



Announcement:

All interested members of the university community are invited to attend the Final Oral Examination for the degree of **Master of Science** of

CHANTAL WOOD

on Thursday, December 13, 2018 at 9:30 a.m. in SSC 2315

Thesis Title: Isolation and identification of natural product inhibitors of Plx2A, a toxin from *Paenibacillus larvae*

Examination Committee:

Dr. G. van der Merwe, Dept. of Molecular and Cellular Biology (Exam Chair)
Dr. R. Merrill, Dept. of Molecular and Cellular Biology
Dr. D. Josephy, Dept. of Molecular and Cellular Biology
Dr. T. Akhtar, Dept. of Molecular and Cellular Biology

Advisory Committee:

Dr. R. Merrill (Adv)
Dr. D. Josephy
Dr. D. Brewer

Abstract: Mono-ADP-ribosyltransferase (mART) toxins are an important class of virulence factors generated by bacterial pathogens that promote many disease states in the target host. They catalyze the hydrolysis of the glycosidic bond joining nicotinamide with the N-ribose of NAD⁺ and transfer ADP-ribose to a target protein. Plx2A has recently been characterized as a mART toxin from the honey bee pathogen *Paenibacillus larvae* that plays a key role in American Foulbrood disease in honeybees. An HPLC-based NAD⁺-glycohydrolase assay was developed and used to reveal several plant extracts that demonstrated inhibition of Plx2A enzymatic activity. Additionally, a library of natural product-derived compounds chosen based on structure-guided modelling was tested against Plx2A, which identified one compound with inhibitory activity. The fractionation of the most promising extracts was achieved by solid-phase extraction with the analysis of these fractions by HPLC. Plant extracts provide a plethora of chemical structures to find novel lead inhibitors against these toxins to be used as potential therapeutics.

Curriculum Vitae: Chantal obtained her Bachelor of Science (Hons), Biochemistry, at the University of Guelph in summer of 2016, and then began her M.Sc. program in the lab of Dr. Rod Merrill in the fall of the same year.