



3.00 credits

30.0 h

Q1

Teacher(s)	Batoko Henri ;Hallet Bernard ;Morsomme Pierre ;Page Melissa ;
Language :	English
Place of the course	Louvain-la-Neuve
Main themes	The main topics of the course include :- signalling modules and pathways involved in cell perception and communication- mechanisms of gene regulation including epigenetic modifications of DNA and chromatin, transcriptional and translational regulations (small RNAs etc), as well as the posttranslational modifications of proteins and their turnover- regulation of metabolic activities- cell cycle and its control- molecular bases of cell differentiation and cell death- intracellular trafficking
Learning outcomes	<p>At the end of this learning unit, the student is able to :</p> <p>The course aims at integrating the molecular and cellular bases of the living world, from prokaryotic to eukaryotic cells. It should be regarded as an in-depth continuation of the undergraduate foundations acquired through the relevant cell biology, molecular genetics, biochemistry and metabolism courses, with emphasis on the integration of approaches and methodologies underpinning our understandings of life. The purpose is to understand how a cell can perceive the variations of its environment (within an organism or as a population of cells) and how it will translate these environmental cues into an appropriate response. This will require the understanding of different modes of cell communication and pathways underlying information transduction as well as their outputs in terms of metabolic activity, gene expression, cell division or differentiation. The various aspects will be treated with an evolutionary perspective, highlighting the common themes of life as opposed to peculiarities of the microbial, plant or animal worlds. This course should be considered as an anchor for the more specialized studies in molecular and cellular biology of microorganisms, plants, animals and humans, within the master program.</p>
Evaluation methods	To successfully complete a module each student is expected to read and discuss a pre-selected article with the dedicated lecturer. The evaluation is based on the critical reading and comprehension of the state-of-the-art, methods, results, <i>et cetera</i> in the selected articles. For each module, the analysis of a compulsory article is asked of the students, the evaluation consists of an open discussion with each lecturer about each of the imposed articles. Due to the four modules that comprise this course, the score obtained for each module intervenes in the calculation of the final score of the evaluation. The evaluation of the four modules will take place in the January exam session.
Teaching methods	Four modules delivered consecutively by four different lecturers
Content	The content of the course is divided into specific modules developed by each lecturer, making the best possible use of his/her main expertise and up-to-date literature in his/her field of interest. Each scientific concept is developed with the aim of highlighting the current state-of-the-art, both in terms of basic knowledge and technological approaches. Together the modules also provide you with the tools to critical read and understand current scientific literature.
Inline resources	The slides used for the lectures (PDF / PPT) will be made available via Moodle. The articles to be analyzed for evaluation will also be posted on Moodle at the end of their dedicated modules.
Other infos	Precursory courses: Students must be familiar with most fundamental concepts and techniques in molecular and cellular biology (level BIO13)
Faculty or entity in charge	BIOL

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Master [120] in Biochemistry and Molecular and Cell Biology	BBMC2M	3		
Master [60] in Biology	BIOL2M1	3		
Master [120] of Education, Section 4 : Biology	BIOL2M4	3		