UCL Université catholique de Louvain

LBRMC2101

2014-2015

Genetic engineering

3.0 credits	30.0 h + 7.5 h	1q

Teacher(s) :	Boutry Marc ;
Language :	Français
Place of the course	Louvain-la-Neuve
Inline resources:	Icampus
Prerequisites :	General biochemistry and general genetics
Main themes :	The theoretical part will detail the major steps of genetic engineering: preparation and screening of libraries, gene cloning, gene characterization and modification, gene expression in heterologous hosts. Concrete problems of genetic engineering in the microbial, animal and plant fields will be discussed. Recent examples of genetic engineering achievements from the recent literature will be discussed.
Aims :	a. Contribution de l'activité au référentiel AA (AA du programme) Cohérence des AA cours en regard de ceux du programme 1.2, 1.3 2.2 3.4, 3.9 6.1, 6.2 b. Formulation spécifique pour cette activité des AA du programme By the end of this course, the student should be able: - To explain the main genetic engineering methodologies - To choose, according to the problem posed, among different strategies used to clone a gene, modify it and transfer it into other organisms - To propose experimental approaches aimed at solving practical problems of genetic engineering in the microbial, animal and plant fields - To understand and set out examples of genetic engineering in the microbial, animal and plant fields as described in English scientific journals *The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".*
Evaluation methods :	Assessment will be based on the presentation of a paper taken from the recent scientific literature (one-third of the mark) as well as the solving of problems of genetic engineering (two-third of the mark)
Teaching methods :	The theoretical part will be taught by the teacher using the blackboard and Power Point files. Concrete problems of genetic engineering will be submitted to the students who will propose solutions that will be discussed all together. Groups of two or three students will each present a recent paper from the scientific literature illustrating a genetic engineering application
Content :	Theoretical part ' Methods of genomic and cDNA screening ' Global analysis of the genome and its expression (genomics, transcriptomics, proteomics, metabolomics) ' directed mutagenesis ' gene expression in heterologous hosts: Escherichia coli, other bacteria, yeast, transgenic cell lines and transgenic organisms (animals and plants) ' protein engineering ' genic therapy ' legal and ethical issues related to genetic engineering. Solving problems: concrete problems of genetic engineering will be exposed and solved by the students. Examples of genetic engineering applications in the microbial, animal and plant fields will be chosen from the scientific literature and discussed by the students
Cycle and year of study :	> Master [60] in Biology > Master [120] in Chemistry and Bio-industries > Master [120] in Biochemistry and Molecular and Cell Biology > Master [120] in Chemical and Materials Engineering
Faculty or entity in charge:	AGRO