

Research, Education and Training to Support State and Federal Agencies (USDA, DHS) at the Biosecurity Research Institute

Background / Description

In the late 1990s, Kansas State University made a programmatic commitment to the area of food safety and security. As a land-grant institution with a major focus on food animal husbandry, K-State made food animal health and welfare and protecting the global food system a priority. The state of Kansas made a strong investment in K-State's research priorities by funding the construction of the Biosecurity Research Institute (BRI). The Department of Homeland Security (DHS) has acknowledged K-State's leadership within this area and construction of the National Bio and Agro-defense Facility (NBAF) is ongoing. As part of DHS workforce development plans for staffing NBAF, a DHS-funded fellowship program is based at the BRI. In 2010, the U.S. Department of Agriculture relocated their expert group, the Arthropod-Borne Animal Diseases Research Unit (ABADRU) to Manhattan, Kansas. Since their facility does not have secure Biosafety Level 3 (BSL-3) capabilities but their research priorities include BSL-3 agents, such as Rift Valley fever virus (RVFV), ABADRU scientists receive training and conduct their research at the BRI. As an academic, rather than federal facility, the BRI supports a USDA-funded training program for non-U.S. citizens. These scientists are critical to establish a global network of experts, however, Federal regulations often prevent engagement at government-run facilities.

Description

The BRI located at Pat Roberts Hall is an enhanced BSL-3 and BSL-3Ag research facility. This state-of-the-art facility is comprised of an ACL/BSL-3 insectary suite (3 rooms at BSL-3E) available for arthropod transmission studies, a mosquito rearing room, 14 BSL-3/3Ag research laboratories, including 5 rooms to enable research on livestock, an ABSL-3 vivarium small animal area, a pathogen storage room (BSL-3E), as well as education, training and administrative spaces.

Research on pathogens at the BRI necessitates that personnel be highly trained and approved for such work. To address this requirement, a dedicated 10,000-square-foot educational wing provides hands-on training activities in a pathogen free integrated laboratory training suite. This allows students to gain foundational skills in a realistic work environment without the risk of biosafety concerns or biocontainment breaches. The BRI also includes world-class high-definition video capture and streaming technology allowing the training suite and research areas to broadcast live video or serve as filming studios. Trainees can view laboratory techniques and monitor disease progression in challenged animals without the need to enter high-risk research spaces.

The BRI is one of fewer than six high containment facilities in the United States that can conduct research on livestock experimentally infected with a broad range of highly pathogenic organisms. The BRI is the designated facility at Kansas State University for work on organisms classified by the U.S. Government as select agents (SA). One of the defining factors for SA designation is that these agents have the potential for weaponization. As such they are of high priority, but require highly specialized facilities and highly trained and approved personnel to ensure constant accountability, safety and security. The primary purpose of the research is to improve understanding and to develop diagnostics and vaccines that can better prepare the U.S. to detect and respond to foreign pathogens that threaten agriculture and public health. Collaborative research on RVFV with USDA scientists has involved the first livestock studies to be conducted in the U.S. since the 1980s.

Relevance

The mission of the BRI, "Leading through research and education to protect agriculture and the public from biological threats," is epitomized by its unique integration of interdisciplinary work on pathogens that infect livestock, people, and plants or contaminate food. Given its close proximity to NBAF, capabilities and staff, the BRI has established itself as a well-respected and much needed resource to provide the essential training and research capabilities needed by State and Federal agencies to develop the next generation of highly qualified researchers.

With interdisciplinary biosecurity research programs, agrosecurity initiatives and the development of collaborative research with USDA and DHS, the BRI is the platform for transitioning work currently conducted at the Plum Island Animal Diseases Center (PIADC) to the National Bio and Agro-Defense Facility (NBAF) which is being constructed adjacent to the BRI.

Agency Contact Information

USDA Agriculture and Food Research Initiative
Dr. Robbin Shoemaker
202-720-5468, rshoemaker@nifa.usda.gov