

Màj 09/06/2022

UE 3.3. Technological skills for conducting a research project in Biology and Health Science

3 ECTS

Teaching unit shared by the following tracks:

- Cellular, Integrative and Translational Neurosciences
- Diabetes and cardiovascular diseases
- Fundamental and clinical oncology, towards precision medicine
- Immunity, Inflammation et Infection

This teaching unit aims to provide students with knowledge of recent techniques and equipment used in molecular biology, biochemistry, cell biology and physiology which are essential for a research project in biology applied to health, in the areas of immunity, inflammation and infection.

Block of Skills and Knowledge - BCC 3: Develop and implement an experimental approach in Biology and Health

Skills acquired (direct / indirect):

- Design an experiment in Biology and Health Sciences in a specific area by defining a problem and formulating objectives (SB2): by using the most appropriate methodologies to verify hypotheses while taking into account technological advances in research field; by describing rigorously and precisely the experimental procedure and by planning the steps of implementation; by arguing the relevance of models and methods' choice (biological model, analysis techniques, statistical tests);
- Implement an experimental approach in Biology and Health Sciences (SB3): by using basic techniques and relevant equipment essential to experimentation in the field; by knowing the limits of validity of a model and by identifying potential sources of error; by arguing choices in relation to the techniques used;

Elective teaching:

Fifteen teaching subunits (EC) are available. Students choose 8 in connection with the techniques to be implemented in their research project and / or essential in their specialization.

- EC1: Human genetics
- EC2: New applications of high throughput gene sequencing
- EC3: Proteomics and metabolomics strategies: commonalities and specificities
- EC4: Inference and interrogation of biological networks
- EC5: Editing and modification of gene expression
- EC6: Viral vectors and their applications
- EC7: Invertebrate models
- EC8: Cell culture systems for organ modeling
- EC9: Microfluidics, Organ-on-a-chip and Mechanobiology
- EC10: Flow cytometry
- EC11: Super-resolution and correlative imaging
- EC12: Single cell electrophysiology: pharmacological applications
- EC13: Preclinical imaging
- EC14: Medical imaging
- EC15: Making organs transparent
- EC16: Meta-analysis
- EC17: Machine learning and artificial intelligence methods
- EC18: Drug Discovery and Development: Recent Concepts and Strategies

Test: written test