

Cache Valley Virus

By: Dr. Michael Zabrodski, Anatomic Pathologist, PDS

Beginning in late November of 2024, PDS began seeing an increase in sheep abortion submissions with striking musculoskeletal and nervous fetal malformations. Cache Valley Virus (CVV) was identified as the etiologic agent through a combination of postmortem and histological examination with ancillary diagnostic testing. In collaboration with the Disease Investigation Unit (DIU) of the Western College of Veterinary Medicine (WCVN), funding was quickly established to allow for comprehensive investigation and testing of malformed fetus submissions from late November 2024 to the end of January 2025. This CVV abortion program has provided a wealth of data and CVV positive case material for PDS to help establish in-house PCR testing for CVV. In addition, this material will prove invaluable in the development of PDS's ongoing genomic research projects.

CVV is a mosquito-borne virus that is considered endemic throughout North America. In Saskatchewan, antibody titer for CVV have been demonstrated across many domestic species and mule deer, with the majority of sheep flocks demonstrating CVV seropositivity. CVV is a well-recognized cause of reproductive loss in both sheep and goats. The congenital fetal malformations attributable to this virus occur when a naïve pregnant animal is infected between 28 and 48 days of gestation. Common musculoskeletal lesions include arthrogryposis of the limbs, contracted tendons, maxillary prognathism, and deviations of the spine (ex. scoliosis, kyphosis, lordosis) (**Fig. 1**). Gross neurological lesions may include cerebellar hypoplasia, hydrocephalus, porencephaly, and/or hydranencephaly (**Fig. 2**).

A diagnosis of CVV fetal loss relies upon the recognition of compatible congenital malformations, the histological presence of severe skeletal muscle hypoplasia, and the detection of CVV through either PCR testing of fresh fetoplacental tissues or virus neutralization assays to detect fetal antibodies against CVV. PCR testing is currently under development at PDS (but is available as a refer-out test at the Animal Health Laboratory in Guelph), whereas CVV virus neutralization is available through the Texas Veterinary Medical Diagnostic Laboratory at Texas A&M.

In cases of suspected CVV abortion in Saskatchewan, other etiologies that may produce similar fetal malformations include other viruses (ex. border disease virus, bovine viral diarrhea virus) as well as inherited defects or the ingestion of teratogenic plants. As such, it is of the utmost importance to ensure that abortion submissions to PDS are complete and include whole fetus(es) and placenta (whenever possible) to ensure a thorough diagnostic work-up of reproductive loss.

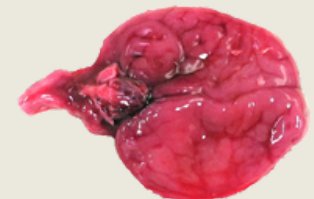
References

- Moeller Jr. RB. Disorders of Sheep and Goats. In: Kirkbride's Diagnosis of Abortion and Neonatal Loss in Animals. John Wiley & Sons, Ltd 2012:49-87.
- Uehlinger FD, Wilkins W, Godson DL, Drebot MA. Seroprevalence of Cache Valley virus and related viruses in sheep and other livestock from Saskatchewan, Canada. *Can Vet J.* 2018 Apr;59(4):413-418. PMID: 29606729; PMCID: PMC5855288.

Fig 1. Aborted sheep fetuses demonstrating multiple musculoskeletal malformations characteristic of CVV infection. Lesions include arthrogryposis, spinal deviations, and maxillary prognathism.



Fig 2. Brain from an aborted sheep fetus demonstrating cerebellar hypoplasia and bilateral hydrocephalus characteristic of CVV infection.



Feed and Forage Nutritional Testing at PDS

PDS would like to announce the addition of Feed and Forage Nutritional Analysis to our suite of analytical testing at PDS. The Near Infrared Radiation Spectroscopy (NIR) machine embodies the latest advancements in feed and forage testing, to provide precision, efficiency, and reliability of results. This analysis is designed to deliver rapid, non-destructive and comprehensive analysis insights into many critical parameters such as protein, fiber, moisture, energy content and more. Robust calibration technology, built on an extensive global animal feedstuff database, in collaboration with Rock River Laboratory, Inc., ensures consistent results across diverse feed sample types. This innovation enables farmers, feed producers, and nutritionists to make more informed decisions, optimize feed formulations, and ultimately enhance livestock productivity.

Testing will be available March 2025. The Feed and Forages Nutritional Analysis submission form will be available on the PDS website once testing is available <https://pdsinc.ca/services/forms>. This form must be used for all test requests.

For further information, email PDS at pds.info@usask.ca.

Pictured: NIR DS3 Feed. (n.d.). <https://www.fossanalytics.com/products/nirs-ds3-feed>.



Trypanosomes in Beavers

By: Lilani Munasinghe, Clinical Pathologist, PDS

Trypanosomes are protozoan parasites that can infect many vertebrates including humans by vector-born transmission. Although there are occasional reported cases of trypanosome infections in cattle, small mammals and in caribou, only a little is known about the prevalence and distribution of trypanosomes in Canada. Recently, trypanosomes were observed upon blood smear evaluation of a beaver rescued from a human-made dam after being caught for ~ 4 days and presented to the Veterinary Medical Centre of WCV. Although the clinical significance and pathogenesis of trypanosome infection in beavers is not discussed in the literature; this is an eye-opening finding for One Health professionals as well as public. Identification of the Trypanosome spp of this case is being investigated currently and a manuscript is being prepared for publication for the educational purposes and for awareness - stay tuned for additional information!



<https://www.istockphoto.com/search/2/image?family=creative&phrase=beaver>

PDS Web Client

The PDS client portal Web Client is accessible through the PDS website at pdsinc.ca. It offers a range of features designed to support our clients with submissions and accessing results. The following tabs are available on the left-hand side of the home screen:

- Results: View case reports for tests you've submitted to PDS.
- Fee Guide: Download the most up to date PDS Test and Services Guide or a customized guide featuring your frequently used tests. PDS no longer provides physical copies of the PDS Test and Services Guide.
- Test Search: Explore all tests listed in the PDS Test and Services Guide. This section is regularly updated with new tests and sample submission requirements. Pricing is provided exclusively for veterinary clinics.
- Shipping: Schedule shipments with Canada Post, Loomis Express, or Purolator directly through this tab.

The Web Client User Guide is available on the PDS website under the document titled PDS Client Portal User Guide.

For login credentials or assistance with the PDS Web Client, please contact us at dso@usask.ca.