

Title: Sample preparation for high-throughput sequencing

Syllabus approved: 2017-

Credits: 3 HEC

Subject: Mycology, Biology

Language: English

Prerequisites:

Applicants must be admitted to PhD studies within the natural sciences. Priority will be given to PhD students associated with the SLU Graduate School in Organism Biology.

Objectives:

This intensive course aims to provide students with practical training as well as theoretical background for collection, handling and preparation of samples for high-throughput sequencing of environmental communities. By the end of the course, participants should be well acquainted with all steps in the preparation of various types of environmental samples for high-throughput DNA and RNA sequencing, as well as acquainted with the theoretical background and main pitfalls. The course also offers students opportunities to discuss various sampling and sequencing methods as well as bioinformatics tools suitable for their own work within the area.

Content:

The course consists of preparatory literature reading, short presentations of own work, lectures on theoretical background, and an intensive laboratory exercise (five half-days) where all steps in the sample preparation protocol will be trained, using soil fungal communities as an example. Active participation by students is required. Lecturers and instructors include researchers from Dept. of Forest Mycology and Plant Pathology and staff from UMBLA (Ultuna metabarcoding laboratory) and National Genomics Infrastructure (SciLifeLab). A selection of research papers will serve as a reference for the course, in combination with the course laboratory protocol.

Examination:

At the end of the course, the students will compile, present and discuss a report of the main results and findings from the course.

Literature: About 15 scientific publications will serve as a reference for the course, in combination with the course laboratory protocol, which will be available at course start.

Additional information: This course is given as a postgraduate course within the SLU Graduate School in Organism Biology in cooperation with UMBLA, SciLifeLab and NEFOM (North European Forest Mycologists).

Learning outcomes:

- *Become trained in all preparatory laboratory steps for high-throughput sequencing of microbial communities in environmental samples*
- *Become well acquainted with the theoretical background for sample preparation choices and their main pitfalls*