Abstract
In only 18 months, the highly contagious porcine epidemic diarrhea virus (PEDv) killed around 10% of the US commercial swine population in 2013. Unfortunately, existing testing strategies are time-consuming and require sample collection and transportation to central labs that produce a result in 2-4 days. Improvements in PEDv detection can translate to lower economic loss, less food security disruptions, reduced environmental impacts of farming, and fewer animal-to-human transmissions. Additionally, improved detection of the disease will allow for earlier implementation. Thus, there is a critical need for rapid testing of farm animals for infectious diseases, such as PEDv.

McMaster researchers have developed a rapid, simple, and reagent-less platform for on-farm detection of PEDv. The platform comprises key components including: a dual-electrode electrochemical chip (DEE-chip) and a barcode-releasing electroactive aptamer. The novel platform has a better sensitivity and specificity due to the lack of reagents required to complete the test. By using a porcine saliva sample, this non-invasive PEDv sensor is capable of pen-side operation that reduces the sample-to-result time frame down to one hour.

Applications
- Pen-side testing and detection of PEDv.
- Design versatility - can be applied to other viruses and pathogens in the future.
- Rapid and on-farm animal disease surveillance

Advantages
- Sample-to-result in 1 hour.
- Rapid detection in the control of the farmer.
- More precise and reliable identification of PEDv.
- Reagent-less electrochemical biosensor.

References