

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 O₂

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 O₂ 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
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Campus

- > Grenoble - University campus