WVDL SPRING NEWSLETTER

SPRING 2022



MEMORIAL HOLIDAY LAB CLOSURE

The WVDL (both Madison & Barron locations) will be closed on *Monday, May 30th, 2022*, in observance of the Memorial Day Holiday. Please plan appropriately for this interruption in shipping and testing. Regular business will resume Tuesday, May 31st , 2022. We wish you a Safe & Happy Memorial Day!



MESSAGE FROM THE DIRECTOR

Spring is finally here in Wisconsin and we hope that all of you and your families are doing well and are healthy. 2022 is proving to be another busy year with many new challenges that we continue to work on with our clients and stakeholders, to provide high quality diagnostics and professional veterinary services. Thank you for all of your feedback and communication to help us serve you more effectively.

As you will read in this newsletter, there is a lot going on in the veterinary diagnostic world. The 2022 highly pathogenic avian influenza outbreak has proven to be far different and more severe than the 2015 outbreak. Check out all the information about our function as a NAHLN laboratory and how our pathologists are working with the DNR and shelter medicine to manage infection in non-avian species.

In May, we had our kick-off discovery meeting to build a bovine germplasm movement plan (BGMP) that will provide guidance for business continuity and movement of semen, embryos, and high genomic merit cattle in the event of a foreign animal disease outbreak, specifically foot and mouth disease. Our meeting in Madison hosted state and federal animal health officials, industry representatives, and veterinary diagnosticians to review industry needs and form action plans to build movement plan guidance.

Just like many of our clients and stakeholders, the cost of doing business is rising rapidly with the current global socioeconomic issues. We are holding to a 2% fee increase starting July 1, 2022, but will likely need to increase some costs with large fluctuations in supply chain and cost structure from our vendors. The most immediate change will be shipping. We lost the contract for ultra-low UPS shipping in November, 2021 and were able to find a temporary substitute in January, 2022. We were anticipating this to be in place for 2-3 years but were informed in May that this contract was expiring June 13, 2022.

We are fortunate to be one of the first of 10 states on the new NASPO contract for shipping, but UPS has discontinued most of the discounts they previously offered due to skyrocketing demand for shipping. We are working to establish shipping options for clients to be as economical as possible and will likely have multiple options for clients to best serve them. Shipping samples to the WVDL will see significant changes to cost and carrier options in the first few weeks of June and these changes should be stable for the long term. We apologize for the inconvenience and appreciate your patience as we work through this change.

Lastly, you may have noticed that we have not switched our laboratory information management system (LIMS) from UVIS to iLES as planned. We have experienced significant delays with the custom programed IT solution and are continuing to work towards a go-live date. We will be rolling out training, hopefully soon, to assist clients with our new system. Stay tuned.

Thank you for taking the time to read this newsletter. We are excited to tell you more about what is happening at WVDL.

Enjoy the rest of your spring and upcoming summer!



Caption - Attending members for the working group of the Bovine Germplasm Movement Plan meeting held in mid-May 2022 at Madison, Wi.

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CLIENT SERVICES UPDATE

WVDL BLOOD COLLECTION TUBE PROGRAM UPDATE

The WVDL was able to source some blood collection tubes that are available to purchase from our supply department. We have reduced the price of the serum separator tubes. Please see the following for the price breakdown.



- 8.5ml Serum Separator Tubes \$40.00 per pack of 100 tubes (or) \$400.00 per case of 1000 tubes
- 6ml No Additive Tubes (for ear notches or serum) \$5.00 per pack of 50 tubes (or) \$120.00 per case of 1200 tubes
- 6ml EDTA Tubes \$5.00 per pack of 50 tubes (or) \$120.00 per case of 1200 tubes

We will continue to do our best to procure and offer blood collection tubes to help our clients. To order blood collection tubes please fill out the order form available on our website: <u>https://www.wvdl.wisc.edu/index.php/forms/</u>

SHIPPING FECAL SAMPLES

WVDL recommends sending fecal samples in either whirl pack bags or milk culture vials.
WVDL supplies milk culture vials free-of-charge. Please order milk culture vials by filling out and submitting our Veterinary Supply Order Form found on our website
(https://www.wvdl.wisc.edu/wp-content/uploads/2018/05/VETERINARYSUPPLIESORDER.pdf).
We strongly discourage submission of samples in gloves or other containers that easily leak.
We have seen an increase in sample shipping containers with fecal contamination due to improper sample containers either leaking or breaking during shipment. This leads to cross-contamination of other samples making identification of a positive samples more difficult.
Please call (608-262-5432) or email (info@wvdl.wisc.edu) if any further questions arise.

BACTERIOLOGY UPDATE

CHANGES TO THE AVIAN ENVIRONMENTAL TESTING SUBMISSION FORM



The Avian Environmental Testing Submission Form is now

available online (<u>https://www.wvdl.wisc.edu/index.php/forms/</u>). It has additional information about our avian *Salmonella* Environmental Test offerings and provides a simple format for submitting requests. For example, this form now has additional check boxes which include: if the submitter is participating in NPIP and if the submission is a high priority. The form also includes the important reminders listed below:

- 1. Per NPIP, samples must be received by the lab within 5 days of collection. Samples received after 5 days will be processed under a disclaimer.
- 2. Please send by overnight delivery on ice packs in an insulated box with lid (via UPS or Speedy with tracking is recommended).
- 3. If not shipping overnight, to ensure sample integrity please add double strength skim milk during sample collection.

The WVDL provides *Salmonella* ser. Enteritidis (SE) rule out testing for environmental samples taken from laying facilities. When requesting Egg Rule Monitoring, please check the box under 'Testing Requested' called 'C. Egg Rule Monitoring (SE isolation, grouping)', which will allow the laboratory to know to report '*Salmonella* Enteritidis isolated' or 'No *Salmonella* Enteritidis isolated' without further testing.

The WVDL, per policy, will serotype all *Salmonella enteritidis* isolates. If serotyping is not necessary, please indicate so by requesting '*Salmonella* Culture ONLY (isolation, grouping)' or 'Egg Rule Monitoring (SE isolation, grouping)'. Per NPIP, we are required to fully serotype ALL Group D *Salmonella* isolates. Thus, if Group D *Salmonella* are isolated when performing *Salmonella* culture or Egg Rule Monitoring culture, serotyping will be completed and reported accordingly.

Avian Environmental *Salmonella* testing is offered at our Barron location, so for timeliness, please send samples directly to the Barron WVDL.

For more information about avian environmental testing for *Salmonella* at the WVDL please refer to wvdl.wisc.edu or feel free to contact the laboratory to address your questions or concerns.

MYCOBACTERIUM AVIUM SUBSPECIES PARATUBERCULOSIS (MAP) LIQUID CULTURE DELAYS



The WVDL has been experiencing intermittent backorders on various reagents needed for the liquid culture of MAP. Although

we have been successful at mitigating most delays for almost all clients, please note that some samples have been delayed by 1-2 weeks as we balance setting up samples based on available reagents. It is important to note, that MAP liquid culture should be used for regulatory purposes for international veterinary health certificates almost exclusively. Some exotic samples require liquid culture when a different *Mycobacterium* is suspected and therefore, liquid culture should be selected. However, the WVDL suggests using molecular or serological testing for Johne's Disease rather than MAP liquid culture. Whenever possible please use the Johne's PCR, which has been demonstrated to be as sensitive as liquid culture. This test will continue to be offered and is useful for non-international regulatory testing and in particular diagnostic testing. If there are any further questions, please see our website, email or call.

MOLECULAR DIAGNOSTICS UPDATE

CRYPTOSPORIDIUM PCR RESULTS UPDATE

In the early 1990s William Current and Lynne Garcia described *Cryptosporidium parvum* as one of the three most common enteropathogens causing diarrheal illness in humans worldwide, especially in developing countries. Interestingly, at that time, it was likely that cryptosporidiosis was part of the 25 to 35% of human diarrheal illnesses with unknown etiology. Currently, in ruminants and other veterinary species, cryptosporidiosis may cause severe and lengthy durations of diarrheal illness, with no known effective therapy, other than supportive care and environmental hygiene practices. Improving diagnostic techniques, increased awareness within the biomedical & veterinary communities, as well as the development of basic research programs in diagnostic laboratories, increases the awareness of this pathogen and the ability for better diagnoses and therapies. At the WVDL, we are actively working to improve the *Cryptosporidium* spp. real time PCR test to identify this organism more quantitatively in diagnostic samples. At this time, results will be reported as a positive or negative. Positive test results should be interpreted in a qualitative manner and not a quantitative manner. Below is a diagram of the *C. parvum* lifecycle for your review.



FIG. 1. Diagrammatic representation of the proposed life cycle of *C. parvum* as it occurs in the mucosal epithelium of an infected mammalian host. Living developmental stages of *C. parvum* corresponding to those labeled a through l in this life cycle diagram are shown in Nomarski interference contrast photomicrographs contained in Fig. 2. After excysting from oocysts in the lumen of the intestine (a), sporozoites (b) penetrate into host cells and develop into trophozoites (= uninucleate meronts) (c) within parasitophorous vacuoles confined to the microvillous region of the mucosal epithelium. Trophozoites (uninucleate meronts) (c) undergo asexual division (merogony) (d and e) to form merozoites. After being released from type I meronts, the invasive merozoites enter adjacent host cells to form additional type I meronts (recycling of type I meronts) or to form type II meronts (f). Type II meronts do not recycle but enter host cells to form the sexual stages, microgamonts (g) and macrogamonts (h). Most (approximately 80%) of the zygotes (i) formed after fertilization of the microgamont by the microgametes (released from microgamont) develop into environmentally resistant, thick-walled oocysts (j) that undergo sporgony to form sporulated oocysts (k) containing four sporozoites. Sporulated oocysts released in faces are the environmentally resistant life cycle forms that transmit the infection from one host to another. A smaller percentage of zygotes (approximately 20%) do not form a thick, two-layered oocyst wall; they only have a unit membrane surrounding the four sporoziets. These thin-walled oocysts (f) represent autoinfective life cycle of *C. baileyi*, infecting chickens, differs from the one shown in that this parasite has an additional type (type III) of meront derived from type II merozies. Drawing by Kip Carter, University of Georgia. Reprinted from *Coccidiosis of Man and Domestic Animals*, p. 155–185, with permission of the autors (W. L. Current and B. L. Blagburn) and CRC Press, Inc. (77a).

Image Credit: Current WL, Garcia LS. Cryptosporidiosis. Clin Microbiol Rev 1991;4(3):325-358.

NASAL SWAB SUBMISSION GUIDELINES

We have been noticing an increased number of nasal swab submissions where the swab shaft has not been shortened properly before shipment. For BVD PCR testing using 96-well plates, it is important to cut the swabs so they do not stick to the aluminum foil that seals the plates. We remove that foil to process the samples and if the shaft of the swabs stick to the foil, multiple swabs may come out of the plate at the same time.



This has the potential to create issues with individual sample identification and cross contamination. For samples submitted in media for PCR testing in tubes, improper shortening of the shafts has resulted in sample media leaking out of the tubes into the shipping containers as the cap is not sealed completely. The WVDL must then add additional media which can decrease the sensitivity of the PCR results. Please see our website for instructions on BVD PCR guidelines for collecting nasal swabs in a 96-well format

https://www.wvdl.wisc.edu/wp-content/uploads/2020/11/BVD-Nasal-Swab-Kit.pdf and

<u>https://www.youtube.com/watch?v=oG666ivbHg8</u> on collecting deep nasopharyngeal swabs for bovine respiratory testing.

PATHOLOGY UPDATE

WISCONSIN FOX KITS TEST POSITIVE FOR HIGHLY PATHOGENIC AVIAN INFLUENZA

In conjunction with collaborators at the Dane County Humane Society – Wildlife Rehabilitation Center and at the Wisconsin Department of Natural Resources, WVDL staff have identified



highly pathogenic avian influenza as the cause of neurological disease in red fox kits. More information can be found here: <u>https://www.vetmed.wisc.edu/wisconsin-fox-kits-test-positive-for-highly-pathogenic-avian-influenza/</u>

POSTMORTEM DIAGNOSES IN SOUTH AMERICAN CAMELIDS IN THE UPPER MIDWEST

South American camelids (SACs) have become increasingly popular as livestock and companion animals in the Midwestern United States. With increased ownership, postmortem evaluations and samples available for diagnostic assessment are being submitted more frequently to veterinary diagnostic laboratories. A recently published retrospective report in the Journal of Veterinary Diagnostic Investigation by Drs. Lorelei Clarke and Ryan Breuer reviews the archived pathology records at the Wisconsin Veterinary Diagnostic Laboratory (WVDL) between 2009-2019 for SAC necropsy cases. Follow this link for the report: https://journals.sagepub.com/doi/10.1177/10406387221091733?url_ver=Z39.88-2003&rfr_id=ori:rid:crossref.org&rfr_dat=cr_pub%20%200pubmed



SEROLOGY UPDATE

ID VET BTV CELISA KIT VALIDATED

The WVDL has validated the Innovative Diagnostics (ID Vet) Blue Tongue virus (BTV) competitive ELISA kits for bovine sera which is specific for the BTV V7 protein antibody. The ID Vet cELISA kit performs well with a high sensitivity and specificity. In a comparison between the current kit manufacturer and another kit manufacturer, the ID Vet BTV cELISA

WVDL transitioned to the BTV cELISA kit. Note, that the ID Vet BTV cELISA kit will have a different interpretation than the previous cELISA BTV kit, which will be clearly indicated with the results. This kit is not USDA-certified, but has been validated against a USDA-certified cELISA kit and has achieve the same sensitivity and specificity using known samples. This kit is approved for caprine, ovine and cervid sera, but the WVDL has not validated those samples types. The test can be performed and will be reported with a disclaimer. For more information about BTV cELISA testing at the WVDL please refer to https://www.wvdl.wisc.edu/ or feel free to contact the laboratory to address your questions or concerns. Below is the interpretation for the ID Vet BTV cELISA kit.

Samples are reported as **Competition Percentage** (S/N%) in ruminant sera. The S/N% for positive animals is <40%.

<u>S/N% &</u> Interpretation	Explanation & Recommendation
S/N% ≥ 40.00% Negative	Antibodies specific to bluetongue virus in ruminant serum samples were not detected.
S/N% < 40.00% Positive	Antibodies specific to bluetongue virus in ruminant serum samples were detected.

VIROLOGY UPDATE

WVDL AND NAHLN (NATIONAL ANIMAL HEALTH LABORATORY NETWORK) UPDATE

WVDL was designated as a Level 1 NAHLN lab for 2022. NAHLN is a nationally coordinated network and partnership of Federal, State, and University-associated animal health laboratories. NAHLN labs provide the capability to diagnose both endemic and high-consequence livestock diseases and are likely to be the first-line laboratories for recognition of an intentionally or accidentally introduced agent in animals. NAHLN labs are capable of testing large numbers of samples for specific disease agents originating from food animal species. WVDL will continue with emergency preparedness efforts, surveillance testing for 12 targets, participate with a variety of NAHLN working groups and committee chairs, validation studies, scenario testing, Quality & FAD training, FAD investigations as well as providing testing assistance, if needed, to other NAHLN laboratories.

HIGHLY PATHOGENIC AVIAN INFLUENZA (HPAI) UPDATE

In the United States, HPAI was first reported in wild bird surveillance on 1/13/2022 in South Carolina. Since then, HPAI EA H5 and EA H5N1 viruses have been confirmed in wild birds,



backyard flocks, commercial poultry facilities and wild mammals in both Canada and the US

(see the map below from <u>https://www.usgs.gov/centers/nwhc/science/distribution-highly-pathogenic-avian-influenza-north-america-20212022</u>).

The index case in Wisconsin with increased mortality was reported to DATCP on 3/13/2022. The samples tested non-negative at WVDL and were confirmed by NVSL. This is the first time in NAHLN history that NAHLN laboratories were entrusted to message out non-negative results prior to NVSL confirmation. It was a great accomplishment for NAHLN laboratories to gain confidence in the quality of our testing results. As of 5/23/2022, approximately 70,276 HPAI PCR tests have been run by NAHLN labs. See

https://datcp.wi.gov/Pages/Programs_Services/HPAIWisconsin.aspx for HPAI in Wisconsin.

The NAHLN program office officially activated WVDL to respond to the outbreak in March. We elevated the BSL-3 suite to the 'Outbreak Mode', with shower out practice to ensured high biocontainment. We also implemented the 5 days quarantine policy for testing staff to avoid contact with susceptible species.



NEWS FROM DATCP - AVIAN INFLUENZA

CLICK above for more information on HPAI in Wisconsin 2022

EXCITING STAFF NEWS

Eryn Opgenorth, Microbiologist at the WVDL, recently completed her Master of Science degree in Biotechnology at UW Madison. Eryn had been working full time at the WVDL while taking classes for the past 2 years. Her final project for the completion of her program was entitled "On-the-Farm SVA/FMD Differential Test". Eryn is currently the new BSL-3 Coordinator at the WVDL, assisting with the operation of the BSL-3 facilities. Congratulations to Eryn! Way to go!









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