

Thesis Project List 2020-21

Faculty Supervisor	Project Title	Further Details
Dr. Bailey	Aquatic Macrophyte Surveys: From Water to Drone to Satellite	Aquatic macrophytes are an important community in lakes of the Trent-Severn Waterway. To facilitate modelling the dynamics of species in this community, we need to correlate the relative abundance and composition of species to low level, multi-spectral drone images and Landsat satellite images. The strength and nature of the relationship between these three modes of observation will be assessed by the thesis student.
Dr. Desaulniers	Biological evaluation of photoresponsive short-interfering RNAs	The Honours thesis student assigned to this project will be working closely with graduate students aimed at evaluating the biological effects of photoresponsive siRNAs in mammalian cell culture. The student must be highly organized and motivated.
Dr. Forrester	Characterization of cys-loop ligand-gated chloride channels in the canine heart worm <i>Dirofilaria immitis</i>	Contact Dr. Forrester for further details.
Dr. Forrester & Dr. Kirkwood	Mining the zebra mussel genome for cys-loop receptor gene sequences	Contact Dr. Forrester for further details.
Dr. Green-Johnson	Examining the immunomodulatory activity of secreted microbial products	The project will focus on analysis of the effects of secretome products from lactobacilli in the context of their impact on the activity of cell types involved in innate immunity (macrophages, intestinal epithelial cells), and would involve cell culture, bacterial culture, cytokine quantification, and varied functional assays of innate immune activity.
Dr. Kirkwood	Characterization of phytoplankton communities in Northern Ontario Lakes	This project is in partnership with the Ontario Ministry of Natural Resources and Forestry, who will be collecting the phytoplankton samples during the summer of 2020. The undergraduate thesis student will analyze the samples as part of their Honours thesis research.
Dr. Simmons	Comparing proteins in wet plasma to dried plasma spots using liquid chromatography tandem mass spectrometry	This project will involve instrumental analyses, bioinformatics, and method development in sample preparation. The ideal student would have a strong background in biology or chemical biology, and will have completed and enjoyed BIOL 2020U. Students who have taken CHEM 3530U would be considered more qualified for this project, although it is not a requirement.
Dr. Simmons	Comparing metabolites in wet plasma to dried plasma spots using liquid chromatography tandem mass spectrometry	This project will involve instrumental analyses, bioinformatics, and method development in sample preparation. The ideal student would have a strong background in biology or chemical biology, and will have completed and enjoyed BIOL 2020U. Students who have taken CHEM 3530U would be considered more qualified for this project, although it is not a requirement.
Dr. Strap	Proteomic analysis of phytohormone perception in <i>Komagataeibacter</i> spp.	Contact Dr. Strap for further details.

Dr. Strap	Molecular and biochemical characterization of signal transduction pathways regulating cellulose biosynthesis in <i>Komagataeibacter</i> spp.	Contact Dr. Strap for further details.
Dr. Strap	Molecular characterization of carbohydrate-selective porins in <i>Komagataeibacter</i> spp.	Contact Dr. Strap for further details.