

## **Module: Basic Immunology and Statistics**

**Module coordinator: Isabelle Dimier-Poisson**

### **Module outline:**

This module will be focused on immunology to ensure that all the students share the same basic knowledge in this core discipline of the programme. A teaching approach close to the “flipped classrooms” concept will be implemented for this introductory course to develop the student's ability to acquire new knowledge autonomously but also to meet and to work collectively, for instance to deepen a meaningful concept through interactive group activities. The module will also include specific training on statistics applied to biosciences.

### **Topics :**

#### **Immunology:**

Lymphoid tissues

General introduction to the immune system

Structure and organisation of the immune system

Complement

Immunoglobulins and B lymphocytes: Structure and function of immunoglobulins, molecular genetics, antigen-antibody interactions, lymphocyte development, B lymphocyte biology, signalling mechanisms and activation

T lymphocytes: T cell antigen receptors, T lymphocyte signalling mechanisms and activation, development of T cells, peripheral T lymphocyte responses and function

Macrophages and phagocytosis

Major histocompatibility complex (MHC) molecules : Structure, function and genetics

Cell biology of processing and presentation

**Statistics:** Probability, Bayes rule, correlation versus causation, Mean, Median, Mode; Standard Deviation, Variance, Normal distribution, linear regression, Confidence intervals, Statistical tests

### **Learning : 4 ECTS**

Lectures: 15h

Round tables: 15h

Tutorials: 5h

Independent work: 65h

### **Assessment :**

50% Test

50% Oral Presentation