United States Department of Agriculture
Agricultural Research Service

PROTECTING ANIMAL HEALTH THROUGH DISEASE DETECTION, PREVENTION, AND CONTROL

The ARS animal health research program protects and ensures the safety of the nation's agriculture and food supply through improved disease detection, prevention, and control. These research-based programs discover and develop diagnostics, vaccines, biotherapeutics, disease management systems, and farm biosecurity measures to control animal diseases. The following accomplishments highlight ARS advances in animal health research in FY 2019.

African swine fever candidate vaccines transferred to industry. In 2019, ARS scientists in Orient Point, New York, developed the first-ever African swine fever candidate vaccines and transferred them to five pharmaceutical companies. African swine fever infects domestic pigs, causes fever and hemorrhages, is often fatal, and threatens the U.S. swine industry. The virus originated in sub-Saharan Africa, spread across Europe and Asia and, in 2018, reached China. Without a vaccine for African swine fever, disease control is strictly dependent on animal quarantine, biosecurity measures, and slaughter.

Study reveals pigs can transmit foot-and-mouth disease (FMD) before showing signs of sickness. ARS scientists in Orient Point, New York, discovered that pigs infected with FMD can infect other pigs just 24 hours after infection, long before showing clinical signs of FMD. This means that outbreaks can be 40 percent greater than previously thought. Failure to account for this new information could make the difference between preparing for a limited, well-controlled U.S. FMD outbreak costing $3 million over 2 months and a catastrophic nationwide epidemic costing $20 billion over 1 year.

A new United States swine pathogen database (*https://swinepathogendb.org*). Several deadly viral swine diseases have recently emerged in the United States causing hundreds of millions of dollars in economic damage. ARS scientists in Ames, Iowa, have created a database of viral genetic sequences to accelerate response efforts to these diseases. The database's suite of web-based tools will aid swine pathogen control efforts across the research community.

Creating the next generation of biodefense researchers. In 2019, ARS established agreements with Auburn University, University of Connecticut, and University of Minnesota as part of a new NBAF workforce development program. This program will provide a cadre of qualified scientists in immunology/vaccinology, epidemiology, and disease pathogenesis who can compete for NBAF positions when they become available. Seven trainees are currently in place.

ARS to conduct international African swine fever workshop in 2020. With the help of the ARS Office of International Engagement and Cooperation, ARS applied for and received USDA Foreign Agricultural Service funding to conduct an international African swine fever workshop with China in 2020. The workshop will identify knowledge gaps and tools to control and eradicate African swine fever. ARS scientists have entered into an agreement with collaborators at the U.S.-China Center for Animal Health at Kansas State University to implement this workshop.