UNIVERSITY of GUELPH

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*

MARIANN LOBBEZOO

On Wednesday, January 4, 2023 at 1:30 p.m. (SSC 2315)

Thesis Title: **Investigating the role of INDETERMINATE1 in controlling the floral transition in Teosinte (*Zea mays* ssp. *parviglumis*)**

Examination Committee:

Dr. Jaideep Mathur, Dept. of Molecular and Cellular Biology (Exam Chair)
Dr. Joseph Colasanti, Dept. of Molecular and Cellular Biology
Dr. Ian Tetlow, Dept. of Molecular and Cellular Biology
Dr. Tariq Akhtar, Dept. of Molecular and Cellular Biology

Advisory Committee:
Dr. Joseph Colasanti (Advisor)
Dr. Ian Tetlow
Dr. Manish Raizada

Abstract: Flowering in all higher plants occurs when the shoot apical meristem (SAM) transitions from vegetative to reproductive growth. Reproductive growth is initiated by mobile signalling proteins known as 'florigens' that are synthesized in leaves and travel to the SAM. Modern maize (*Zea mays* ssp. *mays*) and its progenitor teosinte (*Zea mays* ssp. *parviglumis*), contain florigens encoded by members of the *Zea CENTRORADIALIS* (*ZCN*) gene family. Teosinte is a tropical plant that requires short day photoperiods to induce the floral transition whereas modern temperate maize is an autonomous plant that flowers at the same time regardless of photoperiod. The maize *indeterminate1* (*id1)* gene is a key regulator of autonomous flowering such that *id1* mutants flower extremely late. To investigate how *ID1* controls flowering in relation to photoperiod, an *id1* mutant allele was introgressed into teosinte to create a near isogenic line. This study elucidates florigenic mechanisms in *Zea mays* by further exploring florigen function in temperate maize and teosinte, and how *ID1* regulates the autonomous and photoperiod floral induction pathways. Ultimately, we found that *Zea mays* contains several putative florigens and that *ID1* regulates flowering in teosinte independent from the photoperiod pathway such that *id1* teosinte exhibit extremely delayed flowering.

Curriculum Vitae: Graduating with distinction, Mariann completed her Bachelor of Science (Hons.) in Plant Science with the Plant Biotechnology area of emphasis at the University of Guelph in April 2019. In May 2020, she began her Master of Science program in Molecular and Cellular Biology under the supervision of Dr. Joseph Colasanti.

Awards: CBS Graduate Tuition Scholarship (2020-2022); Plant Science Travel Grant for demonstrated research and career development in the plant sciences (July 2022); received CSPB Student Poster Award at an international Plant Science Conference in Portland, Oregon (July 2022).

Continued…

Publications: Mathur Jaideep., Kroeker Olivia, F., **Lobbezoo Mariann.,** and Mathur Neeta **"The ER is a common mediator for the behaviour and interactions of other organelles"**. *Frontiers in Plant Science*, 13, 846970, 2022.