Recently several bacteria that are commonly tested for at the ISU VDL received new names. You may have noticed a few of these on our reports lately:

**Previous**
- Clostridium difficile
- Clostridium sordellii
- Haemophilus parasuis
- Enterobacter aerogenes
- Propionibacterium acnes

**Now**
- Clostridioides difficile
- Paeniclostridium sordellii
- Glaesserella parasuis
- Klebsiella aerogenes
- Cutibacterium acnes

Did you know?
The International Committee on Systematics of Prokaryotes (ICSP) and the International Code of Nomenclature of Bacteria are responsible for the naming of prokaryotes, including both eubacteria and archaea. These are generally published in the International Journal of Systematic and Evolutional Microbiology when changes are proposed/completed.

We have updated our test names to be consistent with the new nomenclature.
Chronic Wasting Disease (CWD) is a transmissible spongiform encephalopathy of cervids that is uniformly fatal. Unlike mad cow disease, but similar to scrapie, infectious prions are excreted in all body fluids (saliva, urine, feces) and distributed throughout all tissues —yes, even meat! Clients may refer to it as “zombie deer disease” which, while inaccurate, can also be confusing when diseases like Epizootic Hemorraghic Disease (EHD), caused by an arthropod-vectored orbivirus strike. Here in Iowa, the 2019 outbreak caused mass deer mortality on a much larger and more visible (acute) scale than CWD. However, while populations can recover from sporadic incursions of EHD, CWD can become a formidable population regulator, as we are beginning to see out West.

CWD will be the issue of the decade for many natural resource agencies as more states come online with free-ranging, positives and endemic areas continue to expand across North America. In Iowa, the Department of Natural Resources (DNR) began CWD surveillance in 2002 following initial detections in Wisconsin and Illinois. Today, we screen samples from all 99 counties in the state, with increased sampling effort within Disease Management Zones (DMZs), established around free-ranging positives, and affected captive facilities. The bulk of our samples originate from voluntary submissions collected during the hunter harvest, with lesser contributions from roadkill and “target” (sick) animals. However, as the DNR transitions toward a weighted surveillance approach, to increase the bang for our literal buck, we just launched a hunter submission pathway through the ISU VDL, which will roll-out in full force for the 2020-2021 hunting season. This will provide a critical service to hunters interested in testing their harvest from an area that has exceeded our surveillance targets.

On the farmed cervid side, there are currently 81 captive herds in Iowa, all of which are enrolled in the Chronic Wasting Disease Herd Certification Program (CWD HCP) administered by the Iowa Department of Agriculture and Land Stewardship (IDALS). All animals must have 2 forms of individual identification and cervids +12 months of age must be tested for CWD upon death. Herd status is assessed per annum and herds are recognized as CWD Certified at completion of their fifth year in the program. Captive samples are tested at the National Veterinary Services Laboratory (NVSL) in Ames and should include the neuropathogenic lymph node (RPLN), obex (brainstem), and official identification with tissue surrounding the ear tag as proof of ID.

Though often stocked by captive facilities, hunting preserves are permitted by the DNR. As such, field staff facilitate CWD testing of animals that die of natural causes, submitting both the RPLN and obex, whereas only the RPLN is required for free-ranging deer. Of note, states with wild or reintroduced elk populations test both the lymph node and obex in these animals to reduce the incidence of false negatives.

As we close out the 2019-2020 sampling season, the DNR has tested upwards of 7,000 deer state-wide for CWD, with the majority of samples submitted to the VDL for screening via enzyme-linked immunosorbent assay (ELISA). This diagnostic test measures the intensity of antibody binding to the PrPres (prion) protein marker for detection of “initial reactors.” These samples are then confirmed, if the NVSL using immunohistochemistry (IHC) to visualize the presence of PrPres in the fixed tissue. In the next couple of months, the VDL will bring CWD IHC online which will become the new home for our confirmatory testing. This will both streamline and expedite the process of confirming our free-ranging positives, which can help us keep prions out of the human food chain. It is important to remember that while CWD testing is not a food safety test, it can prevent known exposures in accordance with recommendation put forth by the Centers for Disease Control and Prevention (CDC).

References:

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Dr. Michael Rahe grew up in Dyersville, Iowa where he enjoyed playing sports, raising feeder pigs, and helping his veterinarian father on calls. He received his undergraduate degree from Iowa State University and continued on at ISU to receive a DVM degree in 2013. After graduation, he moved to Minnesota where he completed a PhD in porcine immunology in 2017 at the University of Minnesota. He then returned to Iowa State in a cooperative anatomic pathology residency between the ISU VDL and the veterinary pathology department before transitioning into a clinical faculty position in May 2019.

At the VDL, Michael appreciates the opportunity to solve complex diagnostic questions and cases with the superb individuals that make up the veterinary profession. In his spare time, Michael enjoys spending time with his wife, whether it’s traveling, hiking, or working on their home. He is an ardent supporter of Iowa State football and basketball.