UCL Université catholique de Louvain

LBBMC2109

2015-2016

Physiologie cellulaire végétale

5.0 credits	36.0 h + 18.0 h	2q

Teacher(s) :	Batoko Henri ; Chaumont François ; Boutry Marc ; Morsomme Pierre ;
Language :	Français
Place of the course	Louvain-la-Neuve
Main themes :	Lectures will be based on up-to-date knowledge and concepts from specialised textbooks, published reviews and original research. The topics covered, albeit varying from year to year according to the scientific development in the field, are divided into three main areas:Part I is devoted to intracellular trafficking of lipids and proteins, with mechanisms of plant cells compared to current understandings in other model organisms. Topics covered include:- organisation and functioning of eukaryotic cell (yeast, plant, mammals) organelles;- pathways of lipids and protein transport within the cell (biosynthetic, endocytotic)- synthesis and post-translational modifications of secretory proteins- synthesis and transport of sterols, structure and function of membrane micro-domains- mechanisms and regulation of selection and targeting of secretory cargoes- molecular mechanisms of polarised secretion- internalisation and recycling of membrane receptors during signallingPart II is devoted to solute transport across biological membranes with emphasis in the biochemical mechanisms. The diversity of membrane transporters, their structure, function and physiological role will be explained. Selected examples from plants and the experimental approaches used will be detailed. Part III deals with: - the main pathways for synthesis of plants secondary metabolites - the diversity of this secondary metabolism according to the developmental stage and species - industrial scale production of plant secondary metabolites - methods to improve secondary metabolites production.
Aims :	The goal is for students following this course to gain a fundamental understanding of the molecular and mechanistic basis of intracellular exchanges in plant cells, as exemplified by the transport of proteins, lipids, ions and various metabolites. The diversity of secondary metabolites in plants will be analysed.Across the topics covered and by integrating breakthrough experimental approaches in molecular biology, biochemistry and biophysics, a comprehensive understanding of cellular functioning under normal or pathological conditions will be achieved. At the end of the course, it is anticipated that each student would be comfortable in understanding and integrating breakthroughs in techniques used to gain insights in plant cell functioning. Each attendant should be capable of assessing new concepts, put forward new hypothesis and suitable experimental approaches to tackle new biological questions in the field. *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".*
Content :	The teaching is made of formal modular courses by each of the lecturers. As appropriate, a professor or a researcher from a Belgian or foreign institution would be invited for a weekly set of seminars on a defined hot topic in the field. As a learning agenda of harnessing, reviewing and communicating synthetically relevant scientific findings, the students would be asked to critically analyse a proposed scientific paper dealing with any area or knowledge developed during the course. The oral presentation (in presence of the lecturers and other attendees) will be followed by a questions and answers session.
Other infos :	Exam: Student evaluation would be made of (1) an oral presentation from a critical reading of a proposed or chosen scientific paper (2) answering questions around the findings of the presented paper and knowledge from the lectures. A copy of the lectures' slide show will be made available from i-Campus shareware.
Faculty or entity in charge:	BIOL

Programmes / formations proposant cette unité d'enseignement (UE)				
Intitulé du programme	Sigle	Credits	Prerequis	Acquis d'apprentissage
Master [60] in Biology	BIOL2M1	5	-	
Master [120] in Biochemistry and Molecular and Cell Biology	BBMC2M	5	-	
Master [120] in Chemistry and Bioindustries	BIRC2M	5	-	