

Department of Molecular and Cellular
Biology

Graduate Seminar MCB*6500

Friday, January 19, 2024 @12:00 p.m.

presented by:

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(Advisor: Dr. Rebecca Shapiro)

"Uncovering epistatic interactions implicated in *Candida albicans* echinocandin resistance"

Fungi are extraordinary microbial organisms that play important roles in our ecosystem and human life. Although these organisms are typically not harmful to humans, some have the ability to cause life-threatening infections. One particular fungal organism capable of this is *Candida albicans*. Recently ranked by the World Health Organization as a priority fungal organism for research and development, *C. albicans* primarily affects those with weakened immune systems and remains difficult to treat due to antifungal resistance. Therefore, it is imperative that we study the underlying genetic mechanisms that allow *C. albicans* to survive during antifungal treatment. To accomplish this, we propose the use of genetic interaction (GI) analysis. GI analysis is a powerful genomic tool that allows for the evaluation of gene-gene relationships. Although previously utilized in *C. albicans*, this genetic strategy has yet to be applied towards the study of echinocandin drug resistance in the pathogen. Here, we propose the implementation of this approach to a library of echinocandin resistant *C. albicans* strains with varying gene deletions. By monitoring cellular growth in the presence and absence of drug, we will be able to identify gene deletions contributing to echinocandin resistance and sensitivity. This research holds great value for understanding how *C. albicans* genes interact with one another in order to maintain resistance to antifungal drugs, as well as expand our current knowledge on fungal biology and survival.