

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

EC3 - Proteomics and metabolomics strategies: commonalities and specificities.

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First, proteomics and metabolomics analyses will be defined with their specificities and constraints in terms of sample preparation. In particular, the extraction of different molecules will be approached according to the nature of the biological samples and analytical strategies.

Emphasis will be placed on analytical methods using mass spectrometry for the identification and quantification of these biomolecules. These concepts will be highlighted by the presentation of studies demonstrating the application of these strategies to the study of pathologies in search for markers with diagnostic or prognostic value.

Content

- Introduction to proteomic analysis (sample preparation and separation techniques)
- Basics of metabolomics (introduction, analysis of biomolecules, applications)
- Basics of mass spectrometry based analysis (MALDI and ESI sources, main analyzer types, identification and quantification strategies)
- Other “omics” approaches like lipidomics