Genetic engineering

ECTS
6 credits

Component
INSTITUT NATIONAL DES SCIENCES APPLIQUEES TOULOUSE

Number of hours
74h

In brief

Teaching language(s): Français, Anglais

Presentation

Description

- mutations

- transformation

- conjugaison

- transduction

- transposons

Basic tools (enzymes, plasmids, oligonucleotides..)

- Gene cloning

- Expression of recombinant proteins

- Analysis of a gene and its functions (sequencing, gene expression analysis, mutagenesis, protein-protein interactions, ...)

Organisation:

At the beginning of the course, the student will receive a document containing the most important points of the course. Along the course, about two hours will be used to analyse scientific papers in the domain and to solve a general scientific question by proposing adapted molecular biology methods. Simple molecular biology experiments will be performed to allow the student to apply the different concepts seen during the course: microbiology, transduction, genetic engineering tools, use of antibiotics, microscopy, During labwork sessions the student will also manipulate a Molecular biology software. A Group work made on a scientific paper will be presented to the class.

Main difficulties for students:

* To integrate different techniques in a general scientific question

* To find the methods which will allow to solve a problem

Objectives

At the end of this module, the student will have understood and be able to explain (main concepts):

- Basics of bacterial genetics.

- Basic tools used in genetic engineering (restriction enzymes, plasmids…)

- Basic methods like cloning, PCR, sequencing, direct mutagenesis, microarrays, libraries construction, gene expression analysis…

The student will be able to:

- to describe and summarize basic methods

- to insert these methods in a larger scientific and experimental context

- analyse and criticize a scientific paper in this domain

- perform a simple experiment of molecular biology

use an "in silico cloning" software

Pre-requisites

Microbiology / Basic molecular biology

Useful info

Place

Toulouse