UCL Université catholique de Louvain

WBCHM1230

2012-2013

Cell and molecular biology

4.0 credits	30.0 h + 15.0 h	1q

Teacher(s) :	Courtoy Pierre (coordinator) ; Constantinescu Stefan ;
Language :	Français
Place of the course	Bruxelles Woluwe
Main themes :	Lectures will (i) emphasize the functional advantages of various forms of subcellular and tissular compartmentation in a dynamic perspective (structural biology) ; (ii) integrate molecules in this compartmentation context (cellular biochemistry) ; (iii) translate elementary cellular reactions into visible body responses (cellular physiology) ; (iv) reveal the long-term temporal dimension of life, by presenting cell biology as a series of appropriate responses to external challenges (cellular evolution) ; and (v) present exemplary pathologies which are best explained from a cell biological perspective (cellular pathology). Practical courses lead the student to (i) recognize and identify the various forms of life organization at the ultrastructural level, with emphasis on methods, scale and topological relations ; and (ii) understand and evaluate analytical approaches to study cell biology.
Aims :	To discover the power of integrating morphological, biochemical and physiological aspects of cell processes, both qualitatively and quantitatively. To reach an in-depth knowledge, both ultrastructural and biochemical, of the various subcellular and extracellular compartments, in relation with their functions. To understand the basic regulation of cellular differenciation and population control. And to understand how exemplary diseases can be explained at the cell and molecular level. *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 :	Lectures cover the following topics : (1) general organisation of biological membranes ; (2) material fluxes across membranes ; (3) information exchange across membranes ; (4) the secretory apparatus ; (5) the endocytic apparatus ; (6) mitochondria and peroxysomes ; (7) the intracellular matrix ; (8) the extracellular matrix ; (9) control of gene expression ; (10) control of cell populations. Practicals are organized as five afternoons per student group devoted to self-learning under supervision followed by exercices.
Other infos :	Prerequisite : general biology, histology and biochemistry. Examination : the written exam is based on a series of open questions, several of which are testing the capacity to integrate various informations learned throughout the course, and on the analysis of one or two ultrastructural document(s) within a molecular and functional context. Individual support : printed notes, CD-ROM of practicals, for sale and accessible via the Intranet, recommended textbooks available at the Faculty library General Faculty support : one academic member, one assistant, audiovisual facilities for self-learning
Cycle and year of study :	> Preparatory year for Master in Biomedicine > Bachelor in Biomedicine > Bachelor in Medecine
Faculty or entity in charge:	MED