



Spring 2022, Vol. 6, No. 2

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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

Director's Corner

"Perhaps that is where our choice lies—in determining how we will meet the inevitable end of things, and how we will greet each new beginning."

~ Elana K. Arnold (Children and Teen Author)

Spring is a time of new beginnings, not just for nature with ice thawing, plants sprouting and an abundance of baby animals, but also for us humans as the days last longer, students prepare to graduate, summertime plans begin to blossom and baseball season is right around the corner.

Thus, it is with a heavy but grateful heart that I share with you several new beginnings for four VDL staff and faculty.

There are two upcoming retirements. Sandy Erickson retires on April 29, while Mary Finseth's last day is May 6. Sandy came to the VDL 36 years ago and has had dual appointments in Microbiology and the VDL. As our accountant and HR specialist, Sandy has been integral to keeping the lights on and the VDL staffed. Many of you have worked with Mary over the decades. Not only has she been the face and voice of the front office since 1978, but Mary also worked with the North Dakota Veterinary Medical Association (NDVMA) for many years as its executive secretary. Sandy and Mary will be sorely missed.

In addition to staff retirements, two faculty members will also be leaving this spring. Dr. Broughton is returning to Washington State University College of Veterinary Medicine as a Clinical Professor, and Dr. Webb has accepted a tenured professorship with the University of Wyoming. As pathologists, Drs. Broughton and Webb have served regional producers, veterinarians and pet owners with their expert diagnostic skills.

We at the VDL are sad to see our colleagues and friends move on, but we wish them all the very best and are thankful for all they brought to the VDL during their time with us.

As for the VDL, the next few months will be challenging with the change of faculty and reorganization of some of our services. Searches have begun to hire two new veterinary anatomic pathologists. Plans are underway to continue biopsy and necropsy services until the new pathologists arrive. Be sure to check out the website for the most up-to-date information.

Enjoy the coming spring!

Sincerely,

Heidi Pecoraro, DVM, Ph.D., Diplomate, ACVP
NDSU VDL Director

NDSU VETERINARY DIAGNOSTIC
LABORATORY
North Dakota State University

Bench Notes

New LIMS implemented – The new laboratory information management system, MATRIX, went live on March 14. Current clients should have received information on how to access the new system for sample submission and to see reports and invoices. If not, contact us to get you signed up.

Tubes for serology tests – Tubes used for serological testing (*Brucella*, EIA, Johne's, BLV, small ruminant lentivirus) should be 8.5 mL or smaller. Tubes that are 10 mL are incompatible with the centrifuge. If 10 mL tubes are the only tubes available to your clinic, please spin down the tubes in clinic and pour off the serum. The serum is the sample required for serologic testing.

Daily EIA testing – From March through September, equine infectious anemia (EIA or Coggins) testing will be performed daily. Be sure to follow the latest USDA collection and submission regulations. The VDL submission guide can be found at www.vdl.ndsu.edu/wp-content/uploads/2020/01/EIA-test-changes-1-15-20.pdf

Ringworm/Dermatophyte PCR – Due to inadequate sample recovery and concerns of bristle effects on PCR, toothbrush submissions for PCR will be rejected and a culture will be ordered automatically. Samples of skin, hair, scabs or scrapings **MUST** be placed in a sterile tube or container with a secure top, such as a red-top tube, for PCR testing. The container should then be placed in a well-sealed bag to ensure containment. If both a toothbrush sample and sealed container are submitted, PCR can be requested on the sample in the sealed container and the toothbrush will be stored and disposed of as usual.

AST report changes – In the coming weeks, you may notice changes to the display and number of antimicrobials included on your antimicrobial susceptibility test (AST) reports. We no longer report antimicrobials for which intrinsic resistance (resistance patterns that exist in most bacteria of a certain species) is known. We now report only those antimicrobials which are clinically relevant and are recommended for first-line treatment.

Reporting intrinsic resistance makes an isolate appear alarmingly resistant, while in fact the isolate has a normal resistance pattern for the bacterial species. Additionally, when an organism appears more resistant, it might be more tempting to reach for a drug with a higher level of action than is required to treat the infection. Most reports will now have an expanded comment which specifies the host species interpretations used for the AST result and provides information about intrinsic resistance patterns. If warranted or desired for another reason by the clinician, we may be able to provide additional antimicrobial results upon request. Contact the laboratory with any questions.

On-call services – The emergency on-call service will no longer be available after Sunday, May 1. If there is significant death loss in a herd or flock, please email the pathologist at ndsu.vetlab.path@ndsu.edu with details. Emails will be checked over weekends and holidays and emergency autopsies will be performed on a case-by-case basis. There is an overnight depository walk-in cooler located on the receiving dock that is available for secure small animal and sample drop-off.

Disease Updates

Highly pathogenic avian influenza (HPAI) is a foreign animal disease (FAD) that has been detected in commercial poultries, backyard flocks and wild birds in multiple states, including North Dakota. Because of economic and trading consequences of HPAI, the US is on high alert for this disease.

Clinical signs of HPAI include (from the USDA Defend the Flock website, www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/avian/defend-the-flock-program/defend-the-flock-program):

- Sudden death without clinical signs
- Lack of energy and appetite
- Decreased egg production or soft-shelled or misshapen eggs
- Swelling of head, comb, eyelid, wattles and hocks
- Purple discoloration of wattles, comb and legs
- Nasal discharge, coughing and sneezing
- Incoordination
- Diarrhea

If any of these signs are noted in a flock, it is extremely important to contact the state veterinarian's office to make sure the proper FAD investigation procedures are followed and samples are properly collected and submitted for testing to both a National Animal Health Laboratory Network (NAHLN) laboratory and the National Veterinary Services Laboratory (NVSL).

The NDSU-VDL is a level-2 NAHLN laboratory and is prepared to test for HPAI.

The CDC has said the recent detections do not present an immediate public health concern.

Dr. Broughton's Mystery Photo



Front hooves from a 7-year-old horse.

Possible causes for this condition?

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

Mini Case Reports

Kelli Maddock, MS, MLS(ASCP)^{CM}, NDSU-VDL
Microbiology and Biosafety Level 3 Section Head

Salmonella was the cause of diskospondylitis (infection of a spinal cord disc) in a 7-year-old, neutered male Boxer mixed breed dog. The animal was initially treated empirically for urinary tract infection but presented to the clinic two weeks later for hyperreactivity to touch. Due to suspicion of diskospondylitis, the clinic requested *Brucella canis* RSAT testing to rule-out brucellosis. Blood and urine cultures were also requested.

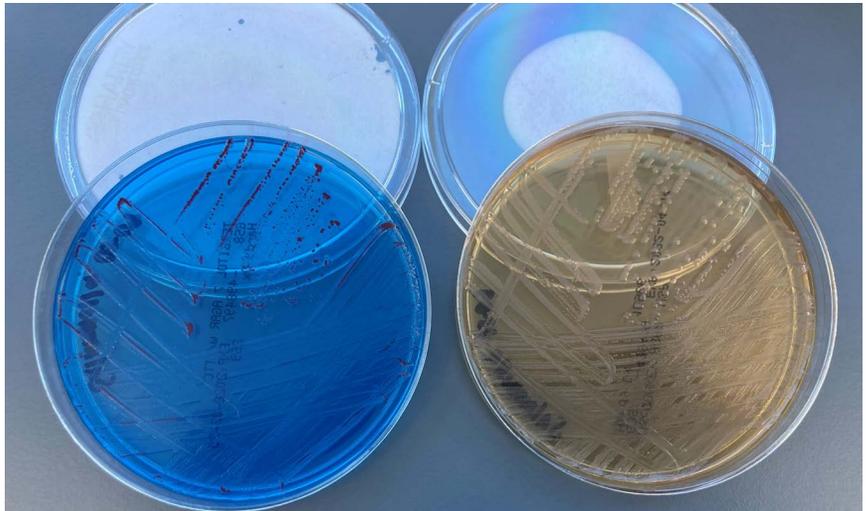
After 24-hours of growth, urine culture plates revealed a grey, non-lactose fermenting organism that was identified as *Salmonella* species by Matrix-Assisted Laser Desorption Time-of-Flight (MALDI-TOF) Mass Spectrometry. A direct analysis of blood culture sediment via MALDI-TOF and later blood culture plates also yielded *Salmonella* spp.

Although treatment of *Salmonella* infections from enteric sources is not recommended due to risk of increased antimicrobial resistance, prolonged shedding of the organism and lack of *in vivo* efficacy, when systemic infection is involved, antibiotic treatment is appropriate.

Antimicrobial susceptibility testing was performed and the animal recovered. It is thought that the exposure to *Salmonella* occurred through ingestion of raw eggs served over dry kibble.

Diskospondylitis is most often reported in young to middle-aged dogs, particularly large breeds. The infection starts from bacterial invasion into circulating blood due to penetrating wounds, injections or spinal surgery. Clinically, the animal typically presents with depression, anorexia, fever, weight loss, hyperaesthesia (excessive physical sensitivity) and paresis/paralysis (Plessas, I.N. et al, 2013). *B. canis* serology testing is recommended along with blood and urine cultures. The most common causes of diskospondylitis are *Staphylococcus pseudintermedius*, *B. canis*, *Streptococcus* spp., *Escherichia coli* or fungal isolates (Markey, B. et al 2013).

MINI-CASE. *Salmonella* colonies growing on differential medias used to identify Gram negative bacterial species. (Photo by K. Maddock).



Because *B. canis* is a biosafety level-3 organism with zoonotic potential, it was critically important for laboratory personnel safety that this submission included a complete case history to ensure higher-level handling of samples. A complete case history also aids the laboratory in choosing appropriate culture growth medium and in interpretation of test results.

For blood culture and other microbiology resources, please visit our website (vdl.ndsu.edu/microbiology).

References

1. Plessas IN, Jull P, Volk HA. A case of canine discospondylitis and epidural empyema due to *Salmonella* species. *Can Vet J*. 2013 Jun;54(6):595-98.
2. Markey B, Leonard F, Archembault M, Cullinane A, Maguire D. *Clinical veterinary microbiology*. 2nd edition. Great Britain: Mosby Elsevier; 2013.

Calendar: Spring-Summer Closures

April 15 – Good Friday **July 4** – Independence Day
May 30 – Memorial Day **September 5** – Labor Day

Continuing Education Day

June 10, 2022

VDL is organizing a continuing education day with approved RACE credits. We will have experts talk on small and large ruminant medicine and nutrition.

**Bison Herd Health
Cattle and Bison Nutrition
Small Ruminant Medicine
Ruminant Parasitology**



Go to vdl.ndsu.edu for more information.

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Staff Changes

Front office – Our long-time post-mortem and accessioning technician, Diandra Gallagher, is moving to the front office. As Mary Finseth transitions into well-deserved retirement, Diandra will be joining Amanda Ferguson answering phone and email inquiries, receiving samples, and preparing and sending out final reports. We are in the process of hiring a new postmortem floor technician.

Staff Spotlight

This issue we shine the light on one of our chemists. Kelly Benson has been with the VDL since 2005. Besides running mass spectrometry and analyzing toxicological data, Kelly is a gifted photographer and snapped the headshots of most of the staff spotlight photos used in the newsletters.

What is your favorite magical or mythological animal?
Pegasus – because who wouldn't want a horse that can fly?

If you had a time machine, would you go back in time or into the future? *I think I would probably go to the past.*

Do you have a favorite plant? *I have lots of them, but my favorite is beautiful field of wheat right before harvest time.*

What is your most used emoji? *Just a good old smiley emoji.* 😊

Spring, Summer, Winter or Fall? *Fall – nice temperatures and beautiful colors.*



Kelly Benson
VDL Chemist



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

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