

Department of Molecular and Cellular Biology
Graduate Seminar MCB*6500

Friday, February 9, 2024 @ 12:00 p.m.

presented by:

Jiaxi Lu

(Advisors: Dr. Jennifer Geddes-McAlister and Dr. Helen Booker)

**"Evaluation of the Proteomic Host Response of AAC
Tenacious to *Fusarium graminearum* and
Deoxynivalenol in Comparison to Sumai 3 and Norwell"**

Fusarium Head Blight (FHB) is a serious fungal disease affecting cereal crops, that can result in significant economic loss in wheat production areas globally. The primary causal pathogen of FHB, *Fusarium graminearum* (*F. graminearum*), produce mycotoxins, including deoxynivalenol (DON). As a secondary metabolite, DON directly impacts human and livestock health by causing diarrhea, dizziness, or abnormal pain for humans and livestock, especially swine and bovine. Different wheat breeding strategies have developed phenotypes of varying FHB resistance, but the defence mechanisms used by the host in response to the pathogen remains unclear. This study uses proteomics of AAC Tenacious (Canadian FHB moderately resistant wheat variety) to reveal the functionality of specific proteins and pathways to defend wheat against the pathogen and detoxify DON. The proteomics data will be integrated and validated with previous preliminary data collected in the Geddes-McAlister lab to study protein functionality in Sumai 3 (Chinese FHB- resistant wheat variety) and Norwell (Canadian FHB-susceptible wheat variety). The findings of this research will contribute to the advancement of knowledge regarding the defence and detoxification pathways of *F. graminearum* and DON, respectively, in wheat cultivars with contrasting responses to FHB. The knowledge generated from this study will inform the breeding of wheat for resistance to FHB.