

The Chair's Holiday Greeting and End of Year Message



Dear Colleagues,

For this the first holiday season in our lifetime occurring during a pandemic, let us continue to follow the public health guidelines as we take a few days to enjoy the holiday season with our families and friends. I share with you the wish that there may be peace on earth and love in the hearts of all mankind this holiday season and always. This is a time to reflect on our successes in 2020 and be thankful for all the contributions of many people along the way, and a time to recommit to a productive 2021.

Wishing you and your families much happiness during the holidays and a Healthy and Prosperous 2021!

Fred Kibenge



Pathology and Microbiology Welcomes Dr. Shivani Ojha

The Department of Pathology and Microbiology is pleased to welcome **Dr. Shivani Ojha** who is currently employed in a one year contract in the Molecular Clinical Bacteriology position at the AVC.



Dr. Ojha hails from Guelph, Ontario, where she worked in the Department of Pathobiology and the head of Animal Health Laboratory at the University of Guelph. Shivani has over 15 years of experience in research involving diverse pathogens. Her research work in molecular diagnostics has harnessed both genetic and serology-based markers to identify and track pathogens of public health significance. She has worked on a range of pathogens to address risk assessment and management, including *E. coli* O157, *Coxiella burnetii*, norovirus, *Clostridium perfringens*, and bacteriophages. Currently at the AVC, she is involved in teaching bacteriology and virology in the VPM4500 course as well as supervising the diagnostic bacteriology laboratory.

Welcome Dr. Ojha!

Pathology and Microbiology Says Farewell and Congratulations to Liz Rostant-McArthur



Liz Rostant-McArthur began her position in Central Services in March 2012. Liz was no stranger to the college as she had started her career 30 years ago in the department of Anatomy & Physiology working in neuroanatomy. She successfully completed a Master of Science in the same department working in salmonid fish behavior and endocrinology. Liz continued to work in the department as a research technician before moving to the Duffy Science Center as a coordinator/instructor for various biology courses and developed and authored her own laboratory manuals for anatomy, physiology, and microbiology which are still in use today.

As Senior Laboratory Technologist in Central Services, Liz was able to utilize many of her skills that she had acquired through her work, research, and studies at UPEI. Central Services is an integral part of the AVC and UPEI. It is a multifunctional laboratory that is responsible for media preparation for Diagnostics Services, research, teaching, and off-campus clients across the Maritimes, decontamination of biowaste, and disposal of hazardous chemical waste, among several other laboratory services. In this position Liz became Chair of the AVC Health and Safety Working Group and participated in committees such as the Institutional Biosafety Committee and the Lab Safety Manual Committee.

Liz thoroughly enjoyed her time managing Central Services alongside the staff, and has a deep appreciation for her co-workers, mentors, teachers, and colleagues she has had the pleasure of working with at the college. They have helped shape who she is today. She has always tried to be involved in campus life, and has had the opportunity to work in different areas and departments on campus gaining wisdom from her time as both a student and as staff. This has provided Liz with a unique understanding of how the university works and has allowed her to make some wonderful friends over the years.

As of November 2020, Liz has officially accepted the position of UPEI Health, Safety, and Environment Manager. In doing so she has resigned her position as Senior Laboratory Technologist in Central Services, leaving it in the very capable hands of Nancy Jay, Rosemary McKenna and Nicole MacDonald-Jay!

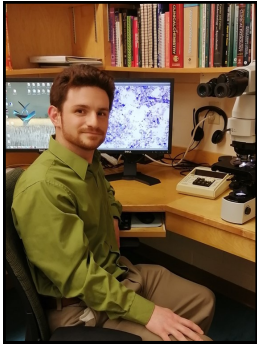
Congratulations to Dr. Janet Saunders



The department is pleased to welcome **Dr. Janet Saunders** into a laboratory technologist position in clinical pathology. In this role, Janet will provide important support to the clinical pathologists in teaching and research activities. She is no stranger to the department as she previously worked in the microbiology section.

Welcome to your new role, Dr. Saunders!

Davis Thompson Award Recipient



Congratulations to **Dr. Brodie Reinhart**, a second year MVS resident in clinical pathology, who recently received the 2020 UPEI Charles Louis Davis and Samuel Wesley Thompson DVM Foundation Pathology Trainee and Scholarship Award. This is a trainee award for excellence in diagnostic pathology. Dr. Reinhart was nominated by the department pathologists and among other strengths, his work ethic and diagnostic ability in cytology was recognized. He was presented with his award via a virtual ceremony on October 27th, 2020.

Congratulations Dr. Reinhart!

Diplomate ACVM Status Achieved



Congratulations to **Dr. Shivani Ojha** on becoming a Diplomate of the American College of Veterinary Microbiologists (ACVM) in Bacteriology/Mycology.

Congratulations Dr. Ojha!

2020 ASVCP/ACVP Annual Virtual Meeting

DIAGNOSIS OF RENAL LYMPHOMA BY WRIGHT-GIESMA STAINED CYTOCENTRIFUGED URINE EVALUATION IN A CAT
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Department of Pathology and Microbiology, Atlantic Veterinary College
University of Prince Edward Island, Canada

Abstract:
Background: Lymphoma represents up to 30% of neoplasms diagnosed in feline patients. Diagnosis of lymphoma in the urinary system by urine sediment examination has been described in a dog, but not previously in cats. Objective: Cytologic description of neoplastic lymphoid cells identified by Wright-Giemsa stained cytocentrifuged urine preparation in a cat. Results: Cytologic findings included a mild non-neoplastic, non-infectious, non-inflammatory leukogram with a stress component. Chemistry abnormalities included a marked azotemia, moderate hyperphosphatemia and moderate hyperproteinemia. Cytocentric urinalysis revealed moderate urinary protein excretion and moderate proteinuria. Microscopic examination revealed moderate numbers of leukocytes and erythrocytes, a uniform population of intermediate to large lymphocytes was observed on a fresh, Wright-Giemsa stained cytocentrifuged urine preparation. These cells had small to moderate volumes of blue cytoplasm that occasionally contained clear vacuoles and fine azurophilic granules. Nuclei were round to occasionally reniform, with fine stippled chromatin and occasional distinct nucleoli. The patient was euthanized and abdominal organs were returned to the laboratory at necropsy. Bladder neoplasia characterized by multifocal, pale yellow, nodular, poorly defined, homogeneous nodules was identified. Microscopically, these nodules were composed of dense sheets of CD3 positive round cells, consistent with T cell renal lymphoma. Conclusion: This case represents an uncommon method of neoplastic lymphoma identification and emphasizes the importance of thoroughly stained urine sediment examination in veterinary patients.

History and Clinical Findings:
A 11-year-old female spayed domestic shorthair cat presented to a local veterinary clinic for weight loss of an unknown duration, polyuria and polydipsia. Samples were submitted to the Atlantic Veterinary College for complete blood count (CBC), biochemistry, and urinalysis.

Diagnostic Test Results:
CBC: Mild leukocytosis characterized by a moderate monocytosis with a mild left shift and a toxic change, a moderate lymphopenia and moderate monocytes suggesting inflammation and stress.

Biochemistry: Mild renal azotemia, moderate hyperphosphatemia and hyperproteinemia. Consistent with reduced glomerular filtration rate.

Urinalysis: Dilute urine and moderate proteinuria. Wet mount urine sediment examination revealed increased red and white blood cells. A cytocentrifuged Wright-Giemsa stained urine preparation contained high numbers of atypical lymphocytes with lower numbers of neutrophils and epithelial cells.

Atypical Lymphocytes in Urine:
Intermediate to large lymphocytes had small to moderate volumes of pale blue cytoplasm which occasionally contained clear vacuoles and/or fine azurophilic granules. Nuclei were round to occasionally reniform with fine stippled chromatin and occasional distinct nucleoli.

Supports lymphoma within the urinary tract and the fine azurophilic granules could indicate a T-cell origin.

Table 1: Abnormal Hematology Results (Sysmex XT2000i)

Test	Units	Result	Reference Interval
WBC Count	$\times 10^9/L$	27.3	4.3-17.0
RBC Count	$\times 10^{12}/L$	6.1	6.4-11.0
Hgb Mass	$\times 10^3/L$	23.1	2.2-8.5
Red Mass	$\times 10^3/L$	0.5	0.0-0.1
Lymphocytes	$\times 10^9/L$	0.3	0.5-1.5
Monocytes	$\times 10^9/L$	1.4	0.0-0.8

Table 2: Abnormal Biochemistry Results (Roche Cobas 6000)

Test	Units	Result	Reference Interval
Urea	mmol/L	37.5	6.4-11.4
Creatinine	mmol/L	661	67-157
Phosphorus	mmol/L	3.09	0.94-1.68
Magnesium	mmol/L	1.22	0.74-1.12

Table 3: Relevant Urinalysis Results (Cystocentesis Sample)

Test	Units	Result	Reference Value
Color	-	Yellow	-
Turbidity	-	Cloudy	-
USG	-	1.014	>1.035
Protein	-	++	-
WBC	Cells/field	12-15	<5
RBC	Cells/field	10-15	<5

Figure 1: Urine Cytology - Cytocentrifuged Wright-Giemsa Stained Urine Preparation
Figure 10-15 μm lymphocytes with clear vacuoles and moderate azurophilic granules. White space (lymphoma) are also present (1000x).

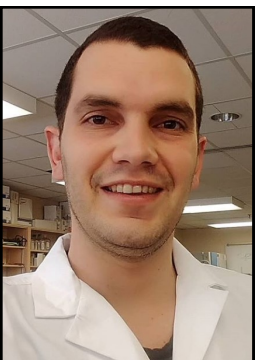
Figure 2: Renal Microscopy - CD3 Immunohistochemistry
Cytocentrifuged Wright-Giemsa stained urine preparation showing a large number of atypical lymphocytes with clear vacuoles and moderate azurophilic granules. Nuclei were round to occasionally reniform with fine stippled chromatin and occasional distinct nucleoli. (1000x).

Follow up:
Renal evaluation via ultrasound and fine needle aspiration or biopsy +/- flow cytometry was recommended. Unfortunately, the owner elected for humane euthanasia. A post-mortem examination was performed.

Post mortem Examination and Histology:
Lesions were restricted to the kidneys which were bilaterally enlarged and pale yellow homogeneous nodules consistent of highly cellular non-neoplastic renal parenchyma. These nodules effaced the renal architecture. Microscopically, these nodules consisted of dense sheets of CD3 positive round cells, consistent with T cell lymphoma.

Dr. Brodie Reinhart, second year MVSc Resident in Clinical Pathology, co-supervised by **Drs. Noel Clancey** and **Cornelia Gilroy**, had the recent opportunity to attend the annual meeting of the American Society for Veterinary Clinical Pathology / American College of Veterinary Pathologists. Due to the pandemic, this conference was held virtually. During the conference, Dr. Reinhart provided an excellent presentation for his poster entitled, "Diagnosis of renal lymphoma by Wright-Giemsa stained cytocentrifuged urine evaluation in a cat".

2020 Poultry Science Association Virtual Meeting



Due to SARS-COV-2, the annual Poultry Science Association meeting went virtual in 2020. **Dr. Santiago Uribe-Diaz**, a Master of Science student under the supervision of Dr. Marya Ahmed at the Chemistry department and **Dr. Juan Carlos Rodriguez-Lecompte** at the Atlantic Veterinary College, Department of Pathology and Microbiology, made an oral presentation during the 2020 Poultry Science Association Virtual Meeting presenting promising results related to his thesis topic. The presentation was entitled "The role of folic acid on the antiviral innate immune pathways in chicken B lymphocytes".

CWHC Organizes National Bat Health Webinar



The Canadian Wildlife Health Cooperative (CWHC) organized and delivered a mini-webinar highlighting various topics relating to bat health in Canada; 100 participants attended.

The purpose of this webinar was twofold: 1) to develop a better understanding of bat health from the Canadian perspective, moving away from a focus on disease problems to those aspects of conservation, management, and research that are informing recovery and conservation actions in a positive manner; and 2) to generate interest among the Canadian bat management and research community to participate in a National Bat Health Workshop that further explores the situational context of bat health in Canada.

Invited speakers included wildlife health and bat experts from federal and territorial governments, academic institutions, regional community bat programs, and the CWHC. Topics covered included: bat health management from the federal,

Yukon, and research perspectives, the importance of health surveillance, bat rabies, COVID-19 and bats, wind farm threats to bats, large scale acoustic monitoring of bats, managing bats in buildings, establishing bat-friendly communities, and public messaging on bats.

This webinar shifted the focus of discussion from being predominantly white-nose syndrome centric to encompass bat health matters on a much broader scale. This webinar was a conversation starter and provided a quick snapshot of a broad array of topics and success stories relating to bat health throughout Canada. A recording of the webinar is available here: <https://youtu.be/P3vf47o6HTo>

Submitted by **Jordi Segers** "National White Nose Syndrome Scientific Program Coordinator" (CWHC National Office) and **Tessa McBurney** "Atlantic Bat Conservation Project Technician" (CWHC Atlantic Region).



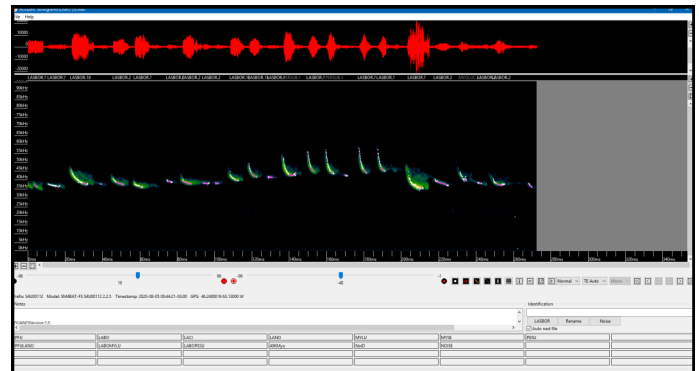
Acoustic Guide for Bat Monitoring in Atlantic Canada



Acoustic monitoring of bats has become increasingly widespread in Canada as a tool to assess bat population measures both pre- and post-emergence of bat white-nose syndrome (WNS), especially this past summer when live bat handling activities were discouraged due to the risk of [potentially spreading SARS-CoV-2 to susceptible bat populations](#). Data collected through acoustic surveys allow inferences to be made about population-level trends, without being invasive or disruptive to at-risk bat species. The North American Bat Monitoring Program (NABat) relies heavily on acoustic monitoring to assess how various threats may impact long-term viability of bat populations. Established in 2015, NABat is a multiagency and multinational program initiated to standardise the monitoring of the 47 bat species resident to Canada and the United States of America. Data collected through NABat monitoring can be used to inform on regional and range-wide population changes, in addition to indicating trends on a local-scale. Funding received by the CWHC, Atlantic Region from the Environment

and Climate Change Canada (ECCC) Habitat Stewardship Program (HSP) for Species at Risk led to development of an [acoustic guide](#) centred on NABat monitoring. This will specifically target the resident and transient bat species found within the four Atlantic provinces. A preliminary draft of the document was used to train 17 key partners from across Atlantic Canada in an online workshop format in June 2020, in preparation for the summer acoustic monitoring season.

The guide and workshop were developed by **Tessa McBurney** and **Jordi Segers**, and were produced through collaboration between the CWHC, ECCC, the New Brunswick Department of Natural Resources and Energy Development, the Newfoundland and Labrador Forestry and Wildlife Branch, the Nova Scotia Wildlife Division, and the Prince Edward Island Fish and Wildlife Section. The guide is publicly accessible on the [CWHC website](#) and will be available in both French and English. The guide has already been put to practical use this past summer with local bat monitoring contracts held by the CWHC. The bat identification section within the guide uses updated criteria for distinguishing between echolocation call patterns of the seven bat species found within Atlantic Canada. Using these echolocation call



characteristics, eastern red bats (*Lasiurus borealis*) were confidently identified for the first time on Prince Edward Island this summer in both Prince Edward Island National Park and a property owned by the Native Council of PEI, highlighting two separate collaborations with the CWHC. A review of acoustic data collected in previous summers revealed that eastern red bats have been occasional visitors to the island over the years. Using these new acoustic techniques, it is hopeful that the eastern red bat, and maybe even other new species, will continue to be detected on Prince Edward Island in the future.



Chinook Project 2020



The Chinook Project had planned to visit two Innu First Nation communities in Northern Labrador in June: Natuashish (fifth visit – 2010, 2011, 2015, 2019) and Sheshatshiu (fourth visit – 2014, 2016, 2019). The veterinarians leading the team were Dr. John Ruffino (from Newfoundland, and a seasoned Chinook veterinarian) and Dr. Stephanie Landry, a new participant (Atlantic Veterinary College). Dr. Becky Jackson in Goose Bay, Labrador would also help coordinate the project. Five veterinary students (hailing from Newfoundland, New Brunswick, Nova Scotia, Prince Edward Island and the United States) were enrolled in the rotation. Once again, the success of the trip also heavily depended on local coordination, and we had good support lined up in the communities. We were looking forward to building stronger ties with Natuashish, and revisiting Sheshatshiu.

Unfortunately, in mid-March it became obvious that COVID-19 would necessitate the cancelling of the Chinook Project clinics. The University of

Prince Edward Island declared a stop in all travel, the Atlantic Veterinary College suspended rotations, and the Atlantic Provinces were locked down for several months. We looked at the possibility of rebooking the rotation in the fall of 2020, but it was deemed to be impractical to plan anything, as the state of public health is so tenuous and uncertain. It would also be very difficult to adjust students' (and veterinarians') schedules to accommodate a change in plans.

We also considered a trip to these communities to provide a small vaccine and deworming clinic (without surgery) and although the communities were receptive to this idea, it was decided that it was too risky to make these plans in such uncertain times. Sponsoring companies (Boehringer-Ingelheim and Zoetis) were kept apprised of the situation, and no product support was utilized this year. Company representatives were very understanding and renewed their willingness to help in the future.



There is still a need in these two communities to control the dog population, as well as disease. Frequent positive cases of rabies in wild animals and the dog population occur across Labrador. In Natuashish specifically, the dog population suffered a distemper outbreak in the spring of 2018. Dr. Becky Jackson recently reported that 2020 has seen a larger than normal number of parvovirus cases in Sheshatshiu.



All three of these diseases are preventable with simple vaccines. The Innu Band Councils of Sheshatshiu and Natuashish are also maintaining registries of dogs and we have been able to microchip many animals in both of these communities. Several dogs that have been separated from their owners have been returned home due to this microchip program.

The Chinook Project is in the process of making plans for 2021 when we hope to be able to return to Labrador. We have been approached by the Southern Coastal communities with a strong proposal to hold a clinic in Port Hope Simpson. People from neighbouring communities would be able to access the clinic by road. This would be the first time the Chinook Project has gone to the South Coast of Labrador.

We will continue to look for collaborative opportunities with Veterinarians without Borders (VwB) and other groups and hope to see a national strategy for access to veterinary care emerge. We participated in VwB panel discussions in 2017, 2018 and 2020, and continue to provide information and propose ideas. Also, we are interested in future research opportunities and developing a humane education plan.

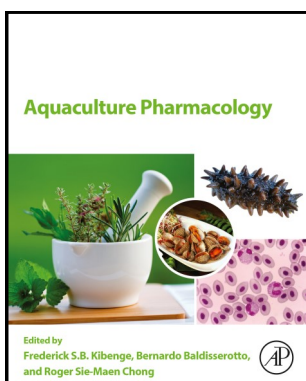


Symposium on Ruminant Diseases



Dr. Alfonso López, Professor Emeritus in Pathology and Microbiology, was an invited speaker for the Symposium on Ruminant Diseases organized by the Universidad Pedro de Valdivia in Chile. It was an inter-institutional symposium held online on August 14, 2020 and sponsored by the Charles Davis Foundation for the Advancement of Veterinary and Comparative Pathology, the Latin Comparative Pathology Group, and "Sociedad Chilena de Patología Veterinaria". Dr. López discussed the current concepts of sepsis and the pathophysiology of shock. Other topics covered during the symposium were diseases of the nervous system, bovine abortion, and digestive tract conditions.

Dr. Kibenge Publishes Third Book



Congratulations to Dr. Frederick Kibenge, Chair of the Department of Pathology and Microbiology at AVC, on the publication of his third book, *Aquaculture Pharmacology*, with co-editors Dr. Bernardo Baldisserotto, professor of physiology, Federal University of Santa Maria, Brazil, and Dr. Roger Sie-Maen Chong, research aquatic pathologist, Commonwealth Scientific and Industrial Research Organization (CSIRO), Australia.

Aquaculture Pharmacology focuses on practical principles of pharmacology, therapeutics, and pain management/anesthesia of finfish, crustaceans, and mollusks, the three major groups of aquatic animal species cultured for human consumption. The book is a reliable and valuable up-to-date "all-inclusive" reference and guide to the state of the field for aquaculture veterinarians and fish health specialists/researchers.

Published by Elsevier (Imprint: Academic Press), the book is available online through Elsevier.com (<https://www.elsevier.com/books/aquaculture-pharmacology/kibenge/978-0-12-821339-1>) in print and electronic format. It is also available in html and pdf format on ScienceDirect.

Publications

Fast MD, Dalvin S. Lepeophtheirosis (*Lepeophtheirus salmonis*) CAB International Climate Change and Infectious Fish Diseases 2020;25:471.

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Co-authored by Fast M. Sea Lice: Infection and Treatment. Code of Practice for the Care and Handling of Farmed Salmonids: Review of Scientific Research on Priority Issues. 2https://getpocket.com/explore/item/the-hacks-that-finally-saved-our-tiny-bedrooms?utm_source=pocket-newtab020;3:20.

Hernández-Jarguín AM, Martínez-Burnes J, Molina-Salinas GM, Cruz-Hernández NI, Palomares-Rangel JL, López A, Barrios-García HB. Isolation and histopathological changes associated with non-tuberculous mycobacteria in lymph nodes condemned at a bovine slaughterhouse. Veterinary Science 2020;7: 172.

Godwin SC, Fast MD, Kuparinen A, Medcalf KE, Hutchings JA. Increasing temperatures accentuate negative fitness consequences of a marine parasite. Scientific Reports 2020; 10: 18467.

Malek S, Weng HY, Martinson SA, Rochat MC, Béraud R, Riley CB. Evaluation of serum MMP-2 and MMP-3, sinovial fluid IL-8, MCP-1, and KC concentrations as biomarkers of stifle osteoarthritis associated with naturally occurring cranial cruciate ligament rupture in dogs. PLOS ONE 2020; <https://doi.org/10.1371/journal.pone.0242614>.

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Please don't print this newsletter unless you really need to!

