WVDL SUMMER NEWSLETTER

August 2025

Wisconsin Veterinary Diagnostic Laboratory

UNIVERSITY OF WISCONSIN–MADISON

Message from the Director

Hello from WVDL!

Summertime in Madison and Barron is a beautiful time of year! We appreciate you taking the time to read this newsletter and pass it on to everyone on your team that can benefit from the announcements from the WVDL, cool cases, tips, and requests for submitting clients. We have

been busy and are excited to showcase our work for animal agriculture and public health, and want to remind everyone that the newsletter archives can be found on the front page of our website.

First and foremost, I would like to welcome two new doctoral staff members to our team. Dr. Nagaraja Thirumalapura has joined WVDL as our Section Head of Bacteriology and Serology. Nagaraja relocated from the Pennsylvania State Veterinary Diagnostic Laboratory with his family and started at the beginning of the fiscal year. We want to express our sincere gratitude to Beth Angell for her role as interim Section Head during the search. Great job, and thank you! I also want to welcome and introduce Dr. Alisia Weyna to our diagnostic anatomic pathology team. Dr. Weyna was a clinical instructor at the UW School of Veterinary Medicine before joining us. It has been a pleasure getting to know both Nagaraja and Alisia this summer, and they are eager to work with WVDL stakeholders and clients.

Other important milestones we are marking this summer include the successful start and ongoing testing of bulk tank milk for H5N1 influenza A as part of the National Milk Testing Strategy, as well as drafting building plans for the Barron facility remodel and addition, with the hiring of a construction manager currently in progress.

There is plenty of summer remaining, but fall is approaching quickly. If you have questions about milk testing for cows to participate in the World Dairy Expo, please reach out. Also, please save the date for our annual bovine genetics export meeting on Thursday, December 4th, 2025. This free event aims to connect like-minded individuals to discuss challenges and new diagnostic testing policies for export health certificates. Whether you're exporting embryos, animals, or semen, markets are evolving, and WVDL will be there to help you navigate the changes so you can continue to sell the best genetics in the world.

Enjoy the weather!

Keith

Client Services

WVDL Yearly Bovine Scour PCR Panel & Bovine Respiratory PCR Panel Reviews

This newsletter highlights summaries of the bovine respiratory panel and bovine scour panel C PCR data from the fiscal year 2024 plus a summary of the Salmonella serotyping results from 2024 (see the Bacteriology section below).

Interesting observations on the bovine respiratory panels include findings that BHV-1 (IBR) and BVD are seldom found in respiratory disease samples submitted to the WVDL, *Pasteurella multocida* is the most common bacteria detected, and bovine coronavirus is found more

frequently in nasal/pharyngeal swabs than in pneumonic lung samples (25.8% vs. 7.8% respectively). See charts below.

For neonatal calf diarrhea, group A Rotavirus was found in 75.4% of the samples tested. See chart below. On July 1st, 2025, the WVDL also expanded scour panel C to enhance its enterotoxigenic *E. coli* (ETEC) testing. The panel now tests for the F41 and K99 (F5) adhesins and the heat-stable enterotoxin toxin (STa) gene.

Finally, analysis of the bovine *Salmonella* serotyping data showed that *Salmonella* Cerro, Dublin, Montevideo, and Typhimurium account for 69.8% of the bovine Salmonella serotypes in 2024. See the Bacteriology section for a link to this compiled data.

These findings in data as well as new research and feed back from our clients prompts investigations and potential changes to the services and testing offered by WVDL. With these changes to tests offered, this means that there are changes to our submission and order forms, please make sure to keep your forms up-to-date. Current forms can be found on the WVDL website under "**Testing**".

Bovine Lung: Respiratory PCR Results

07-01-24 – 06-30-25

Name	# Positive	# Negative	Total	% Positive
Bibersteinia trehalosi	86	637	723	11.9^{a}
Histophilus somni	165	574	739	22.3^{b}
Mannheimia haemolytica	173	561	734	23.6^{b}
Mycoplasmopsis bovis	185	548	733	$25.2^{b,c}$
Pasteurella multocida	206	511	717	28.7^{c}

^{a,b,c}Different lower case letters indicate differences between groups ($p \leq 0.5$)

Name	# Positive	# Negative	Total	% Positive
Bovine Coronavirus (BoCV)	57	677	734	7.8[a]
Bovine Herpes Virus 1 (IBR)	9	729	738	1.2[b]
Bovine Respiratory Syncytial Virus (BRSV)	41	700	741	5.5[a]
Bovine Viral Diarrhea (BVD)	5	733	738	0.7[b]

[a,b,c]Different lower case letters indicate differences between groups (p≤0.5)

Bovine Scour Panel C: PCR Results

07-01-24 – 06-30-25

Name	# Positive	# Negative	Total	% Positive
Coronavirus	132	593	725	18.2[a]
Group A Rotavirus	551	180	731	75.4[b]
Cryptosporidium parvum	287	446	733	39.2[c]
Salmonella spp.	106	635	741	14.3[d]

[a,b,c,d] Different lower-case letters indicate difference between groups (p≤0.05)

Bacteriology Update

Welcome Dr. Nagaraja Thirumalapura - New Section Head of Bacteriology & Serology to WVDL

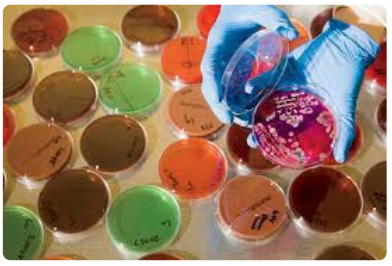
Dr. Nagaraja Thirumalapura joined the Wisconsin Veterinary Diagnostic Laboratory as Section Head of Bacteriology and Serology in June 2025. Dr. Thirumalapura brings over a decade of veterinary diagnostic laboratory experience and more than 15 years of research in microbiology, immunology, and molecular diagnostics. Most recently, he served as Microbiology Services Manager at the Pennsylvania Veterinary Laboratory, overseeing Bacteriology and Molecular

Diagnostics. His work involved research on tick-transmitted bacterial diseases, development of diagnostic assays, coordination of laboratory response to animal disease outbreaks, and promotion of *One Health* through his involvement in the national USDA and FDA Vet-LIRN antimicrobial resistance projects.

Dr. Thirumalapura is board certified in immunology by the American College of Veterinary Microbiologists and holds a DVM, MS in immunology, and PhD in veterinary biomedical sciences. His research and diagnostic expertise align strongly with the mission of WVDL. We are excited for the leadership, insight, and innovation he brings to our microbiology program.

Salmonella by the Numbers

Please visit the WVDL website to see the Salmonella *enterica* subspecies *enterica* serotypes/serogroups identified during the past year, 2024. Find them here.



Molecular Diagnostic Update

EHV-1 PCR Testing Changes

WVDL has updated the EHV-1 PCR reporting format aligning with the ACVIM 2024 consensus statement on equine herpesvirsus-1. Per the EHV-1 experts in the ACVIM consensus manuscript, *"Currently, it is not clear that any specific EHV-1 strain is more likely to cause neurological disease or that any of the 3 DNA Pol variants (D752, N752, or H752) differ markedly in their ability to cause EHM outbreaks in the field."* While WVDL's current EHV-1 PCR assay continues to detect all EHV-1 DNA pol variants, we have discontinued reporting the wild type and neurologic strain results, due to the lack of clear differentiation among the variants as stated in the manuscript. Please be aware of this reporting change for future workups.

For more information on EHV-1 PCR testing at WVDL please visit the test and fee page and search EHV-1. The recent ACVIM consensus statement on EHV-1 can be found here.

Pathology Update

Welcome Dr. Alisia Weyna - New Anatomical Pathologist to WVDL

Dr. Alisia Weyna joined the WVDL Pathology Team on July 1st. She received her BS in Biology from the University of Washington in Seattle and completed veterinary school at the University of Wisconsin-Madison in 2019. She finished her residency in anatomic pathology with wildlife emphasis in 2022 at the University of Georgia College of Veterinary Medicine. Post-residency, she worked as a staff pathologist at the Southeastern Cooperative Wildlife Disease Study and then returned to Wisconsin as a clinical instructor at the School of Veterinary Medicine. Her special interests include infectious diseases, avian, ruminant, and wildlife pathology.

Oh Deer! Another Hemorrhagic Disease in Wisconsin?

Hemorrhagic disease (HD) causing viruses in deer include epizootic hemorrhagic disease virus (EHDV) and blue tongue virus (BTV). Hemorrhagic disease caused by these viruses has been found in white tailed deer in Wisconsin since the early 2000s. In states where these HD viruses are endemic, death rates are lower (<25% of infected animals) compared to northern states, such as Wisconsin, where sporadic outbreaks with high mortality can occur. Typical clinical signs are weakness, ill-thrift, hemorrhages throughout the body, tongue ulcers, edema, fever, and acute death. The disease is most often seen in the late summer and early fall when biting midges, the primary vector, are at peak population.

So, what happens if you have similar clinical signs in deer and negative test results for EHDV and BTV? As WVDL recently discovered, deer adenovirus-1 should be ruled out.

In early 2025, WVDL-Barron received 2 captive white tailed deer. A 7 month old fawn and an adult doe from the same facility. The fawns at the facility were having clinical signs of hemorrhagic diarrhea and acute death. The older deer at the facility had blood coming out of the mouth.

Necropsy Findings:
Gross examination of the fawn was consistent with the clinical history. There was massive hemorrhage within the small intestines, intestinal walls were friable with red to black discoloration, and the terminal colon contained liquid red contents. In addition, there was mild consolidation of the cranial ventral lung lobes.

The doe had numerous ulcerations throughout the trachea with large clots of blood in the lumen. The lungs were diffusely red, rubbery, and exuded red foamy fluid on incision. In addition, there was mild consolidation of the cranial ventral lung lobes with fibrin overlying the pleura.

Results:
Fresh tissue samples were tested by polymerase chain reaction (PCR) for both EHDV and BTV, as well as ovine herpesvirus-2 (OvHV-2; causative agent of malignant catarrhal fever), bovine viral diarrhea virus (BVDV), and *Salmonella* spp. Each test resulted in NOT DETECTED.
Although primarily reported in Northwestern United States and not previously reported in Wisconsin, to the best of our knowledge, deer adenovirus 1 (also known as Odocoileus adenovirus 1 (OdAdV-1)) is another virus known to cause hemorrhagic disease in deer and can form intranuclear inclusions in infected host cells. Fresh intestine from the fawn and fresh trachea and lung from the doe were sent to Oregon Veterinary Diagnostic Laboratory for OdAdV-1 PCR. All tissues tested positive for OdAdV-1

Discussion:
Deer adenovirus hemorrhagic disease (AHD) is a relatively common hemorrhagic disease in Oregon, Washington, California, Wyoming, and British Columbia. There have been scattered case reports in captive deer in Iowa, Colorado, and Nevada. To our knowledge, this is the first report of captive white-tailed deer infected with deer adenovirus 1 in Wisconsin.

Clinical signs of AHD in deer are similar to that of the other hemorrhagic diseases. Juvenile deer tend to be more susceptible than adults, and signs include hemorrhagic diarrhea, blood and/or frothing from the mouth, edema throughout the body, pulmonary hemorrhage, and acute death. Unlike the other hemorrhagic diseases, no vector is needed for transmission. Infection occurs through direct transmission, environmental contamination, or aerosolization.

In conclusion, deer adenovirus 1 (OdAv-1) should be a differential diagnosis in deer with signs of hemorrhagic disease, for which both EHDV and BTV have been ruled out, regardless of the region in which the deer are located.

Reference:
Domshy KA, Lung O, Nebroski M, Kruczkiewicz P, Ayilara I, Woods LW, Lowe E, Davies JL. Adenoviral hemorrhagic disease in a farmed elk (Cervus canadensis) in Alberta, Canada. Can Vet J. 2023 Jun;64(6):524-528. PMID: 37265810; PMCID: PMC10204888

Histopathologic findings in the fawn included severe hemorrhagic enteritis with vasculitis and rare intranuclear viral inclusions within endothelial cells.

Histopathologic findings in the doe included numerous ulcerations in the trachea and severe hemorrhage in the lungs with vasculitis in multiple organs. No viral inclusions were noted in the doe.

DATCP Farmed Cervid Official ID Requirements

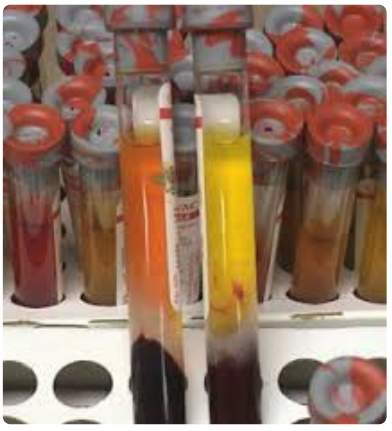
WVDL began charging $20 per farmed cervid head or carcass that is submitted without an official ID for Regulatory Sample Collection in the spring of 2024. This fee covers the cost of the tag and

administrative costs associated with applying and recording the official ID. This is to ensure that all animals submitted to WVDL are in compliance with the DATCP Farmed Cervid Official Identification Requirements.

Furthermore, WVDL has also agreed to report all submissions of farmed cervids that are received without official identification to DATCP to assist them in ensuring compliance. As a reminder, it is the responsibility of the submitting veterinarian to ensure each farmed cervid submitted for CWD testing has an official ID.

Serology Update

Reminder to Avoid Hemolysis in Serum Samples



As we are experiencing warmer summer weather, WVDL would like to provide clients with some simple steps to take to avoid hemolysis of serum samples. To ensure optimal quality we highly recommend that collected whole blood be kept in tubes sitting upright at room temperature for a minimum of 30 minutes to a maximum of 60 minutes. For bovine samples, please leave upright. For avian samples, leave test tubes in a slanted position while clotting. This allows for the clotting factors to bind red blood cells through the serum. The timeframe specified allows the blood clot to form and minimizes the likelihood of any clotting factors remaining in the serum. If possible, samples may then be centrifuged and serum removed for submission. If centrifugation is not possible, samples shall be chilled and submitted directly to the laboratory for testing.

Best Practice for Serum Submissions

- Collect blood for serum submissions in an appropriate tube with no additives (glass, glass serum separator, plastic – polystyrene or polypropylene) and allow to clot at room temperature for 30-60 minutes. This timeframe is essential for blood clot formation and minimizes the likelihood of any clotting factors remaining in the serum.
- Centrifuge blood, if able, and remove the serum from the clot for submission. If centrifuging is not possible, collecting a greater volume of sample is recommended to ensure the laboratory is able to obtain an adequate volume of serum that is free of red blood cells.
- Protect blood samples from direct sunlight, extreme heat/freezing and vigorous mixing to prevent hemolysis and degradation of serum.
- Be mindful of extreme temperature shifts. On warm weather days, blood should be kept in a chilled cooler. Or on cold weather days, blood samples should be kept in a cooler with warm packs. Do not allow for cold or warm packs to have direct contact with the samples.
- Avoid jostling, vibrating, or excessive movement of the blood tubes such as leaving the blood tubes on the vehicle's dash board (which may also be hot) or on the floor.

Excessive serum lipids (clotting factors) and hemolysis (lysed red blood cells) both have an interference effect on serology assays and will be rejected. Lipemic serum will appear thick/milky after centrifugation. Hemolyzed serum will appear dark red with little differentiation between the clot and serum. It will also leave a pink residue along the inside wall of the specimen tube when twirled. These samples should be discarded and a new sample shall be collected for testing.

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