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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

We welcome comments, questions and suggestions. Please email us at vetlab.ndsu@ndsu.edu or call the laboratory at (701) 231-8307.

NDSU Veterinary Diagnostic Laboratory

Director's Corner

2019 certainly has been a challenging year, with periods of drought followed by excessive moisture in much of the region. This has affected haying and the availability of traditional forages significantly, placing many producers in a tough situation.

These conditions usually result in an increased number of losses due to nutritional issues caused by poor-quality forage and the substitution and increased use of alternate feed stuffs, such as coproducts and biproducts, causing ration imbalance. As maternal malnutrition during mid to late gestation often presents as reduced viability and disease resistance in calves, practitioners should work with and encourage their producers to evaluate their winter feeding plans critically.

Laboratory staff have been busy with the delayed fall herd health work and the continued implementation of the laboratory's new information system. Last month, VDL staff traveled to the annual meeting of the American Association of Veterinary Laboratory Diagnosticians, where the national response to the potential introduction of African swine fever to the U.S. was among key topics.

At a Nov. 8 ceremony, the VDL facility was named in honor of former North Dakota Sen. Bill Bowman. Sen. Bowman was an ardent supporter of agriculture and agricultural research during his long tenure in the state Senate. Bowman also received the agribusiness award at this year's NDSU Harvest Bowl.

I hope everyone has a wonderful winter and holiday season.

Sincerely,

Brett T. Webb, DVM, PhD, DACVP
VDL Director

Calendar: Fall and Winter Closures

November 28 — Thanksgiving

January 20 — Martin Luther King Jr. Day

December 25 — Christmas

February 17 — Presidents Day

January 1 — New Year's Day

NDSU VETERINARY DIAGNOSTIC
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Shipping Reminder

The NDSU Veterinary Diagnostic Laboratory has partnered with UPS to provide affordable shipping options for our clients. Visit <https://row.ups.com/Ship/Ship/StandardShipGuest> to access our UPS portal and obtain discounted sample shipment.

Ground shipping is offered at the rate of \$7. Next-day air is offered at \$15. Your account will be billed monthly. Any shipments in excess of the weight limits will incur an additional charge.

If you have used our UPS shipping program in the past, your clinic information will populate when you enter your phone number; otherwise, fill in the required fields. If you have any questions, please feel free to contact us.

Bench Notes

Did you know? As an American Association of Veterinary Laboratory Diagnosticians (AAVLD) accredited laboratory, the NDSU VDL has a stringent quality management system. This requires quarterly to yearly proficiency testing on various assays performed in our sections. All staff and faculty are tested routinely on protocols and skills necessary to provide the most reliable testing and diagnostic support services to our clients. For more information on AAVLD accreditation, please visit www.aavld.org/accreditation-program.

Equine infectious anemia (EIA) serologic testing is performed on Tuesdays and Fridays from October through February. Samples should be received before 5 p.m. on Mondays and Thursdays for testing the following day. Daily (Monday through Friday) testing will resume next March.

Where's the lesion? Freeze artifact can hamper evaluation of tissues severely and can obscure important tumor features. During cold winter months with subfreezing temperatures, the addition of alcohol (isopropyl, methanol or ethanol) at a mixture of one part alcohol to nine parts formalin will help prevent freeze artifact in tissue submissions.

The Resources webpage on the VDL website includes links to sampling and submission instructions for select tests. The website even has a new, illustrated **Rabies Submission Guide** that can be downloaded or printed for your reference (Figure 1). Check it out by clicking the "Resources" link at the bottom of our home page or go directly to www.vdl.ndsu.edu/resources.

An **after-hours depository** is open 24 hours; however, it is checked only in the mornings when the VDL is open. To ensure samples are processed in a timely manner, samples should be submitted to the receiving office during regular business hours (8 a.m.-5 p.m. Monday through Friday, excluding holidays). Also, limited weekend and holiday services are available at the discretion of the on-duty pathologist.

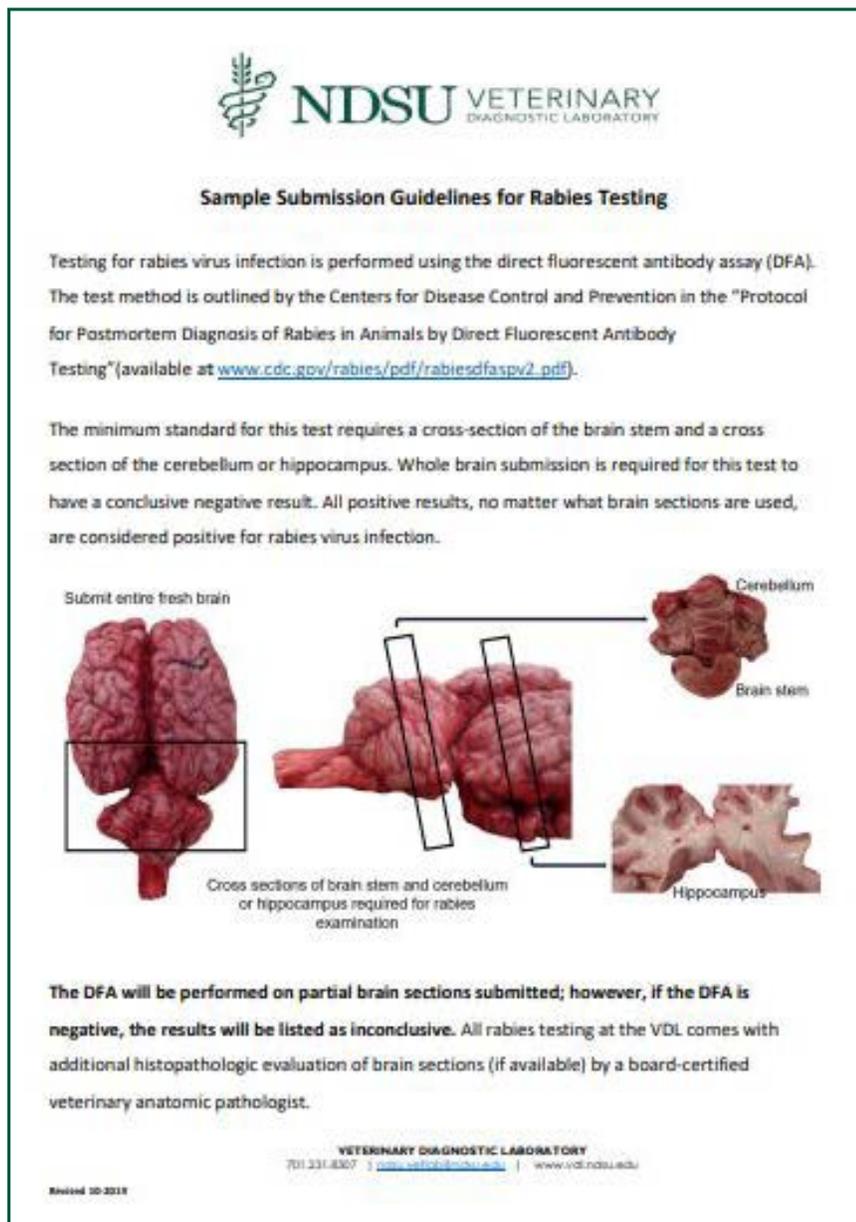


Figure 1: VDL rabies submission guide.

Disease Updates

The **rabies virus** is in North Dakota and Minnesota. Since the beginning of the year, five positive cases from two bats, one skunk, one horse and one cow have been determined.

The virus can overwinter in infected bats. Because rabies is considered 100% fatal in humans, any bat that has had contact with a human should be euthanized by a veterinarian and tested for the virus. Live bats also can be submitted to the VDL. Download the Rabies Submission Guide (www.vdl.ndsu.edu/wp-content/uploads/2019/10/Rabies-Guide.pdf) for more information.

As fall settles in and livestock are moved off pasture, the number of **ruminant pneumonia** cases often rises. This is due in part to a higher density of animals in enclosed spaces such as a barn or pen. Stressors (weather, weaning, pregnancy) also increase susceptibility to disease.

To the right are the viral and bacterial pneumonia trends noted during the last year (November 2018 to October 2019) for cattle (Figures 2a and 2b) and small ruminants (Figure 2c). In many cases, more than one virus and/or bacterium was identified.

The VDL is evaluating susceptibility trends for *Mannheimia hemolytica* and *Pasteurella multocida*. Susceptibility testing is not performed for *Trueperella pyogenes*, *Bibersteinia trehalosi* and *Histophilus somni* due to the incongruent results between *in vivo* and *in vitro* isolates. Stay tuned for susceptibility updates in future newsletters.

Figure 2a: Percentage of bovine viral pneumonia by virus (n=91)

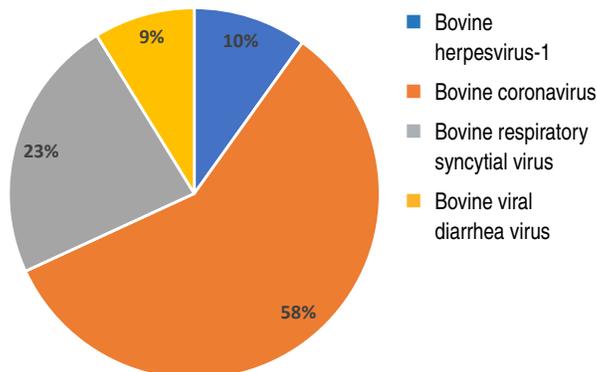


Figure 2b: Percentage of bovine bacterial pneumonia by bacterium (n=287)

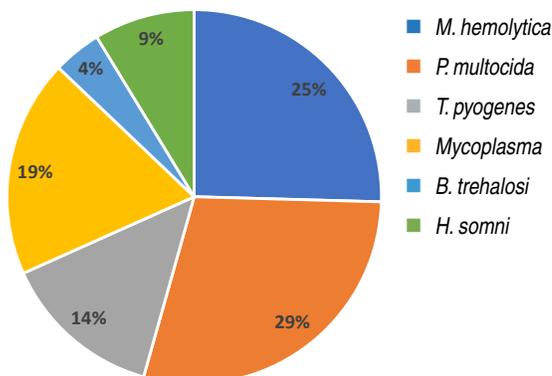
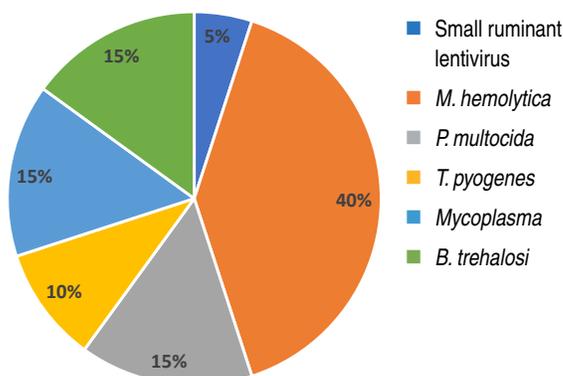


Figure 2c: Percentage of small ruminant (goats and sheep) pneumonia by virus and bacterium (n=60)



MINI CASE REPORTS

Splenomegaly and Hepatomegaly in Backyard Chickens

Two chickens of unknown breed – one adult and one juvenile – were submitted for autopsy. The farm that housed the chickens has a history of sudden death in adult chickens and lethargy, weakness and diarrhea in the younger ones.

Grossly, the main findings were an enlarged spleen in the younger hen and splenomegaly and hepatomegaly in the older chicken. Sciatic nerves appeared normal for both animals. Avian influenza virus swabs were negative, as were bacterial cultures of the livers. Interestingly, *Eimeria* spp. were noted on fecal float for the older chicken but not for the younger hen with clinical diarrhea.

Microscopically, the older bird had widespread lymphocytic infiltration and effacement in many organs, including in the liver, spleen and lung, consistent with lymphoma (Figures 3a-c). Lymphocyte proliferation also was present in the younger chicken, but it mostly was limited to the spleen, with smaller infiltrates in the tracheal submucosa, esophageal submucosal glands, blood vessel walls in the liver, peripheral nerve, ventriculus, and the lamina propria of the small and large intestines.

Lymphoma is associated with two main viruses in chickens: gallid alphaherpesvirus-2 (Marek's disease) and the retrovirus avian leukosis virus. Marek's disease can be seen in chickens of any age group, while avian leukosis typically is seen in chickens more than 14 weeks of age. Given that the younger and older chickens were affected in this case, Marek's disease was the favored diagnoses. Immunohistochemical staining for T cells was positive (Figure 3d), confirming the diagnosis.

See back page for Figure 3.

NDSU Veterinary Diagnostic Laboratory

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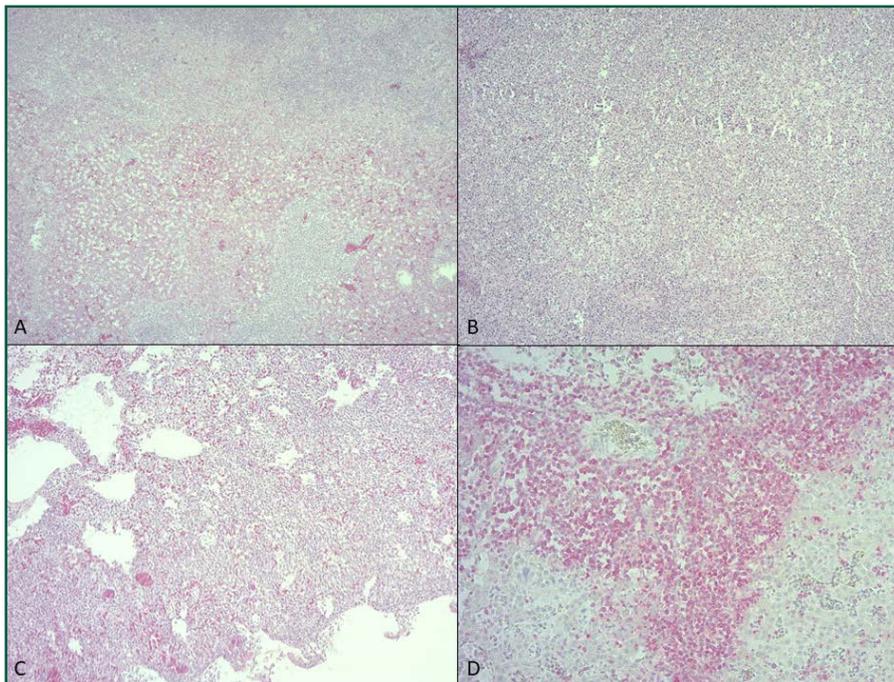


Figure 3: Marek's disease in an adult chicken. Neoplastic lymphocytes infiltrate the liver (A), spleen (B) and lung (C) and are positive (red cells) for CD3 immunohistochemical stain, a T cell marker (D).



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For more information on this and other
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