

BIO-205

Cellular and molecular biology I

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Cursus	Sem.	Type
Life Sciences Engineering	BA3	Obl.

Language of teaching	English
Credits	4
Session	Winter
Semester	Fall
Exam	Written
Workload	120h
Weeks	14
Hours	4 weekly
Lecture	2 weekly
Exercises	2 weekly
Number of positions	

Summary

The course covers the regulation of gene expression, which translates the information contained in the genome into function, by adjusting the levels and activities of mRNAs and proteins to the needs of specific cells, tissues and environments. A particular emphasis is given on experimental methods.

Content

The course contents include notably the structure of genomes, methods to analyze and manipulate DNA, genetics, as well as the regulation of gene expression from DNA all the way to the post-translational level. An emphasis is placed on discussing experimental approaches that allow the analysis of these processes. The weekly lectures (2 hours) are followed by theoretical exercises (1 hour). The acquisition of knowledge is assessed in a written exam.

Keywords

DNA, genome, genetics, gene expression, transcription, splicing, translation, protein folding, mechanistic approaches, research strategies

Learning Prerequisites**Required courses**

Biologie I

Recommended courses

None

Important concepts to start the course

Those covered in Biologie I

Learning Outcomes

By the end of the course, the student must be able to:

- Describe the basic organization of the genome
- Explain the fundamentals of gene expression
- Deduce conclusions from experimental data
- Realize which research methods are appropriate for solving given questions
- Propose experimental designs to investigate biological questions

- Interpret an experimental result.

Teaching methods

The course is organized in two-hours of lectures plus one-hour of exercises each week. Teaching assistants are present during the exercise sessions.

Expected student activities

Attending the lectures and participating actively to the exercises. Two hours of personal study per week are expected.

Assessment methods

Written exam

Supervision

Office hours	Yes
Others	By email appointment

Resources

Bibliography

Molecular Biology of the Cell, 7th edition

Ressources en bibliothèque

- [Molecular Biology of the Cell / Alberts](#)

Notes/Handbook

The lecture slides and exercises will be made available through Moodle.

Websites

- <http://N/A>

Moodle Link

- <https://go.epfl.ch/BIO-205>

Prerequisite for

Integrated laboratory in Life Sciences