

Master Graduate Research Assistantship Genomics/Phenomics-Assisted Dry Bean Breeding

The Dry Bean Breeding & Computational Biology Lab at the University of Guelph is excited to announce the availability of two graduate research assistantships for highly motivated and talented individuals. These positions offer a unique opportunity to join our vibrant research team and engage in cutting-edge projects focusing on Multiomics - assisted dry bean breeding.

Department: Plant Agriculture, Ontario Agricultural College (OAC), University of Guelph

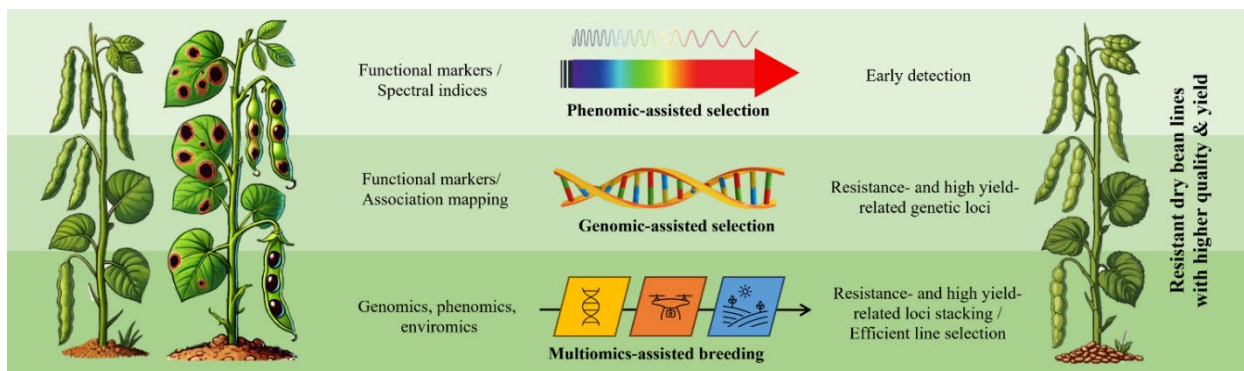
Location: Guelph, Ontario

Start Date: Winter/Spring 2025

Number of positions: 2

Position Overview:

Anthracoze, a significant fungal disease caused by *Colletotrichum lindemuthianum*, has recently impacted dry bean yield and performance across Ontario, jeopardizing the profits of growers and the dry bean industry. The current anthracnose outbreak, raising concerns about the emergence of a new race or reduced efficacy against race 73. This proposal aims to develop advanced phenomics and genomics markers linked to anthracnose resistance, enabling efficient screening of dry bean populations to accurately and quickly select high-yielding, anthracnose-resistant genotypes. Key objectives include determining whether a new race has emerged or if race 73 persists, using high-throughput technologies such as spectral imaging for rapid screening in early growth stages, and developing molecular markers to enhance anthracnose resilience in dry beans.



Schematic illustration demonstrating the use of advanced high-throughput methods to expedite the selection of high-yield, anthracnose-resistant bean varieties.

Position 1: Graduate Research Assistant in Phenomics-Assisted Dry Bean Breeding

Responsibilities:

- Develop and implement high-throughput phenotyping protocols utilizing spectral imaging technologies.
- Conduct fieldwork and greenhouse data collection focusing on phenotypic traits and anthracnose resistance in dry bean populations.
- Analyze phenotypic data using advanced statistical and machine learning techniques.
- Collaborate with team members to integrate phenomic markers into the broader breeding program.
- Assist in preparing manuscripts, presentations, and reports detailing research findings.

Qualifications:

- All qualified applicants are encouraged to apply; however, Canadians and permanent residents will be given priority.
- Bachelor's degree in Plant Science, Agriculture, Remote Sensing, Data Science, or a related field.
- Strong interest in plant phenotyping, remote sensing technologies, and data analysis.
- Prior experience with statistical analysis software and machine learning is preferred.
- Excellent communication and teamwork skills.
- Ability to conduct fieldwork under varying conditions.

Application Process:

- Interested candidates should email the following materials to Dr. Mohsen Yoosefzadeh Najafabadi (myoosefz@uoguelph.ca) with the subject line "DBCBP – YOUR NAME":
- Cover letter specifying the position of interest (Phenomics) and outlining relevant qualifications and research interests.
- Curriculum vitae (CV)
- Contact information for three references.

Position 2: Graduate Research Assistant in Genomics- Assisted Dry Bean Breeding

Responsibilities:

- Develop and apply molecular markers for anthracnose resistance in dry beans.
- Conduct genotyping-by-sequencing (GBS) and other molecular techniques for genomic analysis.
- Perform genome-wide association studies (GWAS) to identify marker-trait associations.
- Collaborate with other researchers to integrate genomic findings into the breeding pipeline.
- Contribute to scholarly articles and participate in scientific conferences.

Qualifications:

- All qualified applicants are encouraged to apply; however, Canadians and permanent residents will be given priority.
- Bachelor's degree in Genetics, Molecular Biology, Plant Science, or a related field.
- Strong interest in genomics and bioinformatics, including experience with GBS and GWAS.
- Familiarity with genetic analysis software and molecular marker development.
- Strong analytical and communication skills.
- Ability to work independently and as part of a collaborative research team.

Application Process:

- Interested candidates should email the following materials to Dr. Mohsen Yoosefzadeh Najafabadi (myoosefz@uoguelph.ca) with the subject line "DBCBCG – YOUR NAME":
- Cover letter specifying the position of interest (Genomics) and outlining relevant qualifications and research interests.
- Curriculum vitae (CV)
- Contact information for three references.

The University of Guelph resides on the ancestral lands of the Attawandaron people and the treaty lands and territory of the Mississaugas of the Credit and we offer our respect to our Anishinaabe, Haudenosaunee and Métis neighbours as we strive to strengthen our relationships with them.

The University of Guelph is committed to equity, diversity, and inclusion and encourages applicants from underrepresented groups to apply. We look forward to welcoming enthusiastic and dedicated individuals to our research team.

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