

OADDLE-News

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Dr. Jerry Ritchey – Thank you for 25 Years of Diagnostic Services!

Dr. Ritchey joined the Department of Veterinary Pathobiology at the OSU CVM in 1997 as a teacher, researcher, and service provider. In this capacity, he served as a pathologist at OADDL and twice served as our interim Director (2012-13; 2019-20). During his last stint as Interim Director, he was influential in leading OADDL's ability to provide human COVID-19 testing to over 100,000 Oklahomans.

In February 2022 Dr. Ritchey was promoted to Associate Dean for Academic and Student Affairs. Although the faculty, staff, students, and clients will miss his presence at OADDL we know he will be exceptional in this new role as the main overseer of veterinary student training programs. Thank you for 25 years of dedication, mentorship, and comradery at OADDL, we will miss seeing your smiley face!



Cytology Corner: Tips for Getting Diagnostic Cytology Samples

Cytology can be very rewarding, but non-diagnostic samples are frustrating for everyone. A few simple tips can increase the chances of getting an answer from your sample!

1. Stick a needle in it, if you can

A **fine needle biopsy** (FNB) using the non-aspiration technique is almost always the best way to sample a lesion, if possible. Touch preps or scrapings

often give only normal surface cells or secondary inflammatory exudates and this might not be representative of the lesion. FNB is usually the best method for getting representative cells if there is a mass or swelling. The smaller the needle the better when doing an FNB (22-gauge or smaller). Larger bore needles generally do not get more cells, just more blood which may make a sample non-diagnostic. *continued on page 2*



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Cytology Corner: Tips for Getting Diagnostic Cytology Samples (continued)

Scrapings can be used with thin, dry lesions into which it is not possible to get a needle. Ringworm lesions and eosinophilic granulomas in cats are two common examples where a scraping may be beneficial, but FNB not practical. When doing a scraping, use a scalpel blade and gently scrape until some (scant!) serum/blood exudes onto the blade. This will help the sample stick to the slide.

Impression smears can be used on ulcerative lesions/draining tracts simply by touching a slide to the exudate. Just realize this is usually done only to look for the type of inflammation present and for the presence of infectious organisms.

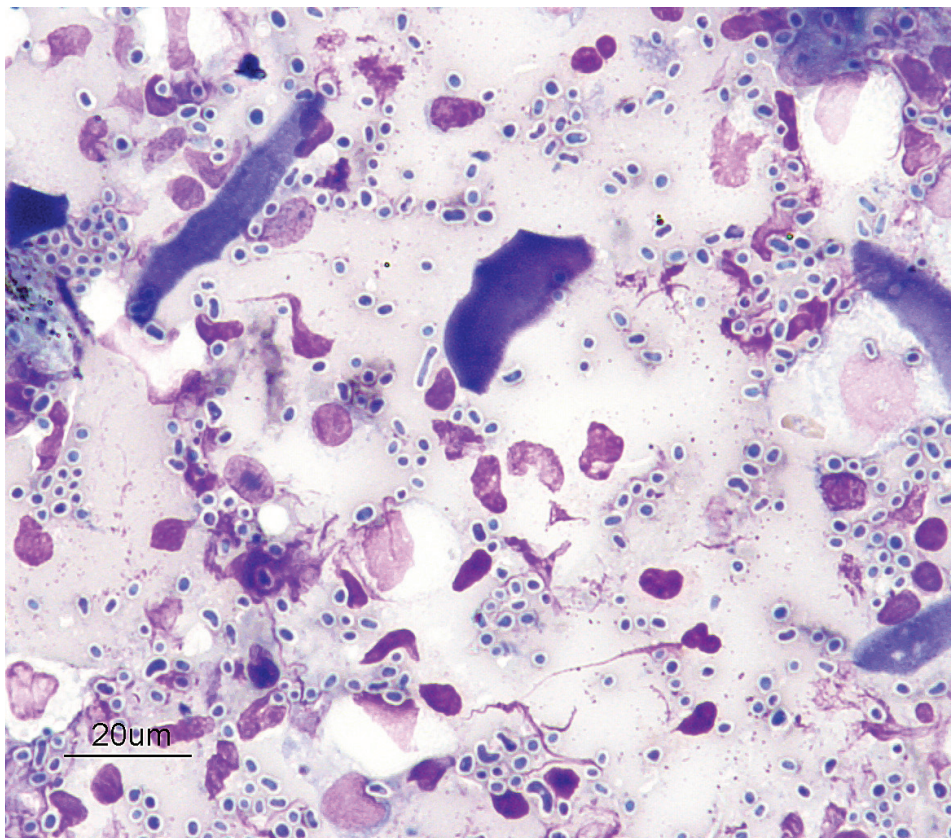
2. Send Several Slides.

Labs charge per *site sampled*, not per *slide submitted*. If you have a single lesion, submitting 1 slide or 5 slides will cost the same. However, you are far more likely to get a diagnosis by sending several slides. It is extremely common to have 1 diagnostic slide out of 5-6 slides submitted. If you have stained a slide to examine in-clinic and you see cells, send that one with the rest. It might be the best slide!

If the mass is large, sample several different areas using different needles. One area of the lesion may have necrosis or secondary inflammation.

3. Spread out the sample

Even a cellular sample may be non-diagnostic if the cells do not spread out well enough to look at. A light slide-over-slide technique is best. Do not to put any downward pressure on the spreader slide as this can result in ruptured cells. This is especially important with lymphoid cells which are very fragile. Alternatively, some samples can be spread as if making a blood smear.



What's your diagnosis?

Skin scraping of cutaneous, flat, hairless lesion on the face of a cat.

Find the answer on the last page of this newsletter.

This is usually gentle on the cells. A mixture of both slide-over-slide and blood smear type preps can be done. Some people use the end of a needle to spread out the sample or just touch two slides together without smearing. These techniques can work, but often do not spread out the cells as well.

If you get a fairly large drop of sample out of the needle (common with lymph node aspirates), the slide may end up too thick. In general, you should end up with a feathered edge near one edge of the slide. If the sample goes all the way to the end of the slide, it may be too thick to examine. In these cases, you can often just touch the spreader slide to the drop of sample and then lift it back up and transfer a small portion of

sample to another clean slide. It is often possible to make 3-4 slides from one drop of sample and get thinner, more diagnostic slides.

4. When in doubt, ask!

* If you have any questions, or are repeatedly getting non-diagnostic results, do not hesitate to call and talk to a pathologist. Some samples simply do not exfoliate well, but it might be helpful to call and discuss the technique for submitting slides. We are happy to try to help (we do not like non-diagnostic slides either!)

— Jim Meinkoth DVM, Dip ACVP
(clinical pathology)

OADDL Participates in SARS-CoV-2 Research Recently Published in *Viruses*

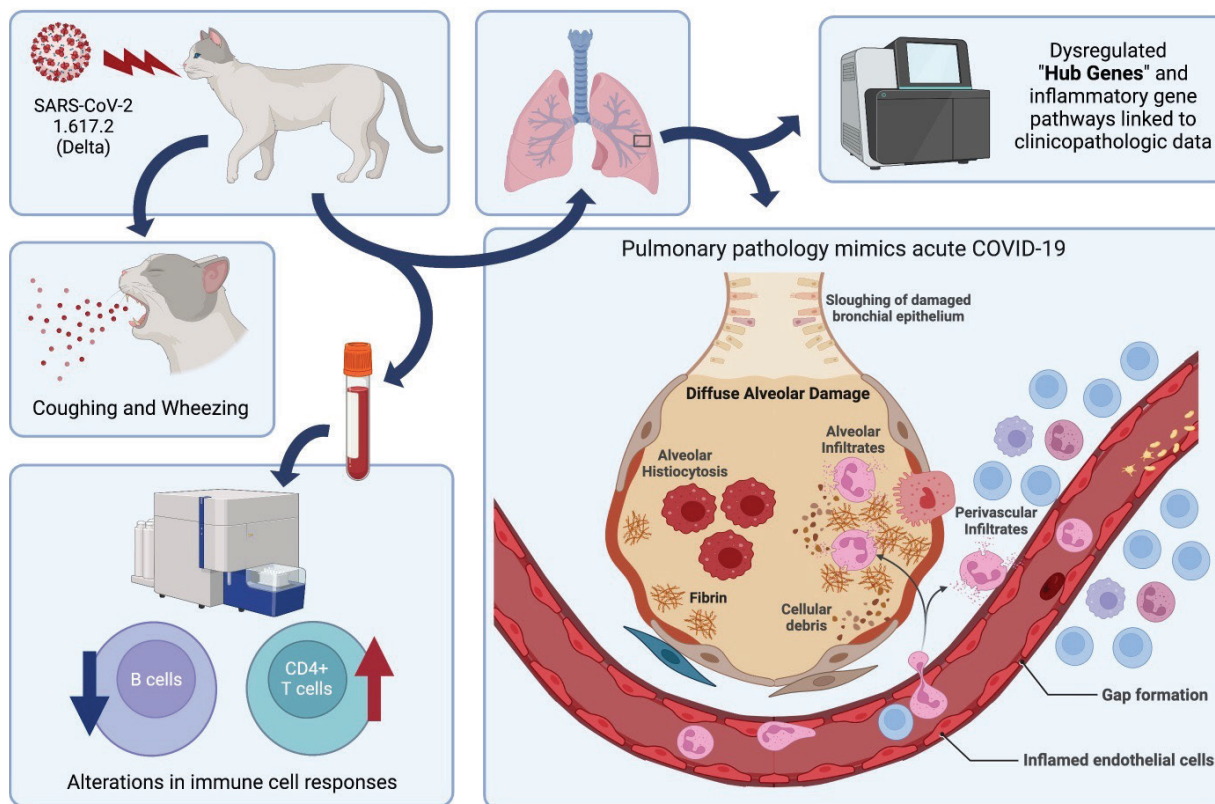
Oklahoma State University, College of Veterinary Medicine, Department of Veterinary Pathobiology (VPB) and OADDL collaborated with the Department of Animal and Food Sciences to investigate the effects of SARS CoV-2 (Delta Variant) in domestic cats. This collaboration resulted in publication of an article titled [SARS CoV-2 \(Delta Variant Infection Kinetics and Immunopathogenesis in](#)

[Domestic Cats](#) in the journal *Viruses*. The article was featured as an Editor’s Choice by the Journal. The research provides insight into mechanisms driving inflammatory responses to SARS CoV-2 infection and revealed marked similarities between humans and domestic cats with regard to clinical signs and histopathology. Additionally, differences between virulence of SARS-CoV-2 variants was revealed.

The study was conducted in OADDL’s Biosafety Level 3 facility under the direction of Drs. Craig Miller and Jerry Ritchey (OADDL pathologists at VPB) with RNA viral genome sequencing by Dr. Akhilesh Ramachandran (OADDL Molecular Diagnostics and Microbiology Section Head) and Dr. Sai Narayanan (Researcher and VPB Pathology resident).

— *Miruthula Tamil Selvan BVSc*

Acute SARS CoV-2 (Delta Variant) Infection in Domestic Cats



Created with BioRender.com

Antimicrobial Susceptibility Profile of *Mannheimia haemolytica* Isolates at OADDL: 2021 – 2022

From January 2021 to August 2022, a total of forty-one cases of bovine respiratory disease was diagnosed with *Mannheimia haemolytica* infection by bacterial culture of lung tissue specimens. 29% of the *M. haemolytica* isolates were multidrug resistant (resistant to 3 or more different classes of antimicrobial agents). The different drugs tested, and their percent susceptibility is shown in the Table.

—*S. Talent, A. Ramachandran*

ANTIBIOTIC	% SUSCEPTIBLE	% INTERMEDIATE	% RESISTANT
Ceftiofur	100	0	0
Danofloxacin	56	12	32
Enrofloxacin	56	17	27
Florfenicol	83	0	17
Penicillin	73	15	12
Spectinomycin	73	3	24
Tilmicosin	64	2	34
Tulathromycin	66	0	34

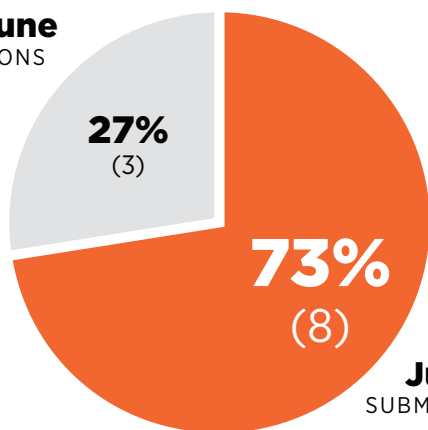
Number of *M. haemolytica* isolates tested = 41

Summer Heat / Drought and Toxicology Testing

The Oklahoma Animal Disease Diagnostic Laboratory provides both in-house and outsourced testing for several toxicological assays, including nitrates, prussic acid, and blue-green algae. With the recent heat waves and drought, the lab has seen an increase in forage submissions for these tests, particularly nitrate testing. So far in 2022, eleven submissions with forage samples were submitted for nitrate testing, with 73% (8/11) submitted in July alone. Of all samples, toxic levels were detected in two of the samples, both from the July samples. Nitrates at these toxic levels (> 10,000 ppm) can lead to abortions or acute illness and death in cattle. All plants are capable of accumulating nitrates; however, certain grasses such as Johnsongrass, sudangrass, and other sorghums have a high potential for nitrate accumulation. This is exacerbated by stressors such as the high heat and drought we have recently seen in Oklahoma.

Prussic acid (cyanide) accumulation can also occur in times of drought, although freezes and other stressors can lead to accumulation in sorghum grasses, particularly in Johnsongrass. Since May, OADDL has received 16 forage samples for cyanide testing, with no positives

Jan. - June
SUBMISSIONS



Of all samples, **toxic levels** were detected in

2 July
SUBMISSIONS

detected. All cyanide testing is performed in-house at OADDL using *Nandina* spp. as a positive control. As prussic acid is volatile, care must be taken to avoid excessive drying. It is recommended to test for cyanide levels within 24 hours of sample collection.

Blue-green algae testing is performed in-house at OADDL. These algal blooms typically occur in the warmer months, particularly hot dry days with little wind. As such, of the 21 water samples submitted to OADDL, 18 (86%) were received in June, July, and August. Of these 18, varying species of cyanobacteria were

detected in 67% (12/18). There are several species of cyanobacteria (blue-green algae), including *Microcystis*, *Anabaena*, and *Oscillatoria* spp. Clinical signs may include skin irritation and gastrointestinal symptoms but often sudden death along the water's edge occurs. If blue-green algae is suspected, it is recommended to collect water samples near these carcasses or where algal blooms are most visibly concentrated. As windy conditions can disperse these blooms, timely collection is recommended. For more information, please call us at 405-744-6623.

– *Brianne M Taylor, DVM, MS, DACVP*

Mini-FLOTAC Fecal Egg Count, Now Available at OADDL-Parasitology

Fecal egg counts (FEC) are routine diagnostic techniques often needed in equines, ruminants and poultry. They are used to detect animals with high egg/oocyst output as well as for detection of the anthelmintic resistance. The Mini-FLOTAC technique can provide a detection limit (dl) of 5 eggs per gram (EPG) and can be used as an

alternative to McMaster FEC which delivers a dl of 25 EPG. The parasitology diagnostic laboratory at OADDL is now offering this test as an option for veterinarians, ranchers and producers. As with other FEC methods, ideally submit 5 to 10 g of fresh feces.

– *Ruth Scimeca, VMD, MSc, PhD, DACVM*

For more information, scan this QR Code or click [here](#).

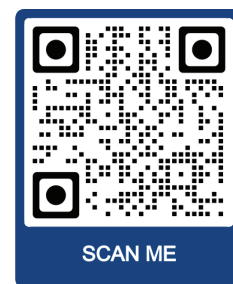


Fig 1. Mini-FLOTAC apparatus (a) loaded sample, (b) reading mode, (c) acquired image with *Trichostrongyles* type eggs, and *Eimeria* sp. oocysts.



Message from the Director

Dear valued clients and stakeholders:

We share with you another edition of our newsletter. Over the years, we have maintained a posture of continuous improvement to better serve you. Highlights of our activities and accomplishments over the past few months include:

- We initiated two USDA-funded projects, with a combined two-year funding of \$833,367. One project aims at enhancing the VetView information management system to allow multi-test online submission requests. The other seeks to develop
- We launched an automated reportable disease system whereby results of reportable diseases are automatically sent to state and federal authorities.
- Following a temporary big price hike in shipping fees due to expiration of the State of Oklahoma's purchasing contract with UPS, we negotiated another contract shipping contract with FedEx, now allowing users to print both UPS and Fedex shipping labels from our website.
- Our website was completely overhauled to OSU's current template, thus easing navigation and general user-friendliness.
- We implemented a new fee structure on July 1, with an overall rate of increase of 2.6% affecting only 11% of our services.



Please, do not hesitate to contact us with any questions or suggestions on how we can better serve you.

- Dr. Jerry Saliki

Getting to Know Us

Shannon Maloney is the Medical Records Technician at OADDL. She has over 15 years of customer service experience and tries to spread laughter and kindness daily. Shannon was born and raised in Stillwater and has enjoyed raising her family here. Outside of work she enjoys learning new hobbies and spending time on the water.



Emily Lau was born and raised in Tulsa Oklahoma and moved to Stillwater to obtain her bachelor's degree in Animal Science, pre-vet. She joined the OADDL team in August 2021 as a Receiving/Necropsy Technician. In her free time, she likes to propagate plants, go to the gym, play video games, and take naps with her puppy. She also has a cat who is super sweet!



Ideas/Suggestions for Future Content

We want to hear from you. Send your ideas and suggestions to

oaddl@okstate.edu.

Contact Us

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vetmed.okstate.edu/oaddl

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Cytology Corner Answer: Ringworm. The scraping contains many variably shaped fungal elements. Ringworm organisms are a small (~2-4um) round to variably elongated basophilic structures surrounded by a clear halo. While they can be found within or on hair shafts, they are more commonly seen free in the background as in this case. The round forms resemble *Histoplasma sp.*, but are a solid blue in contrast to a crescent shaped nuclear area that is common with *Histoplasma sp.* organisms.

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