

Master projects in Hvoslef-Eide's group BIOVIT

NB! Some of these master projects require certain prerequisites being met (like previous courses taken etc)

Main supervisor Prof. Trine Hvoslef-Eide

1. **Applied biotechnology: Gene editing using CRISPR in crop plants** We have a NFR project with Norwegian industry – GENEinnovate, our main focus is obtaining ***proof of concept of CRISPR*** in ***potato***, a vegetatively propagated tetraploid (four sets of chromosomes). We have some proposals for master projects to support this work in the frontline of applied science. Other possible crops: ***wheat*** – all for proof of concept for the time being.

These are 60 credit master themes.

Co-supervisor: PhD student Anders Wulff-Vester

2. **Urban Agriculture – Microgreens (herbs and lettuce) as indicator plants for assessment of various growth media under controlled environments**

We have an EU project SiEUGreen where our task is 1) to ***evaluate different growth facilities for amateur gardeners*** and 2) ***test plant growth in various composts***, as an alternative to the current use of peat in the greenhouses and gardens. We will use set-ups available in the market and provide growth rooms to test various sources of composts and compare with peat soil. The plants will be ***various herbs*** and possibly also ***lettuces*** to test how the plants respond to the growth media.

These are 30-60 credit master themes, depending on amount of analysis applied of various analysis of the plants and composts. . Co-supervisor: PhD student Siv Aurdal

3. **Urban Agriculture – microbiome analysis for assessment of various growth media when growing plants under controlled environments**

The hypothesis is that various compost media and peat will have detectable differences in their microbiome (the combined genetic material of the microorganisms in a particular environment). We want to elucidate upon their possible influence on growth and development of indicator plants, such as lettuce.

This a 60 credit master theme.

Co-supervisors: Professor May-Bente Brurberg and PhD student Siv Aurdal

4. **Applied biotechnology/Bioinformatics: Integrated transcriptomics and metabolomics analysis to characterize the abscission process in poinsettia**

Abscission (knopp- og blomsterfall) is an important developmental process because it will determine the yield of crops like cereals, fruits, nuts and berries as well as the ornamental value of flowering plants. We have generated a de novo transcriptome assembly for poinsettia from previous project to further explore and gene mining for the

trigger genes involved in the abscission process. This part of the transcriptomic analysis will teach you exploring databases using bioinformatics tools and contribute to the elucidation of the mysterious process of abscission. The metabolomics part will involve growing plants, sampling and analysis of the metabolome.

These are two 60 credit master themes where the students will be able to integrate transcriptomics and proteomics for the same inducible model system. If only one student is interested, only one scope will be explored.

Co-supervisor: Researcher Mallikarjuna Rao Kovi

We have a **limited number of master projects in our group, so there will be a competition for the best candidates**. Express an interest by sending a motivation letter with transcripts, so we can see whether you have the right background/how we can supply with courses to provide you with the right background to do this work. *Send to trine.hvoslef-eide@nmbu.no*