



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

**VICTORIA LESY**

on Wednesday, March 17, 2021 at 1:30 p.m. (online)

**Thesis Title:** Characterizing the molecular mechanism behind the anti-florigen ScFT2

**Examination Committee:**

Dr. Joseph Yankulov, Dept. of Molecular and Cellular Biology (Exam Chair)

Dr. Joseph Colasanti, Dept. of Molecular and Cellular Biology

Dr. Robert Mullen, Dept. of Molecular and Cellular Biology

Dr. Jaideep Mathur, Dept. of Molecular and Cellular Biology

**Advisory Committee:**

Dr. J. Colasanti (Advisor)

Dr. R. Mullen

Dr. W. Zhang

**Abstract:** Flowering is a tightly regulated process controlled by diverse external and internal cues, each of which acts through distinct genetic pathways that converge at floral integrators called florigens. These conserved proteins are synthesized in leaves and migrate to the shoot apex to form a floral activation complex, which initiates reproductive growth by activating floral organ specificity. In sugarcane (*Saccharum* spp.), several florigen candidates, such as *ScFT2*, have been identified. Interestingly, overexpression of this gene in *Arabidopsis* disrupts the floral transition and causes a dramatic change in shoot architecture. This research aims to characterize the mechanism behind ScFT2 to determine how it causes an extreme vegetative phenotype. Localization and sequence analyses reveal that ScFT2 is very similar to florigen molecules and is mobile throughout the plant. ScFT2 binds with many key floral regulators as well as a variety of unique uncharacterized factors. Expression patterns also demonstrate that ScFT2 can downregulate floral organ genes to maintain indeterminacy. Ultimately, we identify a variety of new entities involved in floral regulation which can potentially be used to fine-tune flowering in agricultural applications and provide insights into the control of reproduction in sugarcane.

**Curriculum Vitae:** Victoria completed her Bachelor of Science (Hons.) at the University of Guelph in the spring of 2018. She then began her M.Sc. in the lab of Dr. Joseph Colasanti in May of the same year.

**Awards:** Arrell Scholar (2018); Director's Award for Best Presentation at the Canadian Society of Plant Biologists Eastern Regional Meeting (2019)