UE Chemistry and cellular biochemistry

ECTS
6 credits

Component
UFR Chimie-Biologie

- **Teaching language(s):** English
- **Open to exchange students:** Yes
- **Code d'export Apogée:** YAX7BI14

Presentation

Description

(Course outline)

The course is organized in three interconnected topics:

1/ Biocatalysis

2/ Oxygen chemistry in Biology

3/ Biochemistry around cellular membranes (membranes lipids and rafts, membrane proteins, and glycosaminoglycans)

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

Channels

Extracellular Biochemistry: GAGs

Extracellulaire matrices

Glycosaminoglycans (GAG): biosynthesis and catabolism

GAG: biological activities

GAG: pathology and applications

This module brings strong background (relative to oxidative stress) to the Unit “Experimental Approaches in Biology”

Course parts

UE Chemistry and cellular biochemistry - CM	Lectures (CM)	30h
UE Chemistry and cellular biochemistry - TD	Tutorials (TD)	20h

Period : Semester 7

Skills

(Targeted skills)

- 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.

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, and biosynthesis and biology of glycosaminoglycans.

Useful info

Place

Grenoble

Campus

Grenoble - University campus