

Department of Molecular and Cellular Biology
Graduate Seminar MCB*7500

Friday, September 29, 2023 @12:45 p.m.

presented by:

Sujani Rathnayake

(Co-Advisors: Dr. Jennifer Geddes-McAlister and Dr. Mitra Serajazari)

"Assessment of *Fusarium* mycotoxin detoxification by prioritized proteins in Canadian wheat varieties"

Climate change impacts crops' ability to fight fungal infections and broadens pathogen host ranges threatening food security. In Canada, Fusarium Head Blight (FHB) is one of the deleterious fungal diseases in wheat with detrimental impacts on yield and economy. The grain industry of Ontario has incurred a significant profit loss of US \$ 200 million due to FHB outbreaks. The most common causal agent of FHB in North America is *Fusarium graminearum*. During FHB, the fungus *F. graminearum* produces a mycotoxin, Deoxynivalenol (DON), that accumulates within grains and poses significant challenges to the safety and quality of processed food, as well as livestock and aquaculture feed. Current DON management strategies include feed additives and the growth of wheat varieties with general FHB resistance, which vary in effectiveness. Therefore, it is vital to decipher novel methods to reduce DON accumulation and retention in wheat grains. The proposed project aims to identify and characterize plant proteins associated with resistance to DON accumulation in FHB-resistant and -susceptible wheat varieties through controlled lab experiments and direct testing within plants. The detection of DON detoxification proteins and associated genes underlying such traits will be proposed as biomarkers for future screening of the Canadian Wheat seed collection to selectively breed DON-resistant wheat cultivars with enhanced mycotoxin detoxification capabilities for improved food safety and security.