



COLLEGE of
BIOLOGICAL SCIENCE

DEPARTMENT OF MOLECULAR
AND CELLULAR BIOLOGY

Announcement:

All interested members of the university community are invited to attend the Final Oral Examination for the degree of **Master of Science** of

JORDAN HOFSTRA

on Friday, September 10, 2021 at 10:00 a.m. (online)

Thesis Title: Increasing the quality and diversity of Ontario cider through characterization of novel *Saccharomyces* yeast and nitrogen supplementation regimes

Examination Committee:

Dr. Marc Coppolino, Dept. of Molecular and Cellular Biology (Exam Chair)
Dr. George van der Merwe, Dept. of Molecular and Cellular Biology
Dr. Rebecca Shapiro, Dept. of Molecular and Cellular Biology
Dr. Ian Tetlow, Dept. of Molecular and Cellular Biology

Advisory Committee:

Dr. George van der Merwe
(Co-Advisor)
Dr. John Cline (Co-Advisor)
Dr. Joseph Colasanti

Abstract: Cider has experienced a rise in popularity in the province of Ontario. Industrial fermentation of dessert apples (*Malus domestica* Borkh.) by domesticated *Saccharomyces* wine yeast is the preferred production method of Ontario cideries. Here, four novel *Saccharomyces* yeasts were isolated and characterized based on their ability to ferment apple must. The fermentation kinetics of all four novel strains were also compared under five different nitrogen supplementation regimes. The isolates differed in their consumption of cider sugars although all successfully completed fermentations. Supplementing with amino acids or diammonium phosphate (DAP) caused an increase in must attenuation compared to no nitrogen addition. The addition of amino acids or DAP 72 hours into the fermentation enabled several isolates and industrial yeasts to increase the production of fruity-associated flavour compounds such as higher alcohols and esters. Overall, the findings provide Ontario cideries with new resources to sustain continued growth of the already burgeoning industry.

Curriculum Vitae: Jordan completed his Bachelor of Science (Hons.) at the University of Guelph after winter 2019, and then began his MSc in the lab of Dr. van der Merwe in the fall of the same year.