



**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*

**MYLES ST-DENIS**

**On Wednesday, December 1, 2021 at 2:00 p.m.** (online)

**Thesis Title:** Sex-specific Cannabidiol- and Iloperidone-induced neuronal activity changes in an in vitro MAM model system of Schizophrenia

**Examination Committee:**

Dr. Matthew Kimber, Dept. of Molecular and Cellular Biology (Exam Chair)

Dr. Melissa Perreault, Dept. of Biomedical Sciences

Dr. Scott Ryan, Dept. of Molecular and Cellular Biology

Dr. Jibrán Khokhar, Dept. of Biomedical Sciences

**Advisory Committee:**

Dr. Melissa Perreault (Advisor)

Dr. Scott Ryan

**Abstract:** Cortical circuit dysfunction is thought to contribute to schizophrenia pathophysiology and normalization of cortical circuit activity is a proposed biomarker for antipsychotic efficacy. CBD exhibits potential as an adjunctive antipsychotic therapy, however, potential sex effects on drug interactions are unknown. Spontaneous activity of primary cortical neuron cultures derived from male and female methylazoxymethanol (MAM) schizophrenia model rats was recorded at baseline and following drug treatment. At baseline, only male MAM neurons exhibited increased burst firing compared to controls. CBD induced a rapid but transient increase in neuronal activity in MAM networks that was more pronounced in females. ILO and CBD individually induced time-dependent elevations in neuronal activity and when combined, ILO augmented the effects of CBD on neuronal activity in males, whereas in females drug-induced increases in activity were lost. These findings show that CBD induces rapid increases in cortical neuronal activity with sex-specific drug interactions upon ILO cotreatment.

**Curriculum Vitae:** Myles completed his Bachelor of Science (Hons.) in Biomedical Science with a minor in neuroscience at the University of Guelph in 2018. He began his M.Sc. in Molecular and Cellular Biology at the University of Guelph under the supervision of Dr. Melissa Perreault in the Winter semester of 2019.

**Awards:** Ontario Graduate Scholarship (2019 and 2020); Aboriginal Graduate Scholarship (2019)

**Publications:** Thériault, R. K., St-Denis, M., Hewitt, T., Khokhar, J. Y., Lalonde, J., & Perreault, M. L. (2021). Sex-Specific Cannabidiol-and Iloperidone-Induced Neuronal Activity Changes in an In Vitro MAM Model System of Schizophrenia. *International Journal of Molecular Sciences*, 22(11), 5511.

Patel, A. V., Codeluppi, S. A., Ervin, K. S. J., St-Denis, M. B., Choleris, E., & Bailey, C. D. C. (In Press). Developmental Age and Biological Sex Influence Muscarinic Receptor Function and Neuron Morphology within Layer VI of the Medial Prefrontal Cortex. *Cerebral Cortex*.