Progress on vibriosis (bovine genital campylobacteriosis) molecular diagnostics

New molecular tests are being trialled by UQ-QAAFI to directly detect vibrio in clinical samples. We need samples from herds who may have an issue and do not vaccinate to help us validate the tests.

New PCR molecular diagnostic tests were developed to identify the pathogen causing bovine genital campylobacteriosis (BGC). BGC, known as **Vibriosis**, is a venereal infectious disease carried by bulls that results in reduced breeding efficiency, including lower pregnancy rates, embryonic losses, and sporadic abortions.

BGC is of particular concern to northern cattle herds and is on the list of diseases notifiable to the World Organisation for Animal Health. The new diagnostic tests were developed in the MLA project *Improving fertility in northern cattle through bovine genetics and pathogen genomics* project One of the main reasons why BGC causes an estimated economic impact of around $13 million per annum in northern cattle herds and $21 million per annum to the Australia cattle is the inability to accurately diagnose the occurrence, or risk, of an outbreak if the pathogen which causes disease is present following vaccination or natural infection. The new PCR test is more sensitive than current testing methods and one other test has been developed to further improve diagnostic accuracy – this second test is under laboratory testing. Table 1 shows some preliminary screening of the first test and contaminating bacteria can cause a low level of non-specific positive results within the 'weak' and 'suspect' range. Definitive positive results have a score of <30.

qPCR	Clinical	Culture
Suspect (ct >35)	40	3
WEAK positive 30-35	13	1
STRONG positive (ct<30)	3	0
Negative	513	251

Table 1. Preliminary field-testing data for validating the first new test

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QAAFI is a research institute at The University of Queensland supported by the Queensland Government via the Queensland Department of Agriculture and Fisheries.

How you can help

The challenge

- Vibrio causing bacteria are really hard to culture and as such are difficult to transfer to the laboratory for testing using the standard microbiological methods.
- We aim to develop tests that could be used directly on clinical samples.
- These clinical samples (most success is obtained when screening bulls) have a soup of bacteria that are closely related to the Vibrio causing BGC
- These closely related species can interfere with the molecular assays causing false positive results at low levels of detection
- We thus require clinical samples from suspected vibrio positive bulls to continue to streamline our novel molecular detection methods
- Most of the samples obtained so far are from negative herds who likely vaccinate (Table 1)

What can you do for us

- If you do not vaccinate for vibrio (VibroVax- Zoetis) and suspect you have Vibrio in your herd, please contact Prof Tabor on the email below
- We will send you out sampling kits and courier information to collect scrapings from your vibrio suspected bulls
- The kits will include: Tricamper sampling tools (see Figure 1)
- Collect samples from bulls (Figure 20 and cut the top of the Tricamper tool into the saline filled tube (see Figure 3)
- Samples must be kept at 4ºC and sent with an ice brick (also provided) via overnight courier to St Lucia UQ campus
- Instructions on using the Tricamper sampling tool can be found at this site: bit.ly/3dVueBm

Figure 1. Tip of TricamperTM sampling tool

Figure 2. Collected sample

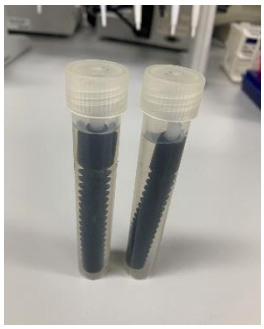

Figure 3. Tip of TricamperTM sampling tool in saline tube for transport to UQ.

Researcher Profile

Professor Ala Tabor

Ala joined QAAFI's Centre for Animal Science in October 2010, after 18 years of conducting research with the Queensland Government.

Ala has been working on bovine venereal diseases since 2003 on various projects.
Her molecular assay developed to detect *Tritrichomonas foetus* (for trichomoniasis) is still in use today and was also commercialised by Life Technologies. She has led research to develop novel vaccines for cattle tick and the Australian paralysis tick currently under commercial considerations.

Other research interests include: development of an Australian trichomonosis vaccine; identifying biomarkers for the prediction of tick resistance or susceptibility; identifying biomarkers for vibriosis immunity and the development of novel ectoparasite vaccines

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