

# Undergraduate Research Project

## Department of Biological Sciences

### Plant Genomics Group ([www.uhriglab.com](http://www.uhriglab.com))

Position Closing Sept 3<sup>rd</sup> 2021

#### **Introduction:**

The Uhrig lab is looking to recruit two BIOL399 or 499 undergraduate research students for Fall 2021.

**Project 1: The effect LED lights on crop yield and nutritional quality.** LED technology is rapidly replacing traditional lighting system in different type of facilities (cannabis indoor facility, vertical farm, and greenhouses) as they are energy efficient. In addition, programmable LED lights have emerged as a cultivation tool that can modulate and improve crop qualities. This project will involve hands-on experience with advanced plant physiology and corresponding phenomics technologies. Further, as part of the larger research project, the student will gain chemical and biochemical analysis experience in addition to intersecting with the industry partner.

**Project 2: Plant genomics and stress biology.** Agriculture is under significant threat year to year due to changes in the global climate and weather patterns. This requires the identification and characterization of novel genes that may can help mitigate these effects. Signaling proteins such as protein kinases and phosphatases represent higher-level regulators of plant cell processes and therefore represent great targets for novel biotechnological and breeding solutions. This project will involve advanced plant genomics and phenotyping to screening populations of plants for stress resistance. Subsequent molecular and/or biochemical analyses will be conducted depending on findings.

#### **Research and Training:**

Other than the scientific goals of each project, each undergraduate student will conduct research with the goal of producing results that contribute to published, peer reviewed manuscripts. Undergraduate researchers will be paired with a graduate student / post-doctoral fellow mentor to assist their research endeavours. Lastly, these projects also hold potential opportunities for graduate student projects starting May 2022.

#### **Applicant Qualifications:**

1. Ability to work both independently as well as part of a team
2. Good communication skills and team work attitude.
3. Interest in plant science (experience ideal, but not required)
4. Optional (experience with chemical and/or biochemical techniques).

#### **Primary Job Expectations:**

1. Sowing, transplanting, potting and maintaining diverse plant species and genotypes.
2. Plant phenotyping for morphological changes and other plant traits.
3. Sterile plant tissue culture.
4. Be able to lift a minimum of 5kg (e.g. a tray of watered plants).

**Potential Additional Opportunities:**

1. The Uhrig lab is a plant genomics and biochemistry lab, therefore additional training in - molecular analyses using advanced biochemical technologies may be provided.

The Uhrig lab encourages students from all backgrounds and nationalities to apply, and offers a diverse, supportive and healthy work environment.

**Appointment Start Date:** September 2021

**Contact:** Interested applicants should send a CV and an unofficial transcript to [ruhrig\[at\]ualberta.ca](mailto:ruhrig[at]ualberta.ca) ([www.uhriglab.com](http://www.uhriglab.com)). Short-listed applications will be asked to interview via Zoom / In person..