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A newsletter about diagnostic trends at the laboratory, animal health topics, 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 and specify "newsletter" in the subject line.

NDSU Veterinary Diagnostic Laboratory

Note from the Editor

Happy New Year! The lab is ready to embrace the opportunities of 2026. With the start of a new year comes a significant leadership transition for our team. On Dec. 31, we bid farewell to our lab director and pathologist, Dr. Heidi Pecoraro. For more than seven years, Dr. Pecoraro provided excellent leadership, guiding the lab through numerous animal disease outbreaks (HPAI) and advocating for our clients and livestock producers. Her dedication helped strengthen our diagnostic capabilities and fostered strong relationships within the veterinary community. We are deeply grateful for the guidance, friendship and enthusiasm she brought to the lab, leaving behind a legacy of excellence and collaboration that will continue to inspire us moving forward.

The interim director, Dr. Kelli Maddock, will bring a wealth of laboratory expertise and leadership skills to this transitional role. Having served with the Veterinary Diagnostic Laboratory (VDL) for more than a decade, Dr. Maddock has institutional knowledge and a strong commitment to operational excellence, ensuring continuity and stability during this period of change. In addition to her interim director responsibilities, Dr. Maddock will maintain oversight of the Microbiology section and the Biosafety Level 3 (BSL-3) laboratory.

In 2025, the VDL experienced a busy year with diagnostic testing and service delivery. A summary of our caseload is provided in the table below. Our mission remains steadfast: to provide reliable testing and diagnostic support services to veterinarians, animal owners, producers and the public health sector. We achieve this through continuous improvement in our protocols and investing in the professional growth of our staff. These efforts ensure that we not only meet current diagnostic needs but also anticipate emerging challenges in animal health.

In this issue, you will find a case report on IBR abortion, a disease update on bovine respiratory disease and updates on our tests offered and testing schedules. 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

2025 YEAR IN REVIEW

Cases	Over 10,000
Rabies DFA	Over 380
Biopsies	Over 2,000
EIA	Over 5,000
Johnes ELISA	Over 6,600
Johnes PCR	Over 23,000

Calendar: Winter Closures

February 16 – Presidents Day

April 3 – Holiday
(Good Friday)

May 25 – Memorial Day

Mystery Photo

A 6-month-old, male, 1 kg, black, domestic shorthair cat, is examined. The cat had a four-week history of progressive ataxia of the hindlimbs progressing to recumbency and a history of anterior uveitis.



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 (Coggins) testing schedule – The testing schedule for EIA (Coggins) testing will be Tuesday and Friday through Feb. 28, then Monday through Friday starting March 1 through May 31.

Bovine Leukosis Virus (BLV) PCR testing – BLV pooled PCR testing will no longer be available as of Jan. 1, 2026.

Screw-top containers for Johne's PCR testing – Starting July 1, 2026, we will require fecal samples/specimens submitted for Johne's PCR testing to be sent in rigid plastic, leak-proof, sterile, screw cap containers. After July 1, 2026, additional processing charges will be applied to improper submissions. Please check our resource section on our website for additional information: <http://vdl.ndsu.edu/johnes-containers/>.

Swine testing – Molecular diagnostics 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: <https://www.vdl.ndsu.edu/updates-to-swine-pcr-tests/>.

Feline triple SNAP test – The feline triple SNAP test for FeLV, FIV and feline heartworm will no longer be offered.

Disease Update

Bovine Respiratory Disease

Quynn Steichen, DVM, MS, DACVP, and Heather Mitchell, DVM

Bovine respiratory disease (BRD) has a multifactorial etiology involving environmental factors, host factors, viral and bacterial pathogens. In North Dakota, the fall and early winter seasons are when we see an increase in respiratory cases, especially in weaned calves. Environmental factors, such as weaning, transport, commingling, weather fluctuations and crowding, act as stressors that alter host defense mechanisms, thereby enhancing transmission of infectious pathogens. With the host defense mechanisms stressed, infectious pathogens like viruses (bovine herpesvirus 1, parainfluenza-3, bovine viral diarrhea virus, bovine respiratory syncytial virus) and bacteria can result in further immune system dysfunction, leaving the lower respiratory tract vulnerable to colonization of commensal respiratory tract bacteria. Often, veterinarians and cattle producers will see the effects of the bacterial colonization, resulting in sick or even dead calves.

Histophilus somni, *Pasteurella multocida*, *Mannheimia haemolytica* and *Bibersteinia trehalosi* are common bacterial pathogens isolated during respiratory/pneumonia season. Besides bronchopneumonia, *H. somni* can also cause pleuritis or pericarditis (Figure 1), polyarthritis and infectious thrombotic meningoencephalitis. Gross lesions of these bacteria are typically indistinguishable from each other and include a cranoventral lobar (Figure 2) or lobular fibrinous bronchopneumonia with foci of coagulative necrosis and variable fibrinous pleuritis. If there are sharply demarcated, irregularly shaped, pale, dry foci of necrosis, this can be observed more in *M. haemolytica* and *H. somni* cases.

Bovine respiratory disease is the most common and costly disease affecting the North American beef cattle industry, and understanding its underlying causes is essential for effective control. Necropsy with diagnostic testing, including viral PCR, aerobic and mycoplasma culture, can help identify respiratory pathogens to aid in treatment and management of the herd.



Figure 1. A weaned calf with fibrinous pleuritis, pericarditis, bronchopneumonia and edema.
Photo by H. Mitchell.



Figure 2. A weaned calf with cranioventral bronchopneumonia. Photo by H. Mitchell.

Mini Case Report

IBR Abortion in a Holstein

Quynn Steichen, DVM, MS, DACVP

The beginning of the year signifies a rise in case submissions, particularly aborted fetuses. In this case, an 8-month-old, aborted female Holstein fetus was submitted to the VDL for diagnostic work-up.

On necropsy, the liver was enlarged and friable. Within the lungs, the interlobular septa were expanded by fluid. On histopathology, there were multiple random foci of hepatic necrosis that disrupted the hepatic parenchyma. The necrosis was characterized by globular hypereosinophilic cell fragments and karyorrhectic debris admixed with macrophages. Along the periphery of the necrotic foci, hepatocytes often had rare, eosinophilic intranuclear inclusions that peripheralize the chromatin.

Based on the histopathologic lesions and ancillary diagnostics, bovine herpesvirus 1 (infectious bovine rhinotracheitis [IBR]) was confirmed. Bovine herpesvirus 1 is an *alpha-herpesviridae* subfamily member with clinical manifestations in the respiratory tract and male and female reproductive tracts.

Abortions occur when dams are initially exposed to the virus while pregnant, when the virus reactivates from latency, or when there is vaccination using a modified live virus on a naive dam.

Bovine herpesvirus 1 abortions typically do not cause consistent gross lesions. Placental edema, indistinct, pinpoint gray foci in the liver and lung, and perivasculär renal hemorrhage are rarely reported. Fetuses typically have an advanced state of autolysis due to expulsion occurring three to four days after fetal death. Fetuses

are typically aborted in the late second to third trimester, but abortions can occur during any stage of gestation. A presumptive diagnosis can be made on histopathology by observing multifocal, random necrotizing hepatitis along with intranuclear inclusion bodies. Intranuclear inclusion bodies are often observed in the adrenal gland but can also be observed in other organs.

Whether submitting a fetus for a full necropsy or fresh and fixed tissues, specific tissues are needed for an abortion work-up. Figure 3 lists the ideal samples for submission to the VDL. The most common sample not submitted is fetal membranes (e.g., placenta). Fetal membranes are crucial for submission, as they represent the interface between the dam and fetus. Most times, these are not submitted due to the logistics of finding the fetal membranes after the abortion, either still out in pasture or consumed.

Figure 3. Fresh and fixed samples to submit to the NDSU-VDL for an abortion work-up.

Samples to Submit (fresh and fixed)

- Heart
- Liver
- Lung
- Kidney
- Spleen
- Abomasal fluid
- Thyroid
- Adrenal glands
- Fetal eyeball/vitreous humor
- Any additional gross lesions
- Lymph node
- Brain (completely fresh)
- Skeletal muscle/tongue/diaphragm
- Eyelid/conjunctiva
- Placenta (2-3 cotyledons)
- Thymus
- Thoracic fluid
- Small and large intestines

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Employment Opportunity

The Veterinary Diagnostic Laboratory at North Dakota State University invites applications for a nontenure-track toxicologist in veterinary toxicology. Primary responsibilities are diagnostic service, consultation with laboratory clientele and supervision as section head of toxicology. Depending on the interest of the toxicologist, there are opportunities for teaching, interaction with NDSU faculty and other scientists, and collaborative research. Minimum qualifications include a DVM degree or Ph.D. in a related field, postgraduate training or experience in toxicology and effective interpersonal, oral and written communication skills.

View the position listing here: https://prd.hcm.ndus.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=2958277&PostingSeq=1.



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

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