



Fall 2025, Vol. 9, No. 4

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A newsletter about
diagnostic trends
at the laboratory,
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interesting cases and
new test offerings.

www.vdl.ndsu.edu

Feedback is always welcome.

Please feel free to send your comments
or suggestions to ndsu.vetlab@ndsu.edu.
edu and specify "newsletter" in the
subject line.

NDSU Veterinary Diagnostic Laboratory

Note from the Editor

As we head into the fall season and the leaves change, we're reminded of how dynamic and ever-evolving our laboratory community continues to be. This issue brings both farewells and fresh beginnings. We extend our heartfelt gratitude and congratulations to Sharon Wilson (serology) and Deanne Iverson (toxicology) on their well-earned retirements after decades of dedicated service. Their expertise, mentorship and steady presence have shaped our departments greatly, and they leave behind legacies we'll long remember. We also say goodbye to our long-time histotechnologist, Jessie Schultz. We are deeply grateful for Jessie's outstanding service to the lab. Her extensive knowledge consistently elevated the quality of our work and her presence will be truly missed.

Turning to new beginnings, please join us in welcoming Gwen Thomas, our new histotechnologist, who brings experience and enthusiasm to the team and has already integrated seamlessly into our lab. We're excited to have her on board and look forward to seeing the histology lab thrive with her contributions. We're also currently seeking a qualified diagnostic microbiologist to join our serology department — please share this opportunity with colleagues who may be interested. In this issue, we also provide updates on clinical laboratory standards, changes to our testing schedule and a case of West Nile virus in an alpaca. As always, we thank you for your continued support of the VDL, and we look forward to working together to advance animal health across our region.

Heather Mitchell, DVM

Calendar: Fall and Winter Closures

November 11 – Veterans Day

November 27 – Thanksgiving

December 25 – Christmas Day

January 1 – New Year's Day

January 19 – Martin Luther King Jr. Day

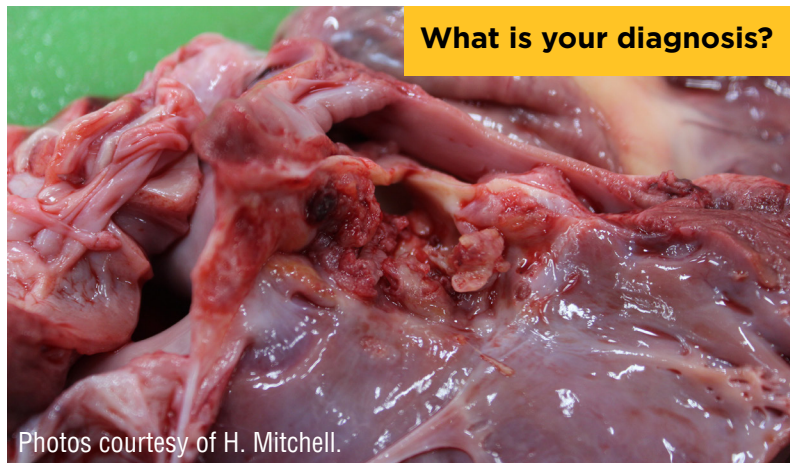
February 16 – Presidents Day



NDSU VETERINARY DIAGNOSTIC
LABORATORY
North Dakota State University

Mystery Photo

A 3-year-old male, yellow, Labrador Retriever had a history of panting, lethargy and vomiting blood one to two days prior to death. Gross necropsy lesions noted a firm, yellow, depressed, oval focus at the cranial pole of the right kidney and a granular renal pelvis. Also, the pulmonary valve leaflets were dull, tan, irregular and thickened.



Photos courtesy of H. Mitchell.



Visit the NDSU VDL website (www.vdl.ndsu.edu) to see the answers and read more about the case.

Bench Notes

EIA testing changes – Starting Oct. 1 to Feb. 28, EIA (Coggins) testing will be performed on Tuesdays and Fridays.

Johne's ELISA – Starting Oct. 1 to May 31, Johne's ELISA testing will be performed on Wednesdays and Fridays.

Swine testing – We have updated the swine PCR testing options. The following assays will be available: PRRSV Singleplex Assay and Porcine Coronavirus Multiplex Assay (PEDV, TGEV, PDCoV). Both assays are validated for serum and oral fluid samples. While tissue and fecal samples are not currently validated, they may still be tested and reported with a disclaimer. Please refer to our website for further information:

www.vdl.ndsu.edu/updates-to-swine-pcr-tests/.

Disease Update

Clinical Laboratory Standards Institute

Briena Meier, MLS(ASCP)^{CM}SM^{CM}, Diagnostic Microbiologist

Which antibiotic is most appropriate for treating this infection in my patient? To help veterinarians answer that question, the VDL's microbiology laboratory utilizes standards set by the Clinical Laboratory Standards Institute (CLSI) to provide veterinarians with reliable, species-specific antimicrobial susceptibility results. CLSI is a nonprofit organization that develops laboratory test standards based on consensus among subject matter experts from around the world. Of veterinary importance is the Veterinary Antimicrobial Susceptibility Testing (VAST) subcommittee, which is a group of veterinarians, microbiologists (including VDL laboratory scientists Sarah Gefroh, Briena Meier and Dr. Kelli Maddock) and other experts who meet on a regular basis to develop veterinary antimicrobial susceptibility testing (AST) breakpoints, quality control recommendations and antimicrobial test methods.

An antimicrobial breakpoint is the minimum inhibitory concentration (MIC) of an antibiotic that distinguishes susceptible organisms from resistant organisms. In basic terms, breakpoints are established by evaluating how much antibiotic it takes to inhibit growth or kill a particular pathogen paired with how that antibiotic acts in the host species. The pharmacokinetic principles of drug absorption, distribution, metabolism and elimination vary drastically by animal species, which is why it is important to use species-specific breakpoints whenever available to determine the most appropriate antimicrobial treatment. Due to limited data or use restrictions, some drugs are not available for reporting in all animal species, and a MIC without an accompanying interpretation (susceptible or resistant) is not useful for guiding antibiotic treatment.

While antimicrobial susceptibility results can be challenging and spark questions, the VDL's microbiologists have the expertise and willingness to help. In addition, CLSI VET09 (Understanding Susceptibility Test Data as a Component of Antimicrobial Stewardship in Veterinary Settings) and the International Society for Companion Animal Infectious Diseases (ISCAID) antimicrobial guidelines are great resources to guide veterinarians in appropriate antimicrobial selection.

Mini Case Report

West Nile Virus

Quynn Steichen, DVM, MS, Diplomate ACVP, Veterinary Anatomic Pathologist

Thus far in 2025, the North Dakota Health and Human Services has reported 70 cases of West Nile virus (WNV) in humans. At the NDSU VDL, there have been two recent cases of WNV in a crow and an alpaca; however, WNV cases from 2021 and 2023 were observed in young lambs.

West Nile virus is an arbovirus belonging to the genus *Flavivirus* and primarily maintained by the bird-mosquito-bird cycle (sylvatic transmission cycle). In this transmission cycle, wild birds are the reservoir and amplifying host while *Culex* mosquitoes are the vector. In the urban transmission cycle, the vector and reservoir hosts are the same; however, in urban settings, dead-end hosts can be infected. Crows, American robins and other wild birds are the main amplifying hosts. For WNV, the amplifying hosts develop a high level of virus in their blood, making them a significant source of transmission to *Culex* mosquitoes. In dead-end hosts, the virus cannot be transmitted to another host to complete its lifecycle. Infections within the dead-end hosts typically lead to clinical disease. Common dead-end hosts for WNV include humans, horses, New World camelids and small ruminants.

In the cases presented to the NDSU VDL, all animals had a clinical history of either behavioral changes or neurologic signs. This is typical of WNV cases as most animals present with weakness, recumbency, ataxia, anorexia, tremors or circling. Typically, in dead-end hosts, only one animal from the herd is affected.

On histopathology, all cases had significant lesions observed in the brain, and one case had lesions in the brain and spinal cord. In the alpaca, the meninges, brainstem and primarily the gray matter of the spinal cord had perivascular cuffing with moderate numbers of lymphocytes and macrophages with fewer plasma cells (Figure 1). Multifocally, areas of hemorrhage and gliosis were noted in the gray matter of the spinal cord (Figure 2).

All mammal cases of WNV at the VDL went through extensive diagnostic work-ups to rule out other viral and bacterial etiologies. One important differential for any neurologic animal includes the rabies virus, especially in animals with no previous vaccination history. All mammal cases were negative for rabies.

There is no specific treatment for WNV, and supportive care is often necessary in severe cases. Vaccination for WNV is common in horses, but there is no vaccine for other dead-end hosts. Current research has extrapolated extra-label use of vaccines in small ruminants and New World camelids; however, this should be a discussion between the owner and their primary veterinarian. There is no vaccine for humans, and extra-label use is not recommended.

Figure 1. Spinal cord. Affecting primarily the gray matter (butterfly-like area), there is lymphohistiocytic perivascular cuffing (arrow). Photo by Q. Steichen.

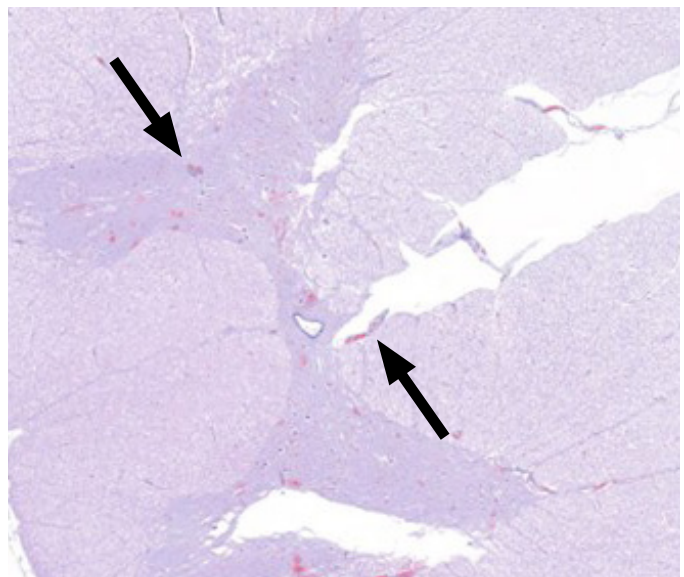
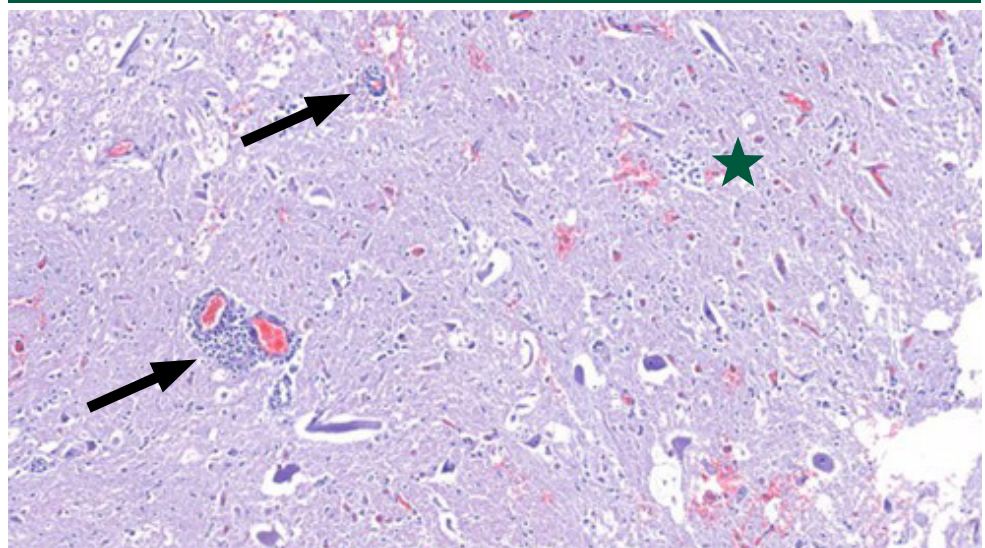


Figure 2. Spinal cord. Higher magnification of the lymphohistiocytic perivascular cuffing (arrows) along with areas of hemorrhage and gliosis (star). Photo by Q. Steichen.



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Employment Opportunity

The Veterinary Diagnostic Laboratory at North Dakota State University is seeking a full-time diagnostic microbiologist. The primary responsibility of the position is to perform serologic and direct and indirect fluorescent antibody assays. Additional backup duties in the microbiology and molecular diagnostic sections, including bacterial and fungal cultures, microscopic evaluation of urine and feces, and PCR assays, are also expected. Additional information and application can be found at:

https://prd.hcm.ndsu.edu/psc/recruit/EMPLOYEE/HRMS/c/HRS_HRAM_FL.HRS.CG_SEARCH_FL.GBL?Page=HRS_APP_JBPST_FL&Action=U&FOCUS=Applicant&SiteId=1&JobOpeningId=2957953&PostingSeq=1



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For more information on this and other topics, see www.vdl.ndsu.edu

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