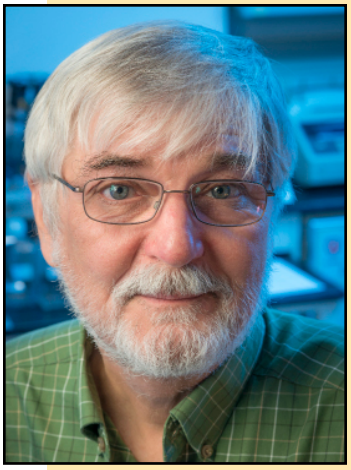

Patrick M. Gillevet, PhD

Professor, Department of Biology

Director, Microbiome Analysis Center

Education

PhD, Biochemistry, University of Manitoba

Key Interests

Population Genetics | Molecular Systematics | Conservation Genetics | Environmental DNA | Microbiomes | Sequencing | Bioinformatics | Molecular Ecology and Evolution

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SELECT PUBLICATIONS

- Dal Forno, M. *et al.* (2020). Extensive photobiont sharing in a rapidly radiating cyanolichen clade. *Molecular Ecology*, 30(8), 1755-1776.
- Jung, J. *et al.* (2021). Comparative study of the hemolymph microbiome between live and recently dead American lobsters *Homarus americanus. Diseases of Aquatic Organisms*, 143, 147-158.
- Bajaj, J. S. *et al.* (2018). Gut microbial RNA and DNA analysis predicts hospitalizations in cirrhosis. *JCI Insight*, 3(5), 147-158.

Research Focus

My laboratory focuses on the study of microbial communities (microbiomes) that reside in the human gut, mouth, urogenital, and respiratory tracts to model the interactions between microbiome function and human-derived gene expression. It has now become apparent that the human microbiome is implicated in social behavior, reproduction, growth, cognition, as well as many diseases. The human microbiome is an integral component of the human ecosystem and is a major driver of the system.

We also participates in numerous studies on population genetics, molecular systematics, and conservation genetics using NextGen sequencing technology. Emerging themes are the use of environmental DNA (eDNA) in the broad interrogation of vertebrate diversity in specific ecological niches, and the use of laser-capture microdissection and in situ hybridization, which allow us to visualize where microbes reside in cells and tissues and evaluate their health effects.

Current Projects

- Analyzing the metabiome (the interactions of the microbiome, metabolome, and immunome) with tools that calculate correlation netwoks for complex data matrices in hepatic encephalopathy in collaboration with Virginia Commonwealth University
- Using multitag pyrosequencing and systems biology analysis with universities from across Canada and the USA to investigate inflammatory bowel disease
- Characterizing the metabiome of the oral mycobiome, the oral microbiome, and the oral metabolome in the background of HIV infection with Case Western Reserve University
- Characterizing the vaginal microbiome from humans and macaques to investigate the influence of HIV infection and the influence of the vaginal microbiome on HIV infection rates and HIV expression