



## Better Disease Detection is Nothing to Sneeze At

By Geoff Geddes, for Swine Innovation Porc

Pig diseases are like unwanted guests: disruptive and hard to get rid of. Apart from the animal welfare implications, disease costs the industry millions in treatment, reduced performance, lower production and pig losses. Like any battle, you won't win the war until you learn all you can about your opponent, which is where serologic testing comes in.

Serologic testing consists of detecting the antibodies that animals produce to fight an infection. Antibodies are present in the blood, oral fluids or milk. The serologic test currently used by most labs - called an ELISA-based assay or test - can detect the antibodies to only a single agent at once. A method allowing them to detect antibodies to several agents in a single assay would save labs and producers time and money, and that's what research is all about.

### Straining for a solution

"Currently you must use a separate test for each virus or bacteria that causes disease," said Dr. Andre Broes, R & D Director and Technical Services Manager (swine, ruminants) with Biovet Inc.

Given the number of pathogens in circulation, that approach can be costly, time-consuming and inefficient. Instead, Dr. Broes and his colleagues sought a single

unique test that would encompass several of the important swine pathogens at once: Porcine Reproductive and Respiratory Syndrome Virus (PRRSV) type 1 and 2, Porcine Circovirus type 2 (PCV2) and Swine Influenza Virus (SIV).

Speaking a language that only scientists understand, they went in search of a solution, and while it's a work in progress, the early results are promising.

### What's your type?

"With our approach employing a new type of assay - Multiplexed Fluorescing Immuno Assay (MFIA) - we use microbeads that we have coated with antigens from either PRRSV type 1 and 2, PCV2 or SIV. Beads are then mixed with the samples to be examined (eg serum). When present in the samples, antibodies react with their corresponding antigen [toxin] at the surface of the microbeads. A special reader then allows us to determine which sample reacted with which antigen. For example, with PRRSV, we can distinguish between type 1 and type 2 of the virus. This is less important in Canada where we only have type 2, but many other countries have both types."

Though no disease is easy to deal with, swine influenza is especially challenging for researchers.

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- DR. ANDRÉ BROES

### When “going viral” is a bad thing

“The virus is evolving quickly. In our test we are using an antigen that is common to all the swine influenza strains. We can conclude that animals have been exposed to swine influenza, but we can’t determine whether it’s an H1 or H3 strain.”

In comparing their progress to date with the standard approach for disease testing, it could be seen as a classic case of “working smarter, not harder”.

“Our results are quite similar to the regular ELISA-based test in terms of sensitivity and specificity. What’s critical here is that we achieved those results with one test instead of four. If labs are able to adopt our approach, they can save time and money and pass those savings onto producers.”

Though many aspects of the pork business, like government policies and consumer tastes, are outside a producer’s

control, the threat of disease is a growing focus as an area that research can address and, if not obliterate, at least soften the blow for animals and their owners. That’s good news for industry, because whether you’re dealing with diseases or party crashers, the longer they stick around, the more damage they can do. ☺

#### Learn more...

You may find additional resources related to the project *Development of a multiplex Luminex immunoassay for serologic diagnosis and sub-typing of swine influenza virus (SIV) infections* by consulting our website:

[www.swineinnovationporc.ca/research-animal-health](http://www.swineinnovationporc.ca/research-animal-health)

Publication of this article has been made possible by Swine Innovation Porc within the Swine Cluster 2: Driving Results Through Innovation research program. Funding is provided by Agriculture and Agri-Food Canada’s AgriInnovation Program and by provincial producer organizations.