



The Work-Up

Diagnostic Services Unit | Issue 7 - May/June, 2023

Inside this Issue

SPECIAL EDITION: Bacteriology
Spotlight: Dr. Beverly Morrison
and the Bacteriology Lab

Corynebacterium urealyticum in
a cat

Vibrio cholerae in fish

Streptococcus equi zooepidemicus
in pigs

Rhodococcus equi in a horse

Salmonella ser. Dublin in a calf

DSU Announcements

Holiday Closures:

Victoria Day: Monday, May 22, 2023

Canada Day: Monday, July 3, 2023

The DSU welcomes **Dr. Manga Devi**,
Serology Technician! Manga will help
set up and run the DSU serology lab
(planned opening fall 2023).

The DSU welcomes **Madeleine
Gauthier**, DSU Summer Student!

Sample Hold Fees: A hold fee will
be applied to any tissues submitted
with a hold request. These samples
will be held for 2 weeks before dis-
posal if there are no further instruc-
tions from the submitting veterinar-
ian. *For whole bodies, an additional
disposal fee will also apply.*

Appropriate sample packaging:

Please ensure samples are submitted
in **leak-proof containers**, including
if the animal owner will be dropping
off the sample. Appropriate sample
packaging helps to avoid contami-
nation of the samples, DSU building,
and personnel.

Deliveries: Please use the DSU en-
trance at the back of the building for
sample drop-offs. A map is available
online: [https://vet.ucalgary.ca/de-
partments-units/dsu/contact-us](https://vet.ucalgary.ca/departments-units/dsu/contact-us)

SPOTLIGHT

Dr. Beverly Morrison pursued a dual DVM/MSc degree at the Western College of Veterinary Medicine (WCVU). She obtained her DVM in 2017 and completed her MSc in Veterinary Microbiology (Bacteriology) in 2019. She gained further research, teaching, and diagnostic bacteriology/molecular microbiology experience during her post-graduate training at the WCVU in partnership with Prairie Diagnostic Services Inc. In 2020, Dr. Morrison joined the University of Calgary, Faculty of Veterinary Medicine as a Clinical Bacteriologist with the Diagnostic Services Unit and was vital to the successful opening of the DSU Bacteriology Lab in November 2021.



The DSU Bacteriology Lab opened November 1, 2021 and has seen a steady increase in cases since then, receiving samples from clinics around the province and tissues from DSU necropsy cases. The Bacteriology Team consists of two Technicians, Mai Farghaly and Karan Gadani, and Clinical Bacteriologist, Dr. Beverly Morrison. Alongside traditional culture techniques, the lab uses state of the art technology for bacterial identification with a MALDI-ToF Biotyper. They perform the gold standard, broth microdilution, sensitivity testing using commercially available Sensititre™ veterinary panels. The lab also offers fungal culture and Clostridium fluorescent antibody testing. In the short time they have been operating, the Bacteriology Lab has gained a reputation for excellence with fast turnaround times, high quality results and reports, and accessibility to practice veterinarians for consult with Dr. Morrison. This culminated in them winning the inaugural UCVM Award's Night Team Excellence Award in February 2023!



PC: Todd Kroll

Corynebacterium urealyticum was isolated from a urine sample from an 11-year-old male DSH cat with recurring bacterial cystitis following a PU surgery. On ultrasound, the cat had a thickened ventral bladder wall. Previous culture results were *Enterococcus faecalis*. *Corynebacterium* spp. are reported to be normal genital flora in cats with few reports of *C. urealyticum* causing encrusting cystitis as in this case. It showed resistance to fluoroquinolones possibly due to Pradofloxacin treatment while awaiting C&S results highlighting the need for C&S to inform appropriate antimicrobial treatment.

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DSU Team

Anatomic Pathologists:

Dr. Jennifer Davies
Dr. Dayna Goldsmith
Dr. Ashish Gupta
Dr. Cameron Knight
Dr. Carolyn Legge
Dr. Jamie Rothenburger
Dr. Amy Warren
Dr. Erin Zachar

Clinical Pathologists:

Dr. Angelica Galezowski
Dr. Catherine Wagg
Dr. Amy Warren

Microbiologist:

Dr. Beverly Morrison

Support Staff:

Jim Carlsen
Dr. Manga Devi
Makaela Douglas
Mai Farghaly
Karan Gadani
Lori Goodbrand
Jennifer Larios
Samantha Lewin
Heather Mitchell-Matheson
Mel Nicolas
Ciara O'Higgins
Dr. Lindsay Rogers
Sara Skotarek Loch

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Vibrio cholerae was diagnosed in a school of Zebrafish with reddened abdomens and heads, skin lesions, and death following start of clinical signs. Necropsy was consistent with the clinical signs with multifocal skin ulcerations and loss of tail fins. Histopathology revealed necrosis of the epithelium and intestinal mucosa alongside cellulitis. *Vibrio cholerae* was isolated from a swab of a skin lesion and serotyped as non-O1/O139 and negative for the Cholera toxin. *Vibrio cholerae* is a zoonotic pathogen with the O1 and O139 serotypes causing cholera in humans. The bacteria persist in aquatic environments with fish acting as reservoirs. It occasionally causes disease in fish with hyperemia and ulceration as seen in this case.



Hyperemia/ulceration, zebrafish (PC: Mel Nicolas)

Streptococcus equi subspecies zooepidemicus (SEZ) was isolated from pregnant gilts with anorexia, depression, abortion, and death. An emulsion of liver and spleen was cultured for final diagnosis. SEZ is a commensal of horses, but virulent strains can cause severe systemic disease and high mortality in pigs. This disease is historically common in Eastern Asia, but infrequent in North America. SEZ is an emerging porcine pathogen and a recent challenge study suggests an isolate genetically distinct from the equine commensal isolates is responsible for causing disease in pigs.

Rhodococcus equi was diagnosed in a 2-year-old Standardbred horse with anemia, weakness, lethargy, and weight loss. Ultrasound showed consolidated lung. Consistent with an *R. equi* infec-

tion, there were crateriform ulcers in the GIT and lymphangitis and inflammation in the mesenteric lymph nodes. *R. equi* was confirmed with a positive culture from both tissues. While typically an infection of foals 1-6 months old, *R. equi* can infect older horses with concurrent disease. This horse also had lesions consistent with equine multinodular pulmonary fibrosis caused by EHV-5 and renal klossiellosis. The protozoa *Klossiella equi* typically only causes incidental infection but in immunocompromised animals it can cause rupture of renal tubules leading to tubular nephrosis and interstitial nephritis.



Crateriform ulcers, equine GIT (PC: Mel Nicolas)

Salmonella serovar *Dublin* was isolated from a 1-month Holstein heifer with a history of lethargy and severe scours. Histologic changes on tissues submitted from a field necropsy were consistent with a severe bacterial septicemia likely due to an underlying necrotizing enteritis. *Salmonella* spp. infection was suspected and confirmed with culture of the lung and liver. It was serotyped as *S. Dublin*, a common cause of severe bacterial sepsis in calves. *Salmonella* serovar *Dublin* is a provincially reportable disease and has zoonotic potential. The bacteriology lab has identified over 10 different *Salmonella* serovars in production animals, companion animals and exotics, and wildlife stressing the importance of this lab service in Alberta.

Did you know...

...how the MALDI-ToF Biotyper works? MALDI-ToF MS stands for Matrix-Assisted Laser Desorption/Ionization Time of Flight Mass Spectrometry and uses a laser to disperse and ionize a bacterium into smaller molecular components. The time for these components to move through a vacuum based on electric charge gives a bacterium its fingerprint and allows the Biotyper to identify it by comparison to a commercial database. After primary culture, the bacterial species can be identified within minutes.

PC: Todd Kroll

