

Pathology & Microbiology Newsletter Bi-monthly News Bulletin Atlantic Veterinary College University of Prince Edward Island Issue 58 March, 2021



Gill Health Project Led by AVC Faculty Member Receives \$4.7 Million in Funding



Charlottetown, PEI (March 11, 2021)—A project to develop an early warning system for identifying complex gill disease on salmon farms, led by **Dr. Mark Fast,** professor of fish health and immunology, Atlantic Veterinary College at UPEI, has received \$4.7 million in funding through Genome Canada's Genomic Applications Partnership Program (GAPP).

The project is one of <u>five applied research genome</u> <u>projects</u> that received \$8.6 million in federal funding and an additional \$17.8 million in co-funding from provincial governments, businesses, and research partners across Canada. Partnering with Dr.Fast on the project are Cermaq Canada, Grieg Seafoods,

Genome Atlantic, and Genome BC. Salmon production in Canada is under increasing threats from infectious and non-infectious diseases such as complex gill disease. Over the last decade, gill health and associated disease have been a growing challenge in salmon farming operations in both the Pacific and North Atlantic. Complex gill disease is a multifactorial condition resulting from the interaction of environmental and husbandry conditions as well as infection by pathogens and parasites to create proliferative lesions, particularly during the summer and fall months.

The project will validate biomarkers of healthy and compromised gills of Atlantic salmon and use these to develop an early warning system for the development of gill disease on Atlantic salmon production sites across Canada. The resulting genomics-enabled tools for fish health will guide the management and intervention strategies for complex gill disease in Atlantic salmon.

"On behalf of the Atlantic Veterinary College, I congratulate Dr. Fast and his collaborators on being awarded this funding." said Dr. Greg Keefe, Dean of AVC. "Research projects like this are important because they can provide solutions to problems that affect the health and welfare of animals, people, and communities."

Dr. Katherine Gottschall-Pass, Interim Vice-president Research and Academic at UPEI, joined Dean Keefe in congratulating Dr. Fast and his team.

"Geonomics research such as that led by Dr. Fast has great potential to improve the lives of Canadians," she said. "I'm proud that the Atlantic Veterinary College at UPEI is taking a leading role on such an important project."

Genome Canada's GAPP funds translational research and development projects that address real-world challenges and opportunities identified by industry, government, not-for-profits, and other receptors of genomics knowledge and technology.

Submitted by Anna MacDonald with the permission of Dr. Mark Fast.

# Dr. Gary Conboy Retires from UPEI



After 29 years at the Atlantic Veterinary College (AVC) as a diagnostic parasitologist and Professor, **Dr. Gary Conboy** retired in December 2020. Originally from Minnesota, Dr. Conboy received both his veterinary degree (Class of 1980) and his PhD in parasitology (1990) from the University of Minnesota before joining the AVC in 1991. Since then, Gary has been section head and cornerstone for the diagnostic clinical parasitology laboratory.

Gary has been a much loved professor during his tenure. Veterinary students first had the pleasure of experiencing his dry sense of humor in first year, but also enjoyed learning from him in fourth year where Gary contributed invaluable teaching in several clinical rotations. Gary has an excellent research and publishing record with more than 60 peer-reviewed publications, including many invited review articles. He is also coauthor of the 7<sup>th</sup>, 8<sup>th</sup>, and 9<sup>th</sup> editions of *Veterinary Clinical Parasitology*, a text used in veterinary education and in working veterinary diagnostic laboratories.

Gary is an expert in morphologic helminthology, and has used this (now uncommon) skill set in diagnostic and research settings, collaborating with colleagues here as well as internationally. His main research focus has been nematode lungworm parasites of wild and domestic canids, a field where his expertise truly shines. Gary also contributed to the training of numerous graduate students, both as a member on graduate program committees and as a primary graduate program supervisor. Gary is always generous with his time, knowledge, experience, friendship, and jokes, and (luckily for us) continues this practice in his retirement.

Gary's other interests include travelling, traditional Irish dancing, cycling, slug ranching, and collecting bad puns. He enjoys spending time with his family which includes his wife Helen and daughters Eileen and Nora. Gary is kindly continuing to act as section head for our clinical parasitology laboratory and is maintaining his adjunct and graduate faculty status with the department. Therefore, we haven't lost him as an expert resource just yet. That day is one we are not looking forward to but which Gary has more than earned with his decades of dedicated service at the AVC.

Congratulations on your retirement, Dr. Conboy!

Submitted by Dr. Melanie Buote with permission from Dr. Gary Conboy.

## **AVMA Brave Space Certification Program**



Congratulations to **Dr. Fred Kibenge** who earned the Brave Space Certificate Program badge by completing the course Brave Space Certificate Program. Brave spaces are workplace environments that encourage interaction, dialogue and accountability.

The Brave Space Certificate Program is a suite of CE programs put on by the American Veterinary Medical Association. The CE programs consist of interactive videos with a multiple-choice quiz at the end of each module and a final multiple-choice guiz at the end

of the 7 modules. For each quiz, the pass mark is the highest above 70% and participants then receive a CE

certificate and a certificate to recognize participation at the end of the seven modules which earns a Brave Space Certificate Program badge. These are excellent CE programs for anyone working in a veterinary school or veterinary practice. In fact, they are excellent for anyone in a workplace environment. The AVMA Brave Space Certification Program can be accessed on the AVMA Axon web page.



#### https://axon.avma.org/my

# **Cytology Textbook Chapter Contribution**



**Dr. Shelley Burton** and Dr. Etienne Côté from the Department of Companion Animals contributed a chapter on pericardial effusions in the recently published textbook, *Veterinary Cytology*. This textbook is co-authored by clinical pathologists and clinicians as it was designed to provide both the cytologic features and clinical relevance of diseases. Drs. Burton and Cóté enjoyed working together and are proud of the final product.

## Pathology and Microbiology Welcomes New Post-doctoral Fellow



Pathology and Microbiology welcomes **Dr. Stacey Goldberg**, our new Post-doctoral Fellow (PDF) to the department.

Originally from Maryland, USA, Dr. Goldberg relocated to Prince Edward Island in September 2012 to begin work on her doctoral research at the University of Prince Edward Island under the mentorship of Dr. Russell Kerr and Brad Haltli. Dr. Goldberg graduated in May 2019 with a Ph.D. from the Department of Biomedical Sciences, Atlantic Veterinary College (AVC). Her graduate studies concentrated on the isolation of microbes from marine sponges, chemical evaluation of putatively novel natural products they produced in culture, and description of novel bacteria including biochemical evaluation, genomic sequencing, and bioinformatics. Stacey has had multiple publications documenting her thesis work describing novel bacteria in the International Journal of Systematic and Evolutionary Microbiology. Stacey received a B.S.

degree in Biology from Towson University and a M.S. degree in Biotechnology from Johns Hopkins University (JHU) prior to her PhD candidacy. She started her professional career in 2002 at JHU as a Senior Laboratory Technician working on cancer research, vaccine development, and immunology. Stacey continued her career as a Research Scientist at Aeras Global TB Vaccine Foundation in the Department of Immune Assessment. After several years in these challenging and stimulating environments, She felt compelled to return to her passion in marine science, which led her to a position as a Research Technician at the Bermuda Institute of Ocean Sciences in the Phytoplankton Ecology Laboratory. Stacey had the opportunity to perform scientific research at sea, expanding her work in the field of oceanography and microbiology. This experience reinforced her desire to pursue research in a field that merged her life-long interest in marine biology with her experience in biotechnology and molecular biology with the goal of taking on more project ownership. Following her PhD in 2019, Stacey remained in PEI to work as a research scientist with MicroSintesis, Inc. where she led a project to develop a platform testing the effects of probiotics in reducing the virulence of pathogenic bacteria, among other assignments. Recently, she was awarded funding via the Mitacs Elevate program as a Post-doctoral Fellow to study the microbiome and immune function of Atlantic salmon subjected to different diets and infection challenges. The PDF will be fulfilled over the next two years as a collaborative project between AquaBounty, Inc. and Dr. Mark Fast.



### **MSc Thesis Defense**

Congratulations to **Shuchen Yan**, who successfully defended her MSc thesis ("Development and validation of multiplex polymerase chain reaction based diagnostic procedures for detecting eight viruses and one viroid in the Potato Nuclear Stock Certification Program ") on Tuesday, January 12, 2021. Shuchen's program was co-supervised by Huimin Xu (CFIA) and **Dr. Fred Kibenge**. The Supervisory Committee members were **Dr. Juan Carlos Rodriguez** (Chair), Dr. Larry Hale, and Dr. Yingwei Wang. Members of the Examination Committee were **Dr. Chelsea Martin** (Chair), Dr. Angela Riveroll, Dr. Larry Hale, Dr. Yingwei Wang, and Dr. Huimin Xu (Co-Supervisor).

# CWHC Atlantic Delivers Bat Monitoring Workshops Across Atlantic Canada

Throughout the month of February, **Tessa McBurney** from the Atlantic node of the Canadian Wildlife Health Cooperative (CWHC) and **Jordi Segers** (CWHC National Office) delivered workshops in a webinar format on monitoring bats in Atlantic Canada. The goal of the webinar was to establish a bat monitoring network across Atlantic Canada by training individuals in consistent bat monitoring techniques following the international North American Bat Monitoring Program (NABat) guidelines. This initiative was achieved through the project *Stewardship for Protection and Monitoring of Atlantic Canada's Endangered Bat Species*, a two-year project funded by Environment and Climate Change Canada through the Habitat Stewardship Program for Species at Risk, and co-led by **Dr. Scott McBurney** (CWHC Atlantic), **Dr. Megan Jones** (CWHC Atlantic/





#### AVC), and Jordi Segers.

Three of the bat species found in Atlantic Canada are listed as endangered under the federal Species-at-Risk Act due to bat white-nose syndrome (WNS): the little brown myotis, northern myotis, and tri-colored bat. Monitoring of these species is critical for determining the success of recovery actions and for providing wildlife managers

with the necessary information to further aid in their conservation. There are an additional four bat species in the Atlantic provinces: the big brown bat, silver-haired bat, eastern red bat, and hoary bat. While these species are not similarly impacted by WNS, their populations may experience declines brought on by additional threats, including wind energy development, pesticide use, and habitat loss. The NABat monitoring program provides consistent monitoring methods for all these species. Acoustic surveys include stationary point surveys targeted at bat species habitat use and mobile transects which provide data for species relative abundance estimates. Acoustic surveys can be combined with colony counts, which are used for bat population estimates. By utilising the full spectrum of NABat monitoring techniques, wildlife managers can be provided with a detailed picture of species distribution and population recovery across the landscape.



Two full-day workshops were offered for each Atlantic province, resulting in a total of eight workshops. A total of 128 participants learned about bat ecology, bat monitoring techniques, establishing a NABat monitoring site, how to deploy acoustic bat detectors, and how to use acoustic files to identify bat species. These workshops also provided an opportunity for provincial and federal biologists, wildlife technicians, watershed group managers, Indigenous groups, conservation societies, researchers, nuisance wildlife control operators, and citizen scientists to come together and establish a regional network of individuals trained in bat monitoring and conservation. The webinars are recorded and are publicly available in conjunction with instructional videos on managing acoustic data and a step-by-step guide on bat monitoring in Atlantic Canada. These workshops were hosted in collaboration with: the New Brunswick Department of Natural Resources and Energy Development, the Newfoundland and Labrador Forestry and Wildlife Branch, the Nova Scotia Department of Lands and Forestry, the Prince Edward Island Forests, Fish and Wildlife Division, and the Prince Edward Island Watershed Alliance.



# **2021 Winter Seminar Series**

### DEPARTMENTS OF BIOMEDICAL SCIENCES & PATHOLOGY AND MICROBIOLOGY Tuesdays at 1:30 pm Virtually

March 16	Identification of Critical Enzymes within the salmon louse chitin synthesis pathway revealed by RNA interference	Dylan Michaud Pathology and Microbiology
March 23	Assessing Laboratory Rodent Husbandry Practices: Implications for Data Variability	Logan Bigelow Biomedical Sciences
March 30	From Herpes to COVID: My journey as a budding virologist.	Dr. Ben Johnston Chemistry Department
April 5	Boosting tilapia ( <i>Oreochromis niloticus</i> ) immune response using of PACAP (Pituitary Adenylate Cyclase Activating polypeptide).	Eyesun Fajei Pathology and Microbiology

Co-ordinators of the departmental seminar series are Drs. Paul Bernard and Noel Clancey.

# **Publications**

Godoy M, Medina DA, Suarez R, Valenzuela S, Romero J, **Kibenge M**, Wang Y, and **Kibenge F**. Extensive phylogenetic analysis of piscine orthoreovirus genomic sequences shows the robustness of subgenotype classification. Pathogens 2021;10:41.https://doi.org/10.3390/pathogens10010041.

**Clancey NP**, **Martinson SA**, Ruffino J. What is your diagnosis? Ventrolateral cervical mass in a dog. Veterinary Clinical Pathology. 2021;00:1-3.

Godoy MG, **Kibenge MJT**, **Kibenge FSB**. SARS-CoV-2 transmission via aquatic food animal species or their products: A review. Aquaculture 2021; 536: 736460. <u>https://doi.org/10.1016/j.aquaculture.2021.736460</u>.

Medcalf KE, Hutchings JA, **Fast MD**, Kuparinen A, Godwin SC. Warming temperatures and ectoparasitic sea lice impair internal organs in juvenile Atlantic salmon. Marine Ecology Progress Series 2021; 660:161-169. https://doi.org/10.3354/meps13610.

For comments or suggestions for our newsletter, please contact: Dr. Fred Kibenge (kibenge@upei.ca) or

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