UNIVERSITÉ LIBRE DE BRUXELLES

Biologie moléculaire de la cellule

Lecturer
Françoise ROTHE (Coordinator)

Course mnemonic
BIOL-G2202

ECTS credits
5 credits

Language(s) of instruction
French

Course period
First term

Campus
Erasme

Course content

> Eukaryotic cell and model organisms

> DNA, genome and chromosomes

> DNA replication

> Cell division and DNA repair

> RNA transcription and maturation

> Regulation of gene expression

> Translation and post-translational regulations

> Membranes and membrane transport

> Cellular compartments and intracellular trafficking

> Signal transduction

> Cytoskeleton

> Cell cycle

> Molecular and cellular biology techniques and their applications in the clinic

Objectives (and/or specific learning outcomes)

> Describe and explain the structural and functional organization of the animal cell (organelles, cell membranes, cytoskeleton)

> Describe and explain cellular interactions and the role of the extracellular matrix

> Describe and explain the mechanism of cell division

> Describe and explain the flow of genetic information in the cell (DNA - RNA - proteins)

> Describe and explain the regulation of gene expression (RNA maturation, splicing, RNA editing, small RNA, methylation ...)

> Describe and explain the consequences of gene and cell deregulation. Concrete examples of pathologies

Pre-requisits and co-requisits

Co-requisites courses

BIOL-G1102 | Biologie générale (Module I) | 5 crédits and BIOL-G1103 | Biologie des organismes et du développement (Module II) | 10 crédits

Course having this one as co-requisit

VETE-G3308 | Génétique des animaux domestiques | 5 crédits

Required knowledge and skills

Required course :

BIOL-G1101 - Unité, Evolution et diversité de la vie 10 credits - Catherine LEDENT (Coordinator)

Teaching method and learning activities

Ex cathedra courses. Depending on the health situation courses may be given online.

Possibility of oral presentations related to one of the chapters of the course, discussions of scientific articles and seminars with invited speakers.

The course will be complemented with concrete examples related to the medical field.

Interactive training using Wooclap tool.

Contribution to the teaching profile

Acquisition of basic scientific knowledge related to the medical field at the molecular and cellular levels.

Opportunity to develop scientific curiosity as well as the rigor and analytical method required in the medical field.

Learn the vocabulary, roles, impacts and use of key biological concepts:

> Describe the structure and functions of the main organelles of eukaryotic cells

> List the classes of genes and proteins involved in these functions as well as their respective role

> Establish the functional link between certain genetic alterations, the impacted cellular and molecular mechanisms and the pathological consequences

References, bibliography and recommended reading

1) Molecular Cell Biology (9th edition, 2021) Lodish, et al. Also available in French version: Biologie moléculaire de la cellule.

2) Molecular biology of the cell (6th edition, 2017) Alberts et al. Also available in french Biologie moléculaire de la cellule (6e#me édition).

Course notes

Université virtuelle

Other information

Place(s) of teaching

Erasme

Contact(s)

Prof Françoise Rothé, Breast cancer translational research laboratory, Jules Bordet Institute, Faculty of Medicine. E-mail : francoise.rothe@ulb.be

Evaluation method(s)

written examination

Evaluation method(s) (additional information)

Potential oral presentation

Determination of the mark (including the weighting of partial marks)

Written examination - January 2023 session / Written examination - August / September 2023 session - Multiple choice questions + possibility of open questions.

In case the students will do an oral presentation, the mark will be integrated in the final mark with the written examination.

Main language(s) of evaluation

French

Programmes

Programmes proposing this course at the faculty of Medicine

BA-VETE | Bachelor in Veterinary Medicine | unit 2