



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. With support from the ARS Office of International Research Engagement and Cooperation, ARS leads and coordinates global alliances to prevent, control, and—when possible—eradicate diseases such as foot-and-mouth disease and African swine fever. The following accomplishments highlight ARS advances in animal health research in FY 2020.

Development of a safe and effective African swine fever virus vaccine. African swine fever (ASF) is a devastating and highly lethal disease of pigs for which there are no commercial vaccines. The most recent vaccine candidate, ASFV-G-delta I177L, exceeded the performance of other ASF vaccine candidates. A low dose of the vaccine fully protected pigs against ASF and had no adverse effects. A patent has been issued covering the development ASFV-G-delta I177L, and ARS scientists have established an agreement to initiate the commercial development of the vaccine.



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Predicting susceptibility of different species to infection with SARS-CoV-2. Several groups report that SARS-CoV-2, the virus that causes COVID-19, primarily enters cells by attaching to the ACE2 receptor. ARS researchers in Ames, Iowa, evaluated cross-species ACE2 genetic diversity to determine different animal species’ susceptibility to SARS-CoV-2. The analysis predicted the limited potential of livestock transmission of SARS-CoV-2 and showed that genetic changes in the ACE2 receptors in domestic animals, including dogs, pigs, cattle, and goats, may have limited SARS-CoV-2 infections in these animals.

Duration of foot-and-mouth disease contagion in infected live pigs and carcasses. ARS scientists in Orient Point, New York, found that pigs infected with foot-and-mouth disease virus (FMDV) are infectious for at least 9 days—considerably longer than suggested by previous research conducted with cattle. Their research further emphasized that infected carcasses can be a potential source of FMDV contamination and must be handled properly to prevent transmission. This information can be used to update models used for foot-and-mouth disease outbreak simulations involving areas of substantial pig production.

Validation of an international standard for testing bovine tuberculosis. ARS scientists in Ames, Iowa, worked internationally with other bovine tuberculosis research labs and the World Organization for Animal Health to evaluate and validate a new international standard tuberculin for skin testing cattle for bovine tuberculosis. This new standard enables uniform testing worldwide and will benefit regulatory agencies, veterinarians, and livestock producers involved with maintaining the tuberculosis-free status of the United States.