

Department of Molecular and Cellular Biology
Graduate Seminar MCB*7500
Friday, June 1, 2018 in SSC 1511 @ 12:45 p.m.

presented by:

Yashu Song

(Co-Advisors: B. Meng, R. Hanner)

“Investigation of the global gene expression changes in grapevines infected with Grapevine leafroll-associated virus-3 and Grapevine rupestris stem pitting-associated virus”

Grapevine leafroll-associated virus 3 (GLRaV-3) and Grapevine rupestris stem pitting-associated virus (GRSPaV) are two of the major grapevine viruses with worldwide prevalence. For both viruses, the exact pathological impact that they have on grapevine remains unclear due to the lack of research validating the interactions between the grapevine and the two viruses at the molecular level. It is believed that infections with GLRaV-3 alone and with GRSPaV alone impact differently on the expression of select genes in grapevine involved in the biological pathways that are fundamental for the plant growth and development as well as fruit quality. This research aims to analyze the global gene expression profiles of grapevine leaf and berry at different developmental stages infected with GLRaV-3 or GRSPaV. The comprehensive transcriptome analysis by next-generation sequencing (RNA sequencing) will be carried out using greenhouse-grown grapevines introduced with the two viral infections, followed by bioinformatics analysis. Transcriptomic changes will be validated by quantitative reverse transcription polymerase chain reaction (qRT-PCR) and northern blotting. This research offers for differentially expressed genes (DEGs) insights into molecular impacts of GLRaV-3 and GRSPaV. In addition, the research will pioneer in investigating the spatiotemporal pathological impacts of GLRaV-3 and GRSPaV. The outcome of the research would provide essential knowledge on how infection with GLRaV-3 and GRSPaV will impact on plant growth, development, and fruit quality of grapevine.