UE Cell Biochemistry

ECTS
6 crédits

Composante
UFR Chimie-Biologie

Période de l'année
Toute l'année

- **Langue(s) d'enseignement:** Anglais
- **Ouvert aux étudiants en échange:** Non

Présentation

Description

Course outline

Biocatalysis
Basis in Enzymes cofactors and vitamins
Cofactors involved in group transfer
Cofactors involved in redox reaction,
Cofactors and chemical origin of life

Biological Chemistry of Oxygen
Chemistry of O_2
Defense mechanism, detoxification of reactive oxygen species (ROS)
Role of ROS in physio-pathology
Regulation, sensing mechanism
Cellular sources of ROS.

Membrane Biochemistry
Lipids, Membrane and Rafts
Membrane proteins: synthesis and topology
Membrane proteins and detergent biochemistry
Receptors
Transporters
Vesicular trafficking.

Biochemistry of viral infection and immunity
Membrane fusion
Membrane budding
Biochemistry of innate factors

Extracellular Biochemistry: GAGs
Extracellulaire matrices
Glycosaminoglycans (GAG): biosynthesis and catabolism
GAG: biological activities
GAG: pathology and applications

Methods of study
Molecualr factory characterisation : cryoelectron microscopy
Imaging complexes, location and dynamic in cellulo
This module brings strong background (relative to oxidative stress) to the Unit “Experimental Approaches in Biology

Heures d'enseignement

CM	CM	31,5h
TD	TD	21h

Période : Semestre 7

Compétences visées

-Targeted skills:

The course is organized in several interconnected topics:

1/ Biocatalysis

2/ Oxygen Chemistry in Biology

3/ Membrane Biochemistry (membranes lipids and rafts, membrane proteins, vesicular trafficking)

4) Membrane – Virus interaction: biochemistry of infection, membrane fusion, membrane budding

5) New methods to study macromolecular complexes and high resolution cell biology imaging.

6) Biochemistry of extracellular matrix.

Expected competences acquired by the students:

- expertise in structural analysis of an active site
- basics in chemical mechanism occurring in enzymes (as a function of the different types of cofactors)

- characterization of cofactors/active site by biophysical methods.

- Electron transfer in biology

All these competences are preliminary to future drug design expertise and approaches that will be viewed more deeply in other modules of the master.

- Chemistry and reactivity of O_2 in biology (molecular basis of oxydative stress, role in pathology (cancer, etc..); detoxification, ...

- Biochemistry of lipids, lipids rafts, membrane protein biochemistry (receptors, transporters, channels), basis in pharmacology of membrane proteins.

- Biosynthesis and biology of glycosaminoglycans.

- Cell biology of mb : mb budding, fusion, vesicular trafficking

Infos pratiques

Contacts

Responsable pédagogique

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