



MSc Position

University of Guelph

School of Environmental Science (SES)

Controlled Environment Systems/Controlled Environment Systems Research Facility (CESRF)

POSITION: MASTER OF SCIENCE STUDENT IN PLANT PHYSIOLOGY / MOLECULAR BIOLOGY / HORTICULTURE
ADVISOR: DR. MICHAEL DIXON
START: IMMEDIATE AVAILABILITY
DURATION: TWO YEARS
STIPEND: AVAILABLE

Project Description

A M.Sc. studentship is available involving research at The University of Guelph's Controlled Environment Systems Research Facility (CESRF) (www.ces.uoguelph.ca) in collaboration with PlantForm Corporation (www.plantformcorp.com), and funded by the Natural Sciences and Engineering Research Council (NSERC) (www.nserc-crsng.gc.ca).

The CESRF is an essential part of Canada's contributions to plant research and technology development for human space exploration and closed environment related activities, and provides a comprehensive research venue for measurement of plant growth in a precisely controlled environment. PlantForm is a Guelph-based biotech company focused on providing low-cost therapeutic drugs for the improvement of quality of life, using a proprietary technology licensed from the University of Guelph to manufacture antibodies and drug proteins in tobacco plants.

Transient expression of recombinant proteins by infiltration with transgenic *Agrobacterium tumefaciens* is a widely used method of studying the role of proteins *in planta* and is being developed as an industrial platform for the production of high value and therapeutic proteins. Despite widespread use of this method, relatively little work has been done to understand effect that *Agrobacterium* infiltration and recombinant protein expression has on the host plant's nutritional requirements. The successful candidate will conduct research aimed at developing a better understanding of the metabolic changes that occur post-infiltration. The student will examine nutrient uptake in *Nicotiana benthamiana* pre and post infiltration under a variety of environmental variables including fertilizer formulations (e.g. N, P, K and pH manipulation) and modifications to atmospheric composition (e.g. CO₂ enrichment, humidity, vapor pressure) in order to better understand plant development and to improve plant performance.

Pre-requisites: B.Sc. in horticulture, plant physiology, molecular biology, biochemistry or other appropriate field; knowledge of gene expression systems; prior experience with protein analytical techniques would be beneficial but is not necessary.

Graduate Student Role & Responsibilities

The graduate student will work closely with their advisor(s) to design and implement experiments that will address the goals and objectives of the project. Course work will be required; the nature of those courses will be determined based upon experience and background. The graduate student is obligated to meet the codes of conduct set out by the university, the school, and the faculty advisor. All safety training will be provided.

Stipend & Awards:

The standard University of Guelph, SES stipend rate will apply. The successful candidate will be encouraged (and mentored) to apply for a range of scholarships. Please note that due to funding limitations, this position is open to eligible **domestic candidates only**. Only successful applicants will be contacted for an interview. Position to remain open until a suitable candidate is found.

To Apply, please send cover letter, resume/CV, a sample of your written work (e.g., undergraduate written report) and a copy of your unofficial undergraduate transcript to:

Theresa Rondeau Vuk
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