Fundamentals in Molecular Biology (1 ECTS)

Organizer(s)

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Group « Macular Degeneration and Diabetic Retinopathy »

Course dates

- **8 course sessions from March 4 – April 29, 2022**
- **Fridays from 10-12h (except April 15 >>> public holiday)**

Summary

Molecular biology is the convergence of many disciplines, mainly biochemistry, genetics, physics, and bioinformatics. Molecular biology concerns the study and the understanding of the interactions between the various systems of a cell, including the interrelationship of DNA, RNA and protein synthesis and learning how these interactions are regulated.
The goal of the course is to cover the essentials of molecular biology and to provide students with an overview of fundamental tools used in laboratory to study molecular aspects in diverse pathologies.

Course level

Introductory

Content of course sessions

- Session 1: The beginnings of molecular biology / The structure of DNA / The structure and function of RNA
- Session 2: From gene to protein / Genome organization, from nucleotides to chromatin / DNA replication
- Session 3: DNA repair and recombination / Recombinant DNA and molecular cloning / Tools for analyzing genes and proteins expression
- Session 4: Transcription in prokaryotes vs eukaryotes / Epigenetic mechanisms
- Session 5: RNA processing and post-translational gene regulation / Translation
- Session 6: Omics analyses / Inhibitors of Proteins
- Session 7: Genetically modified organisms / Medical molecular biology / Conclusions
- Session 8 : Journal clubs (see below)

Assessment

The assessment will mainly be based on students' understanding of the papers to be read before each course session, and the journal club presentation by student pairs in session 8. For those presentations, students will be asked to pair up and choose the paper to prepare in the end of the first session.
Students are expected to read all the papers that will be provided, enabling active participation.
Participants are requested to attend at least 80% of the course sessions.

Course materials

- log in to "https://moodle2.unil.ch" with your institutional address (unil, chuv, epfl)
- click on "Faculté de Biologie et de Médecine" > "Ecole doctorale / doctoral school" > "Lemanic Neuroscience Doctoral School"
- course materials and papers will be stored under "Fundamentals in Molecular Biology"

Please use the self-enrollment method with the same password than the zoom sessions.

Location

Life Streaming on Zoom:
https://unil.zoom.us/j/95528534042

Meeting ID: 955 2853 4042
Password: 040322

Please keep your camera on as the course is targeting interactions, and you will be asked questions throughout the course.

Registration

Register before March 1 by writing a mail to lndscourses@gmail.com (with your supervisor in copy) and stating the course title as subject.