

MSc – improving fish growth and gut health by feeding insects

Position: thesis based MSc

OAC Academic Unit: [Department of Animal Biosciences](#)

Advisor Name: Dr. David Huyben (huybend@uoguelph.ca)

Start Date: September 1, 2021

Duration: 2 years

Stipend: \$20,000/year

Project Background: Dr. Huyben and colleagues at the ABSc department are seeking applicants for a thesis based MSc project focused on improving fish growth and gut health by feeding insects. The project is funded by the Ontario Agri-Food Innovation Alliance in partnership with local and international feed ingredient suppliers as well as the University of Laval (Quebec). This project exists within a larger research program focused on determining the influence of nutrition on the sustainable growth, health and microbiome of aquaculture fishes.

Project Methodology: The MSc candidate will be responsible for two components of the project: 1) Literature review with a meta-analysis, and 2) Young trout feeding trial. First, data from dozens of published studies on the impact of feed additives on the immunity and microbiome of farmed fish species will be collected and a meta-analysis will be performed to rank various host and environmental variables. Second, a 6-month trial feeding black soldier flies to different age groups of rainbow trout will be performed at the Ontario Aquaculture Research Centre (Alma), which is a 35min drive north of Guelph. The MSc candidate will be responsible for making feed, feeding fish, sampling tissues, lab work, data analysis and writing a thesis. Nutritional lab work involves analysis of protein, lipids, amino acids and other nutrients at the ABSc department. Molecular lab work involving PCR, gel electrophoresis and next generation sequencing of the gut microbiome at the University of Laval. In addition, the MSc candidate will be involved in other components of the project focusing on feeding insects, probiotics, prebiotics and fatty acids to zebrafish and juvenile trout. The project financially supports travel costs and attendance to a national or international conference.

Required Skills: The MSc candidate should have a strong background in aquaculture with additional knowledge on molecular biology, microbiology and/or nutrition. They must have an honours BSc in biology, animal science or a related field with a minimum B average (75%). They must have previous experience performing a literature review,

laboratory work and statistical analysis (e.g. R). The candidate should be self-motivated to learn, an independent worker, able to problem-solve and have a critical thinking mindset. They should be able to work well within a group and have strong written and oral communication skills.

Preferred Skills: Hands-on experience feeding and dissecting fish. Experience assisting grad students with a research trial. Knowledge on nutritional (e.g. proximate analysis), molecular (PCR) and/or microbiological (plating) lab methods. Experience calculating nutritional parameters (growth, FCR) and/or performing bioinformatics on microbiome data.

Application Deadline: April 28th 2021 at 11:59pm

Application Instructions: Qualified candidates should send their CV, transcript, cover letter (one-page) and two references to:

Dr. David Huyben
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Learn more:

- [Dr. David Huyben's faculty page](#)
- [Grad Studies at ABSc](#)
- [Aquaculture Centre](#)