

3 credits

30.0 h + 10.0 h

Q1

Teacher(s)	De Smet Charles ;Lemaigre Frédéric ;Michiels Thomas coordinator ;
Language :	French
Place of the course	Bruxelles Woluwe
Prerequisites	Notions of general biology and cytology <i>The prerequisite(s) for this Teaching Unit (Unité d'enseignement – UE) for the programmes/courses that offer this Teaching Unit are specified at the end of this sheet.</i>
Main themes	For prokaryotes as well as eukaryotes : - structure of the DNA and genome organization ; - mechanisms and signals of DNA replication ; transcription ; translation (typical genetic flux DNA-RNA-protein and post-translational modification) - epigenetic regulation
Aims	Objectives of this class include the learning of basic principles of molecular biology for eukaryotic and prokaryotic organisms. The student will be able - to draw and to recognize the chemical structure of nucleic acids. - to explain the basic mechanisms of replication, transcription, splicing and translation and the various enzymatic activities involved in these processes. 1 - to analyse nucleic acid sequences and their coding capacity. - to explain imprinting and how epigenetic modifications such as DNA methylation, histone acetylation and others affect gene expression. These knowledges are a prerequisite for other courses such as microbiology, biochemistry and immunology ----- <i>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".</i>
Evaluation methods	The evaluation of students takes place through a written exam. On top of basic knowledge in molecular biology , the exam will evaluate, through exercices, the student's ability to use the matter that was taught.
Teaching methods	Regular courses with use of slides and blackboard Sessions are organized to make the student acquainted with nucleotide sequence analysis and to the use of computer softwares for simple sequence manipulations and analyses
Content	In prokaryotes and eukaryotes : structure of nucleic acids ; chromatin organization; DNA replication; gene organization ; RNA transcription and its regulation ; types of RNAs (mRNA, rRNA and tRNA), the process of mRNA translation ; post-translational modifications and protein targeting in the cell ; epigenetic regulation of gene expression by DNA methylation, histone modification, and others, and regulation of these processes.
Bibliography	• fichier reprenant les diapositives de cours, disponible sur Moodle Support: Livre: Biochimie Génétique. Biologie Moléculaire. J. Etienne et al. Editions Masson; diapositives présentées au cours et mises à la disposition des étudiants. Manuel d'exercices pratiques distribués par les enseignants. • text file and illustrations available as pdf files on the Moodle platform • textbook : Biochimie Génétique. Biologie Moléculaire. J. Etienne et al. Editions Masson, available at the medical school library (no longer edited) • files with exercices on the Moodle platform
Faculty or entity in charge	FASB

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Aims
Bachelor in Biomedicine	SBIM1BA	3	WMD1120 AND WMD1006 AND WMD1105	