dipl. ACZM; University of Illinois

Ranavirus Surveillance in the Great Smoky Mountains National Park

Leader: Matthew Gray, PhD; University of Tennessee

Note: Vans will depart outside of Holiday Inn lobby at 7 a.m. Reservations required (see registration desk).

Resources from the Symposium can be downloaded at:
<http://fwf.ag.utk.edu/mgray/ranavirus/ranavirus.htm>
or <http://ranavirus.com/>

Ranaviruses:

an Emerging Threat to Ectothermic Vertebrates



Artwork by: Dr. Jeanne Jones, Mississippi State University

**July 27–29, 2013
Knoxville, Tenn., USA**

THE UNIVERSITY of TENNESSEE 
INSTITUTE of AGRICULTURE

International Conference of the Wildlife Disease Association

Second International Symposium on Ranaviruses Holiday Inn – World's Fair Park Knoxville, Tenn., USA

Program of Events – July 27, 2013

Unless noted otherwise, all presentations will be in the Medallion Room

8:15 a.m.	Welcome Matthew Gray Director of the Global Ranavirus Consortium (University of Tennessee)	11:15 a.m.	Ranavirus infection in Costa Rican amphibians Jacob Kerby (University of South Dakota)	3:45 p.m.	The three dimensional structure and morphogenesis of Singapore grouper iridovirus Jinlu Wu (National University of Singapore)	9:15 a.m.	Monitoring ranavirus-associated mortality in Dutch heathland in the aftermath of an outbreak Annemarieke Spitzen (Reptile, Amphibian & Fish Conservation Netherlands)
8:30 a.m.	EMERGING INFECTIOUS DISEASES AND AMPHIBIAN POPULATION DECLINES: HOW ARE WE GOING? Richard Speare (James Cook University)	11:30 a.m.	Characterization of amphibian ranavirus in the international wildlife trade Kristine Smith (EcoHealth Alliance)	4 p.m.	Experimental challenge study of ranavirus infection in previously infected eastern box turtles (Terrapene carolina carolina) to assess immunity Jennifer Hausmann (Maryland Zoo)	9:30 a.m.	Surveillance of ranavirus in frog farms and surrounding environments in Brazil Rolando Mazzoni (Universidade Federal de Goiás)
9:30 a.m.	Emergence and Conservation Overview CAN PATTERNS OF RANAVIRUS EMERGENCE BE USED TO ASSESS CONSERVATION THREAT? Trenton Garner (Zoological Society of London)	11:45 a.m.	Ranaviruses: An underestimated pathogen of cool water species in Northeast China XiaoLong Wang (Northeast Forestry University)	4:15 p.m.	Immune response in fathead minnow cells following infection with frog virus 3 V. Gregory Chinchar (University of Mississippi Medical Center)	9:45 a.m.	Risk analysis common midwife toad-like virus, the Netherlands Jolianne Rijks (Utrecht University)
10 a.m.	Ranavirus could potentially speed up extinction for the endangered Mississippi gopher frog (Rana sevosa) Julia Earl (University of Tennessee)	Noon	Lunch	4:45 p.m.	Signapore grouper iridovirus (SGIV) induced paraptosis-like death in host cells via the activation of MAPK signaling Qiwei Qin (Chinese Academy of Sciences)	10 a.m.	Ranavirus outbreak in captive eastern box turtle (Terrapene carolina carolina) population with mycoplasma and herpesvirus coinfection: Management and monitoring Richard Sim (Wildlife Center of Virginia)
10:15 a.m.	Repeated detection of frog virus 3 during aquaculture health surveys Thomas Waltzek (University of Florida)	1:30 p.m.	Pathology and Physiology Overview RANAVIRAL DISEASE PATHOLOGY AND PHYSIOLOGY Debra Miller (University of Tennessee)	5 p.m.	DISCUSSIONS ON SYMPOSIUM OVERVIEW TOPICS Emergence and Conservation – Led by Trent Garner – Location: Medallion Room Pathology and Physiology – Led by Debra Miller – Location: Parlor 2 Virology and Immunology – Led by Jacques Robert – Location: Parlor 4	10:15 a.m.	Coffee Break
10:30 a.m.	Coffee Break	2 p.m.	Frog virus 3 in eastern box turtles: Agents seen with coinfections James Wellehan (University of Florida)	6 p.m.	POSTER SESSION AND SOCIAL <i>Location – Tennessee Ballroom</i>	10:45 a.m.	Ecology and Epidemiology Overview ECOLOGY AND EPIDEMIOLOGY OF RANAVIRUSES: MECHANISMS CONTRIBUTING TO OUTBREAKS Matthew Gray (University of Tennessee)
10:45 a.m.	Study of highway construction mitigation leads down to an unexpected road: Concurrent die-offs of turtles, salamanders and frogs at one site in Maryland, USA Scott Farnsworth (Washington State University)	2:15 p.m.	Ranavirus associated dermatitis in lizards Anke Stöhr (Universität Hohenheim)			11:15 a.m.	Mathematical modeling of ranavirus ecology Amanda Duffus (Gordan State College)
11 a.m.	Distribution of ranaviruses in Japan Yumi Une (Azabu University)	2:30 p.m.	The wood frog, Lithobates sylvaticus, as a model to study the pathogenesis and host-pathogen interactions of frog virus 3 Maria Forzán (Canadian Cooperative Wildlife Health Centre)			11:30 a.m.	Environmental dependency of ranavirus/amphibian genotypic interactions: A coevolutionary Rubik's cube David Lesbarrères (Laurentian University)
		2:45 p.m.	Ranaviruses in snakes, lizards and chelonians Rachel Marschang (Universität Hohenheim)			11:45 a.m.	The within-pond epidemiology of an amphibian ranavirus Jesse Brunner (Washington State University)
		3 p.m.	Coffee Break			Noon	Amphibian ranavirus disease dynamics in an industrially altered landscape Danna Schock (Keyano College)
		3:15 p.m.	Virology and Immunology Overview THE HOST IMMUNE SYSTEM: A DOUBLE-EDGED SWORD CONTROLLING RANAVIRUS INFECTION BUT PROMOTING VIRAL PERSISTENCE Jacques Robert (University of Rochester Medical Center)			12:15 p.m.	Lunch

Program of Events – July 28, 2013

Unless noted otherwise, all presentations will be in the Medallion Room

8:30 a.m. Diagnosis, Treatment and Management Overview

AN OVERVIEW OF RANAVIRUS DIAGNOSTICS, TREATMENT AND MANAGEMENT

Allan Pessier (San Diego Zoo)

9 a.m. Chelonian diagnostics, pathology and therapy

Matthew Allender (University of Illinois)