

Researchers unveil nation's first porcine virus rapid detection test

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Mere months after porcine epidemic diarrhea virus (PEDV) was first confirmed in the United States swine population, University of Minnesota researchers have developed a PEDV rapid diagnostic test. The first-of-its-kind test, which is available now, provides a way to quickly and cost-effectively identify the presence of US PEDV strains. Credit: University of Minnesota 2013

Mere months after porcine epidemic diarrhea virus (PEDV) was first confirmed in the United States swine population, University of Minnesota researchers have developed a PEDV rapid diagnostic test.

The first-of-its-kind test, which is available now, provides a way to quickly and cost-effectively identify the presence of U.S. PEDV strains.

Characterized by [acute diarrhea](#) and vomiting, a PEDV outbreak wipes out an average of 50 percent of young swine at newly affected farms. PEDV poses no risk to other animal or human health and no risk to food safety. Should PEDV become widespread, however, the pork industry could suffer significant losses. The virus has been confirmed in sixteen U.S. states so far. There is no known vaccine or treatment for the virus at this time.

Thanks to the new test, samples from animals suspected of carrying PEDV can be submitted to the University of Minnesota Veterinary Diagnostic Laboratory (VDL) for testing. Test results are known within 24 hours, allowing for swine producers and farmers to take necessary precautions to prevent further spread. Genetic material is also extracted from the samples, which can be tested and tracked to monitor PEDV spread.

Samples including swine fecal swabs, saliva, serum, feed, and fecal, intestinal and [lung tissues](#) can be tested via a multiplex assay which identifies the presence of not just PEDV, but also transmissible gastroenteritis (TEG) – a virus that has existed among U.S. swine populations for some time. Pairing the tests improves affordability to agriculture by bringing the cost of the test to less than \$50.

"The University of Minnesota has been preparing for the arrival of an infectious disease like PEDV by making strategic investments over past 10-20 years," said James Collins, D.V.M., Ph.D., director of the VDL, professor in the College of Veterinary Medicine, and expert in food animal diagnostic medicine and infectious disease. "Agriculture is such an important part of what we do in Minnesota and thanks to preparation and the help of our partners, we were able to mobilize available resources and technology quickly to turn around a new test in just a few months. In our mind, the point where research can move this quickly is the pinnacle of where we need to be."

In addition to development of the test, the U of M team has completed sequencing the DNA of one strain of U.S. PEDV. The sequence has been deposited into the GenBank database in the National Center for Biotechnology Information to help amplify the research potential of new PEDV genome understanding.

Development of a cost-effective bioassay to

determine whether PEDV is being spread via non-genetic materials including feedstuffs is ongoing at the University. Investigations aim to both identify the presence of PEDV and determine whether it is alive and active, thus posing a risk. The U of M, in collaboration with the United States Department of Agriculture and National Pork Producers Association, also continues to investigate how PEDV first entered the U.S. and further ways to best limit it's spread.

"This is an important new disease that's entered the U.S. and we have to try to mitigate its damage. The University of Minnesota is working diligently to help address the problem," said Collins.

Provided by University of Minnesota

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