

ABOUT THE INSTITUTE

Founded in 2004, the Institute for Infectious Animal Diseases (IIAD), a Department of Homeland Security Science and Technology Center of Excellence, performs research and develops products to defend the world from high-consequence infectious diseases.

- Leverages the resources of multiple major universities, private entities, national laboratories and partners at the state, federal and international levels.
- Focuses on research, education and outreach to prevent, detect, mitigate and recover from high-consequence infectious diseases.

• Champions the One Health concept with its research on the highconsequence diseases that are transmissible between animals and humans, and through its partnerships with the Centers for Disease Control and Prevention (CDC) and the U.S. Department of Agriculture (USDA).

MISSION

To promote and enhance global animal, public and ecosystem health by providing innovative, sustainable, inter-disciplinary solutions addressing complex global disease challenges.

ABOUT HIGH-CONSEQUENCE INFECTIOUS DISEASES

- At least 60 percent of all human pathogens are zoonotic, according to the CDC.
- Seventy-five percent of recently emerging infectious diseases that affect humans are of animal origin.

• The most dangerous of these animal diseases pose catastrophic risks to human health, livestock health and the agricultural economy.

- Vaccines for transboundary diseases Biological Vision: To be a leading international - Agricultural screening tools research partner in providing cutting-edge, multi-- Sample preparation/preservation tools disciplinary, basic and translational - Decision support technologies for disease control research and education. Integrated data-- Mobile applications for animal health sharing tools - Laboratory information management systems **Outcomes:** - Enhance resiliency - Increase capacity - Advanced training for diagnosticians, Training - Build sustainability epidemiologists, technicians and inspectors

DIRECTOR: Melissa Berquist, Ph.D.



Berquist serves as the Institute's director and previously served as IIAD's associate director for six years. Berquist provides scientific leadership, ensuring overall strategic continuity, facilitating communication with stakeholders, and synchronizing and coordinating the Institute's efforts related to strategic management, budget, regulatory compliance and efficiency. A graduate of Northwestern University with a bachelor of science in biomedical engineering, Berquist earned her doctorate in molecular medicine/molecular and cellular biology from the University of Maryland's School of Medicine.

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The Institute for Infectious Animal Diseases Member of the Texas A&M University System



Biological research

Vaccines for transboundary diseases:

• Applied the novel approach of reverse vaccinology to identify and develop vaccine candidates for African swine fever virus. Delivered 10 novel antigens and four novel antibodies for use in future challenge and diagnostic development studies.

Agricultural screening tools:

• Developing a diagnostic test that will distinguish animals infected with Rift Valley fever virus from vaccinated animals – which could dramatically lower cull rates and help restore export markets during recovery from outbreak scenarios.

• Validated a real-time molecular test to rapidly detect foot-and-mouth disease virus in bulk-tank milk samples.

• Developing a diagnostic kit to detect antibodies to foot-and-mouth disease that

will cost less, produce results faster and distinguish infected from vaccinated animals. • Developed a real-time, molecular assay to test oral fluids for African swine fever, classical swine fever, and foot-and-mouth disease viruses using an easy-to-collect pooled sample.

Sample preparation/preservation tools:

• Developed a technology that will allow scientists and diagnosticians to safely collect, transport and store biological specimens without the need for refrigeration or special handling.

Integrated data-sharing tools

Decision support technologies for disease control:

- Enhances information sharing between decision makers and emergency managers during an outbreak.
- Organizes vital data from multiple sources into a single, easy-to-use format.

Mobile applications for biosurveillance:

• Allows veterinarians and inspectors to enter clinical animal health data from livestock premises, feedlots and markets.

• Empowers epidemiologists and analysts to aggregate and analyze the data using visual, geospatial and temporal tools.

Laboratory information management systems:

 Supports routine lab operations, such as receiving samples, performing tests and reporting results.

 Provides biosurveillance capability through monitoring key results, analyzing data and producing reports.

Training

Short-term training programs for diagnosticians, epidemiologists, and scientists:

 Forty-seven fellows from four continents trained for up to 12 weeks at Texas A&M University in tailored short-term training programs in diagnostic detection, surveillance/epidemiology, and vaccine development.

 More than 200 participants trained on diagnostic detection and surveillance during in-country reciprocal visits.

- Texas A&M University System
- U.S. Department of Homeland Security
- U.S. Department of Agriculture
- U.S. Agency for International Development
- U.S. Department of State
- U.S. Department of Defense
- Agricultural and allied industries
- Bio-pharmaceutical companies
- The private sector
- National laboratories

International partners

- Australia
- Bangladesh
- Bulgaria
- Canada
- China
- Egypt
- Indonesia
- Kazakhstan
- Kenya
- Pakistan
- South Africa
- Tanzania

Global Organizations

- Epizone
- Food and Agriculture Organization of the United Nations (FAO)
- Pan American Health Organization (PAHO)
- World Organisation for Animal Health (OIE)



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- Afghanistan
- Italy

• U.K.

 Nigeria Tunisia

Mexico

Bahrain

Thailand

Ukraine

Uganda

Turkmenistan