

Enzymology

Introducing

Description

Enzymology: Detailed description of

- Classifications of enzymes, general and specialized databases
- Kinetic models: Michaelian enzymes, inhibition mechanisms, kinetic models of multi-substrate enzymes, allosteric enzymes and regulation
- Principles of nucleic acid and protein sequence alignment (local and global alignment)
- Biophysical methods used to determine 3D protein structure
- Visualization of catalytic site and analysis of catalytic mechanisms

Objectives

At the end of this module, students should understand and be able to explain

- the importance of studying enzymes and the use of these biocatalysts in biotechnology in the context of ecological transition, sustainable development related to the bioeconomy.
- the methods for measuring the velocity of an enzymatic reaction
- the equations applied to model the kinetics of enzymatic reactions
- the influence of the main physico-chemical parameters on the catalytic efficiency.
- the methods used to determine and analyze the enzyme three-dimensional structure

Students will also learn to use:

- databases of nucleic acids as well as databases of

protein sequences and three-dimensional structures
- computational tools used for sequence alignments (nucleic acids or proteins), visualization of tertiary protein structures and for structure-function relationship studies.

Necessary prerequisites

I1ANETCH Chemistry
I2BECH10 Organic Chemistry
I2BEBS10 Structural Biochemistry
I2BEAN20 Analytical Methods
I2BEGR20 Reaction Engineering

Évaluation

L'évaluation des acquis d'apprentissage est réalisée en continu tout le long du semestre. En fonction des enseignements, elle peut prendre différentes formes : examen écrit, oral, compte-rendu, rapport écrit, évaluation par les pairs...

Practical info

Location(s)

 Toulouse