

Department of Molecular and Cellular Biology  
**Graduate Seminar MCB\*6500**

Friday, February 26, 2021 @12:45 p.m.

*presented by:*

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*(Advisor: Dr. Jennifer Geddes-McAlister)*

**“Identification of the metabolo-proteomic host response  
of *Triticum aestivum* to the *Fusarium graminearum*  
mycotoxin deoxynivalenol”**

Cereal crops have long been an imperative agricultural resource globally to provide nutrition for humans and many livestock. A large impact upon the success of these crops is due to loss of yield from disease. Among the various diseases, fungal pathogens and their associated mycotoxins are responsible for a large amount of the damages. Deoxynivalenol (DON) is a mycotoxin produced by *Fusarium graminearum* once it infects the heads of cereal crops as a disease known as Fusarium Head Blight (FHB). Resistance markers to FHB have been identified in some wheat crops, but resistance pathways towards DON are still being elucidated. In this proposal, I will compare the responses of FHB-susceptible and -resistant wheat cultivars after inoculation with DON. To do this, I will utilize mass spectrometry-based proteomics of the samples to identify key host proteins that are produced within the resistant varieties when inoculated with DON. Next, I will observe the metabolomic response of the different treatment groups to identify the downstream targets of the activated protein pathways and potentially, DON detoxication products. The findings of my research will enhance our understanding of DON detoxication pathways as a marker of FHB resistance within wheat cultivars. This will lead to better selection techniques of crop cultivars to combat loss of yield from FHB in the future.