Department of Molecular and Cellular Biology

Graduate Seminar MCB*6500

Friday, Feb. 10, 2017 in SSC 1511 @ 12:45 p.m.

presented by:

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Exploring propagation, fermentation, and flavour compound production of *Brettanomyces bruxellensis*

Beer fermentation is most often associated with *Saccharomyces cerevisiae*; however, due to the limited diversity observed amongst fermentative strains the range of products that can be produced with this yeast are limited. As a result, interest in non-conventional yeasts that have fermentative capabilities, such as *Brettanomyces bruxellensis*, has seen a spike in recent years. In particular, *B. bruxellensis* has seen a surge in popularity amongst craft brewers looking to produce novel products with unique flavours and characteristics. *B. bruxellensis* has been predominantly studied in the context of a wine spoilage organism, resulting in a limited understanding of how this organism behaves in a beer fermentation and the flavour compounds and aromas it is capable of producing. To this end, variable flavour profiles and unpredictable and lengthy fermentation times in comparison to *S. cerevisiae* are amongst the challenges of *B. bruxellensis* fermentations. The effect of oxygen, pH, and various nutrients on propagation length and efficiency will be tested to determine optimal growth conditions and decrease fermentation time. Following this, *B. bruxellensis'* effect on flavour compound production and fermentation kinetics will be investigated in a primary, secondary, and co-pitch fermentation model. In addition, the gene expression of enzymes responsible for the production of ester flavour compounds, which constitute a large portion of *B. bruxellensis'* flavour profile, will be examined. Research on how *B. bruxellensis* ferments and improving propagation techniques will provide invaluable information for the brewing industry and allow more people to begin using this organism in their fermentations, thereby producing novel and unique products to stimulate continued industry growth.