Module: Laboratory Tools for the Biosciences

Module coordinator: Robert Dalziel

Module outline

The goal of this module is to make the students familiar with a range of laboratory activities related to research in the field of infectious diseases and One Health. The module consists of four experimental activities. The first is the transfection of eukaryotic cells. The second involves DNA extraction and cloning with a workshop on DNA sequencing and sequence analysis. The third involves RNA quantification and the fourth is about recombinant protein production, purification and analysis.

Topics

Methods for transient and stable transfection of eukaryotic cells
Cell culture procedures and aseptic technique
Reporter constructs and how they are used
Visualisation of fluorescent molecules
DNA extraction and amplification
PCR fragment cloning, sequencing and analysis
RNA extraction and analysis
Quantification of DNA and RNA by quantitative PCR
Purification of eukaryotic proteins using recombinant plasmids in bacteria
Protein quantification
Western blot and ELISA

Learning: 10 ECTS

Lectures: 20h
Practical activities: 80h
Independent work: 150h

Assessment

20% Assessment of laboratory note books
15% Test
10% Abstract and outline of report
55% Scientific report based on experiments in one section of the course