

2020 Summer Newsletter

Message from the Director

Greetings from the WVDL! We hope you and your families are safe and well during extraordinary times we are living in right now. Since March, our team has been working hard to keep our mission and its critical work running while assisting the State of Wisconsin in the Badger Bounce-back plan. The recent events around the country have caused us all to take a pause, think about our core values, listen to our team, and support UW-Madison's efforts to improve inclusion, equity and diversity on our campus and in our communities. We are supportive of the Black Lives Matter movement and strive every day to support a safe and inclusive environment for all.

Following our 2020 Winter Newsletter, WVDL increased testing fees by 3% with exemption for individual animal bovine testing due to the severe economic situation dairy farmers are coping with due to SARS-COV-2 global pandemic. We have also changed our necropsy pricing structure and have developed additional precautions to avoid barbiturate residues in rendered products, which are detailed below. Don't miss the other highlights from our diagnostic sections and our team member spotlight of Shashi Yadav.



As a NAHLN Level 1 Laboratory, we are part of the surveillance and preparation for potential foreign animal diseases including African Swine Fever, Rabbit Hemorrhagic Fever Virus, and the potential emerging new strain of Swine Influenza in China. Building on these strengths, we are also working with the Wisconsin State Laboratory of Hygiene to provide dedicated, high throughput molecular diagnostic testing as part of the University of Wisconsin-Madison's Smart Restart Program.

One last highlight is our upcoming 2020 WVDL Annual Bovine Genetics Export meeting on July 16th, 2020. Due to COVID-19, our meeting will be held virtually and is free of charge. We will

have 4 hours of CE for those who attend and this is a great chance to hear about current events and challenges for export of bovine semen and embryos. Please contact us if you would like to be included on the mailing list for this meeting.

Keith Poulsen, DVM, PhD Director

Barbiturate Residue Program for Rendering

Zero-Tolerance Policy Implemented

Barbiturate Residue Program for Rendering

The WVDL contracts with an independent rendering company, which provides a service to the animal and meat industries of collecting and processing fallen livestock and other deceased animals and rendering such materials to make ingredients, such as animal proteins and fats, for use in animal food. At times, animals may be euthanized due to sickness or injury. Euthanizing agents such as pentobarbital have been implicated in domestic and wild animal poisoning, resulting from ingestion of rendered tissue from animals euthanized with these compounds. The FDA has identified pentobarbital as a chemical hazard affecting food safety and, as a result, prohibits using animals euthanized with chemical drugs, such as pentobarbital, in animal food. The FDA and rendering companies which process deadstock are actively sampling and testing animal byproducts and animal foods for pentobarbital. WVDL has implemented this zero-tolerance policy to ensure that all animal remains intended for rendering are free of barbiturate chemical hazards, such as pentobarbital. Because of the financial implications associated with providing contaminated material to our rendering contractor, the WVDL has implemented the following strategies:

- a. Addition of Barbiturate Free Clause to the General Submission form that must be acknowledged (signed) by the submitting veterinarian prior to a necropsy being performed on the animal at WVDL.
- b. Collection and retention of liver samples from all animals entering the rendering stream for potential verification of barbiturate free status.
- c. In the event that WVDL is notified by the rendering company of a barbiturate residue contaminated batch of finished product, the WVDL will submit retained liver samples from the tissues associated with the batch for barbiturate testing. WVDL will retain duplicate samples that are uniquely identified and tracked within the established LIMS and Quality systems. The submitting veterinarian for cases containing barbiturates will be held fiscally responsible for all costs incurred.

Due to the significant costs incurred by the submitting veterinarian for non-compliance with this policy. and potential future implications for loss of this economical disposal option, it is essential that submitting veterinarians accurately and completely fill out the 'Cause of Death' section of the General Submission form for all necropsy submissions, including a veterinarian signature acknowledging the barbiturate free clause. Submission of incomplete forms will result in testing delays. Information regarding alternative euthanasia options can be found on our website under the Diagnostic Resources section

Barron

Coggins/Equine Infectious Anemia (EIA) Testing Available at WVDL-Barron EIA Testing is in full swing at the Barron Laboratory and the WVDL is excited to launch a new fee structure for this testing:

- We have eliminated out-of-state charges for EIA testing There is a single price of \$8.00/ sample for all EIA ELISA tests;
- We still do not charge an accession fee for EIA testing.

EIA submissions are tested daily at the WVDL Barron Laboratory. Samples received, with properly filled out documentation, by noon will have same day testing. Samples should consist of 1ml serum, refrigerated and shipped with cold pack(s). WVDL accepts three submission types for EIA testing: including

- Official Federal VS 10-11 Form (carbon paper);
- 2. Global Vet Link (electronic)
- 3. APHIS Veterinary Services Process Streaming (VSPS) (electronic).

Note: We do not require any WVDL submission form be submitted with EIA samples.

We would like to bring your attention to the release of new regulations by the USDA last October (VSG-15201.1). This is a great document to reference when submitting samples for the regulations that a submitter must follow as well as what we must adhere to. Below is a check box of items that need to be completed. We have included this at your convenience to help ensure the VS 10-11 paperwork is completed prior to submission to the WVDL. In order to avoid delays in testing, please review the following USDA regulations and verify they have been addressed before submitting future EIA test requests. Be sure to use the newest VS 10-11 form by confirming a FEB 2018 or newer date located on the bottom left corner of the form.

- Date of blood draw entered
- Test requested marked
 - The WVDL only tests ELISA. If AGID is needed, it will be a referral to NVSL
- Reason for testing marked
- County of Equine at time of blood draw entered
- Valid NAN (National Accreditation Number)
 - <u>https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/nvap/ct_areavet</u>
- Veterinarian signature and/or date entered
- Name of animal and/or tube number on submission form must match the tube
- Horse description diagram clearly marked Horse description fields #17 #22 entered

Please remember to write legibly on form. Also, every box on form must be entered. If there is no information or does not pertain, please enter an (NA) or a dash (-) in the box. If you have questions or concerns regarding this matter, please contact Todd McCoy, WVDL Laboratory Manager, Barron, Wis., at 715-637-3151, ext. 112 or email: <u>Todd.Mccoy@wvdl.wisc.edu</u>. We believe our exceptional service and dedication presents us an opportunity to be your EIA testing provider for years to come.

Caseous Lymphadenitis (CL) ELISA Testing Available at WVDL Barron

Along with bacterial culture for Corynebacterium pseudotuberculosis at both the Madison and Barron WVDL locations, the Barron WVDL also offers CL (occasionally referred to as CLA) ELISA. This is a serological assay to detect C. pseudotuberculosis-specific antibodies in sheep and goat sera. For definitive diagnosis of animals showing clinical signs (visible subcutaneous abscesses), please submit abscess material for culture to directly diagnose CL. However, for herd-level screening, please use the CL ELISA. As a reminder, a serological test for an individual animal should be interpreted with caution given the animal could have an active or past infection that has resolved. The CL ELISA should be used to determine herd prevalence of the infection. The CL ELISA costs \$9.00/sample. Additionally, the WVDL-Barron location offers the Ovine Progressive Pneumonia (OPP) Virus ELISA as well as the Caprine Arthritis Encephalitis (CAE) virus ELISA. Please submit at least 0.5 mL of serum.

Microbiology

COVID19 Specimen Kit Preparation for the State of Wisconsin

During the first week of Stay At Home orders, the WVDL received information regarding the need for viral transport media (VTM) to be produced within the state to meet the COVID19 testing

demands of the State of Wisconsin. On March 21, WVDL made its first batch of VTM needed for COVID19 specimen kits used for the preservation of nasopharyngeal swabs taken from humans prior to testing. A few days later, the VTM passedquality standards set and performed by the Wisconsin StateLaboratory of Hygiene (WSLH). Until last week, the WVDL had produced VTM 5 days per week and had used that media to make kits 7 days per week, working 6 a.m. to 6 p.m. or later.



Upon request by the Department of Health and the State Emergency Operation Center in May, we increased production of VTM and COVD19 specimen kits to meet the Governor's goals.

To date, we have produced 499 L of VTM (1L = 500 kits), 157,041 VTM tubes and 125,219 COVID19 specimen kits. The microbiology section was able to maintain the workload while also serving the needs of the State of Wisconsin. Overall, 16 staff members and ten students have participated in this process directly, as well as members from all of the WVDL sections. We will continue to make COVID19 specimen kits until August and then will go on standby for the State of Wisconsin. If the need arises, we will be able to produce more COVID19 kits for the State of Wisconsin.







Top Right: Microbiology staff member, Heather Cushing dispenses bulk VTM in conical

tubes for COVID19 specimen kits. **Above Left:** Fourth-year veterinary student employee, Jacey Benzing, preparing to fill COVID19 specimen kits. **Center:** Jillian Sensing, a veterinary student, packs biohazard bags with a nasopharyngeal swab and VTM tube. **Right:** Veterinary student employee, Megan Skoyen, seals a COVID19 specimen kit.

Changes to Salmonella Antimicrobial Susceptibility Testing

Starting August 3rd, 2020 the WVDL will no longer perform an antimicrobial susceptibility test for *Salmonella* isolates obtained from fecal samples. The WVDL will continue to do *Salmonella* serotyping and will do antimicrobial susceptibility testing if it is requested by the submitting veterinarian. Some of the reasons for the change in laboratory policy are listed below.

- 1. There are no veterinary approved Clinical and Laboratory Standards Institute (CLSI) break points for *Salmonella*. The only break points available are for human use¹.
- Oral antibiotics cause gut microbiome dysbiosis (less diversity) leading to an increased probability of *Salmonella* colonization and increased risk of invasive *Salmonella* complications².
- Oral antibiotics increases the risk of antimicrobial resistance (AMR) for many different types of gut bacteria including *E. coli* and *Salmonella*².
- 4. Enteric Salmonella are often resistant to the most common classes of oral antibiotics that are approved for use in livestock.
- 5. Oral antibiotics increase the number of *Salmonella* superspreaders and their use also increases the duration of *Salmonella* shedding³. It has been estimated that superspreaders account for roughly 80% of *Salmonella* transmission³. Superspreaders are especially problematic since they cause an increase in environmental load of *Salmonella* which serves as a reservoir of new infections.
- 6. For dairy beef and veal operations, oral antibiotics particularly those that use the aminoglycoside class of antimicrobial drugs increase the risk of drug residues being detected at the time of slaughter.
- Salmonella are intrinsically resistant to the aminoglycoside class of antibiotics which includes Neomycin⁴.
- 8. Some commercial non-medicated probiotics have good activity against enteric Salmonella, do not cause drug residues and have been shown to improve gut microbiome diversity^{5,6}. This means there are viable alternatives to oral antibiotics in livestock that are relatively inexpensive.

¹Lubbers, B., M. Papich, S. Schwarz, R. Bowden, D. Diaz-Campos, M. Fielder, C. Langston, X. Li, M. Martinez, C. Miller, I. Morrissey, C. Pallotta, T. Shryock, S. Simjee, V. Sinnott-Stutzman, M. Sweeney, M. Traczegski, D. Trott and S. Yan. ²Croswell, A,. E. Amir, P. Teggatz, M. Barman, and N.H. Salzman. 2009. Prolonged Impact of Antibiotics on Intestinal Ecology and Susceptibility to Enteric Salmonella Infection. Infect. Immun. **77**(7):2741-2753.

³Gopinath, S., J.S. Lichtman, D.M. Bouley, J.E. Elias and D.M. Monack 2014. Role of Disease-Associated Tolerance in Infectious Superspreaders. Proc Natl Acad Sci USA. **111**(44):15780-15785.

⁴ Sweeny, M., D. Diaz-campos, R. Bowden, T. Fritsche, J. Hayes, C. Langston, B. Lubbers, T. Martin-Jimenez, C. Miller, C. Pallotta, M. Papich, A. Parkinson, S. Schwarz and M. Traczewski. 2018. Vet01 Performance Standards for Antimicrobial Disk and Dilution Susceptibility Tests for Bacteria Isolated From Animals. Clinical Laboratory Standards Institute. Ed. 5.

⁵Uyeno, Y., S. Shigemori, and T. Shimosato. 2015. Effect of Probiotics/Prebiotics on Cattle Health and Productivity. Microbes Environ. **30** (2): 2741-2753

⁶Allen, H.K., U.Y. Levine, T. Looft, M. Bandrick, and T.A. Casey. 2013. Treatment, Promotion, Commotion: Antibiotic Alternatives in Food-Producing Animals. Trends Microbiol. **21** (3): 126-132

Changes to Johne's Disease Diagnostics using Liquid Culture

Most of our clients have moved away from Johne's disease diagnostics using the liquid culture method due to the length of time needed for culture (49 days for bovine and 56 days for ovine, caprine and exotic species). However, some clients require Johne's liquid culture results for regulatory purposes. Previously, the Johne's liquid culture diagnostic test had several options which included confirmation with Acid-Fast staining looking for characteristic Acid-fast rods with or without PCR confirmation.

Starting August 3rd, 2020, all Johne's liquid culture testing will now be confirmed with PCR. Not only will we gain efficiency, but more importantly, our Johne's disease (*Mycobacterium avium* subspecies *paratuberculosis* (MAP)) PCR utilizes three PCR targets increasing sensitivity and specificity needed for this regulatory test. The price for Johne's liquid culture test will now be \$45.00/sample in which all cultures will be confirmed using PCR. In addition, we will no longer be accepting pooling for Johne's liquid culture as the length of the test makes unpooling positive pools greater than a 15 weeks turn-around time and therefore is not practical for most of our clients. We encourage submitters who are not required to use the Johne's liquid culture test to please use the Johne's Disease (MAP) PCR, which is run Tuesdays and Thursdays with results reported within 24 hours. The Johne's Disease (MAP) PCR allows for pooling of up to 5 samples and upon positive results, samples are run individually automatically to identify the positive sample(s). Currently for '*Mycobacterium paratuberculosis*' and a semi-quantitative number. However, the liquid culture test will now be reported similarly to our direct Johne's Disease PCR utilizing a cycle threshold (C_T)

value which is inversely proportional to the amount of MAP present in the sample. Our validation data has shown that there are a small number of exotic samples (less than .01%) that show PCR signals that are not consistent with the true positive samples. Even with utilization of the additional targets, we are unable to conclusively determine the MAP PCR result for these rare situations. Therefore, we have decided that with those situations we will report the MAP PCR results as **undetermined**, with the additional recommendation of retesting the animal within the next 6 months. If you have any questions, please feel free to contact the Microbiology Section.

VMRD Johnes Serology Kit is Now USDA Approved for Use in Goats

VMRD has obtained USDA licensing for the use of their *Mycobacterium avium* subspecies *paratuberculosis* Antibody Test Kit. VMRD completed their validation using paired serum and fecal samples on their ELISA kit and compared to a local competitor's kit. VMRD ELISA showed 100% sensitivity and 98.5% specificity while the competitor ELISA showed 98.1% sensitivity and 96.9% specificity. WVDL completed their own validation of the VMRD ELISA kit in June 2019. Our validation panel showed 100% sensitivity and 96% specificity on a smaller number of samples.

Changes to Prices for Some Aquaculture Tests

Changes to the cost of the media necessary to run the Kirby Bauer Disk Diffusion method for susceptibility testing of fish isolates will now be \$15.00/isolate. In addition the Bacterial Kidney Disease (BKD) fluorescence antibody (FA) test will now be \$5.00/sample due to an increase in the cost of reagents needed for this testing. Lastly, again due to an increase in the cost of reagents, the Nested PCR for *Renibacterium salmoninarum* will now be \$55.00/sample.

Staff Spotlight: Shashi Yadav, Microbiologist

1. Where are you from? What high school and college did you graduate from? What are your degree(s) in?

- I am from India. I did my high school and post-graduation from Bhopal, India. I have a Master's Degree in Zoology.
- 2. What is one thing on your 'Bucket List'?
 - Driving a race car!!!



I love to read about yoga, meditation and gardening. I love to read people's blogs and experiences. I enjoy audio books. I'm currently reading *Inspiring Thoughts* by Swami Vivekanand.

4. What is the one food that you will never bring yourself to eat?

Any kind of meat.

5. What is your favorite movie

• DDLJ (Dilwale Dulhniya Le Jayenge). It's a very popular bollywood movie.

6. If you could play the lead role in any movie, which character would you choose?

· I want to play Simran from the DDLJ.

7. What three flavors of ice cream would be on your triple scoop cone?

• I would love to have Strawberry, Butter Pecan and Vanilla.

8. When you were a child, what or who did you want to be when you grew up?

• I wanted to be an artist. My older brother was a very good painter and I saw him making beautiful paintings and I always wanted to be like him still trying.

9. What pets did you have growing up?

As a kid, I had a dog, cat, parrots and birds and even a cow (all my Dad's)!!!. Our dog was my favorite and when I moved to the USA, my dog stopped eating and was sad all the time. I kept sending him a bag of dog food every other week.

10. What skill would you like to master?

• Making BONSAI. I love Bonsai and I've tried a couple of times and failed.

11. What conspiracy theories do you believe in?

None

soundtrack?

12. Best concert you ever saw?

• Back Street Boys. That was the first concert I saw in Milwaukee in 1998.

13. If you could be any animal in the world, what animal would you be and why?

If I could be an animal, I would love to be a cat so I can talk to my cat 'Mira'. She is very expressive and when I talk to her she responds so well, but I don't understand. I really want to know what she is saving.

14. What is the favorite part of your job?

Everything, because I have the best Boss, best Supervisor and the best coworkers!!! When you work on the best team nothing feels too heavy!

Virology & Molecular Diagnostics

Help us help you with diagnostic testing!

BVDV testing: WVDL receives thousands of ear notch samples each year. As a reminder, below are sample collection guidelines. Please see our website for complete details as well as guidelines for nasal swab collection for BVD PCR testing: http://www.wvdl.wisc.edu/wpcontent/uploads/2016/12/BVD-PCR-Sample-Collection-Guidelines.pdf

BVD PCR Sample Collection Guidelines

- A. Materials and Equipment Needed for Ear Notch Collecting:

 - Ear notching tool that yields a 1cm a side notch
 Red Top blood tube: The preferred tube is a VACUETTE® No Additive Tube: 9ml.
 Shipping container rack that holds individual tubes in slots.
 Submission form: <u>http://www.wdl.wisc.edu/index.php/forms/</u> Click on the "Instructions for Excel Spreadsheet Template" and "Excel Spreadsheet for Electronic Submission".
 Disinfectant for rinsing notching tool: 10% bleach (eg.100ml (3oz) bleach in 900ml, (27oz) water) Click on the "Instructions for
 - water). 6
 - Clean rinse water: 3-5 gallon bucket. Change bucket water every 20-30 notches. Use disposable gloves and wear clean coveralls.
 - 8. Do not vaccinate or tattoo at the same time samples are taken.

1. Label Red Top collection tubes with the animal ID's and sequence number's (#1 through number in submission).

2. Dip notching tool in disinfectant then ALWAYS rinse away disinfectant with copious

quantities of clean water. Caution: Residual disinfectant on the notching tool will yield false negative results, therefore thorough rinsing with clean water is required!! 3. Take a proper size ear notch from a clean portion of the ear (see below). For comparison, a

triangle notch size is superimposed on a nickel. Place notch into a labeled, dry, red top collection tube (no formalin, other liquid or separator gel; do not use snap-cap milk tubes or whirl-pak bags). **Caution:** Collected ear notch **MUST** be free of contaminating dirt, feces, tattoo ink or BVD vaccine.



Best location for taking ear notch



Size of ear notch sample

BVD sample storage and shipping guidelines

Store collected ear notches for a maximum of 72 hours at refrigerator temperatures and ship over night to the WVDL on cold packs. This allows for a Friday collection and Monday shipping. Collection and storage of ear notches in clinics or on farms over the course of weeks or months causes sample degradation, making our testing invalid. Poor quality samples will be rejected.

Serum samples:

- WVDL recommends serum separator tubes (aka tiger top tubes) over the non-additive red top blood tubes. Serum separator tubes help reduce hemolysis of samples and provide cleaner serum for testing.
- Currently we supply serum separator tubes as a very low cost. They can be ordered here: https://www.wvdl.wisc.edu/index.php/forms/

Nasal swab samples for BVDV PCR:

- WVDL recommends using BVD Nasal Swab Kit for large submissions of BVDV PCR testing.
- Currently we will supply the first kit free of charge for you to try out, please contact us to request the kit. They can also be ordered here: https://www.wvdl.wisc.edu/index.php/forms/

What is your goal of testing? What you need depends on what you are looking for.

1. Transient/Acute Infection (detection of virus)

- Recommended Test: Individual PCR Could also use: Virus Isolation
- Note: timing of collection during viremia stage will be critical for successful isolation.
 Recommended Sample Type: Whole blood
 Note: Detection of acute infection requires use of whole blood because this sample
 - contains white blood cells.
- Inappropriate Sample Types: Ear Notch, Serum

2. Persistent Infection (detection of virus)

- Recommended Test: Pool PCR for screening herds; Individual PCR Could also use: Virus Isolation or Antigen Capture ELISA (ACE) Note: May be subject to maternal derived antibody interference. ACE should only be used
- Recommended Sample Types: Nasal swabs; Whole blood; Ear notch

 Note: Serum (only suitable for animals > 9 wks old)

 Inappropriate Sample Types: Serum in animals <9 weeks old due to potential immune clearance; Ear notch contaminated with tattoo ink

3. Testing for Antibody

- Recommended Test: Serum Neutralization (SN)
- Note: SN samples should be taken 2-3 weeks apart for paired testing.
 Recommended Sample Type: Serum

Swine Oral Fluid Testing

Due to a low number of samples received since testing began at WVDL and high cost to WVDL for reagents and supplies, we will be discontinuing PRRS and SECD PCRs on oral fluids by July 31, 2020.

- https://datcp.wi/gov/Pages/Programs_Services/Swine/Movement/aspx.

Pathology Sciences

Necropsy and Biopsy Fee Structure Changes

This new fee structure aims to simplify necropsy and biopsy fees and also to better reflect the amount of time, effort, and under the cap testing included in those fees. Companion animal fees will see an increase of 20% this year, and we anticipate a 20% increase in these fees in 2021 and 2022 as well, in order to more closely align those fees with the inlab costs for a typical necropsy case.

We understand that price increases change your cost of doing business. The WVDL's necropsy service is essential and it remains a great value to your practice and clients.

The new fee structure went into effect on July 1, 2020 and will be reflected on August invoices.

A. Production Animal Necropsy (\$126.39)

Any age: bovine, sheep, goat, cervid, llama, alpaca, pig, mink, poultry, commercial fish

<u>B. Production Animals Necropsy</u> (0-5 lbs: \$151.67; 5-100 lbs: \$224.59; 100-500 lbs: \$333.79; >500 lbs: \$435.96).

- Any age: dog, cat, horse, pocket pet, pet bird, zoo animals, wildlife
- Note: No change to disposal or special procedure fees. Retain +50% surcharge for Out-of-State submissions.

C. Bottle Necropsy (\$106.82)

Any species, one animal

D. Surgical Biopsy - Histopathology

- First site (anatomical location)* (\$65.14)
 Each additional site (\$25.00)
- *Up to three skin punches considered one anatomical site. Up to three endoscopic biopsies per organ considered one anatomical site. Note: Fixed tissues from deceased animals will be considered a bottle necropsy.

Necropsy fees include accession fee and all routine in-house testing excepting serology. Referral testing fees are NOT included.

Multiple animals per submission:

- For mammals, up to 3 fetuses/neonates from the same litter may be included under one necropsy fee. Tissues will be pooled at pathologists discretion. Additional fees may apply.
- For poultry from commercial flocks (NOTE: Premise ID required), up to 5 birds from the same age/group may be included under one necropsy fee. Tissues will be pooled at pathologists discretion. Additional fees may apply.
- For commercial fisheries, up to 5 animals from the same age/group may be included under one necropsy fee. Tissues will be pooled at pathologists discretion. Additional fees may apply.

Research Requests: The fee structure above does not apply. Routine WVDL diagnostic pathology services do not include research studies. Research studies may be possible to arrange with individual WVDL pathologists on a case by case basis, as part of scholarly activity, with the expectation of co-authorship on peer reviewed scientific publications.

Client Services

We welcome a new Sample Receiving Tech to the group - Kelly Fanello

Kelly Fanello graduated from Madison Area Technical College (2005) with a degree in Veterinary Technology. She then became a Certified Veterinary Technician. After college, Kelly worked in multiple veterinary clinics in the Madison area, working with dogs, cats, and exotic species. In the clinics, she did a variety of tasks including anesthesia monitoring, dentistry, laboratory work, radiography, inventory and client / patient care. In 2019, Kelly decided to shift her focus from clinical work to the laboratory



Swine Oral Fluid Rope Kits no longer available from WVDL

We are discontinuing the PRRS and SECD testing on swine oral fluids, and will no longer be selling the rope kits. They are available from ITL Biomedical here : https://www.itlbiomedical.com/product/tego-swine-oral-fluids-kit/

Serology Submissions

Blood tubes should be labeled with animal identification and position number matching the submission form. When multiple tests are requested it is helpful to provide multiple tubes of serum. Please provide a minimum of 2 ml of serum per test. To expedite turnaround time of submissions larger than 10 samples please use our electronic submission forms below. This will eliminate transcription errors and make data entry for your submission faster.

For any supply request. Use this form - Veterinary Supply Order Form.

Electronic Submission of Accession Details: WVDL now provides a template Excel spreadsheet that makes it possible for clients to electronically provide details for submissions. This can be very helpful for DVM's and clinic staff as well as the WVDL. In prototyping this feature we have found it eliminates many data entry errors and saves hours of time spent by both submitters and the lab, especially on larger submissions. Please see the following two files:

- Excel Spreadsheet for Electronic Submission
 Instructions for above Excel Spreadsheet Template

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