

## **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