

Fundamentals in Molecular Biology (1 ECTS)

Organizer(s)	Raphaël Roduit, PhD Hôpital Ophtalmique Jules-Gonin Group « Macular Degeneration and Diabetic Retinopathy »
Course dates	8 course sessions (Zoom session) from February 24 – April 28, 2023 Fridays from 10-12h (except March 31 and April 7)
Summary	<p>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.</p> <p>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.</p>
Course level	Introductory
Content of course sessions	<ul style="list-style-type: none">• <u>Session 1</u>: The beginnings of molecular biology / The structure of DNA / The structure and function of RNA• <u>Session 2</u>: Articles presentation (students)/ From gene to protein / Genome organization, from nucleotides to chromatin• <u>Session 3</u>: Articles presentation (students) / DNA replication / DNA repair and recombination• <u>Session 4</u>: Articles presentation (students) / Recombinant DNA and molecular cloning / Tools for analyzing genes and proteins expression• <u>Session 5</u>: Articles presentation (students) / Transcription in prokaryotes vs eukaryotes / Epigenetic mechanisms• <u>Session 6</u>: Articles presentation (students) / RNA processing and post-translational gene regulation / Translation• <u>Session 7</u>: Articles presentation (students) / Omics analyses / Inhibitors of Proteins• <u>Session 8</u>: Articles presentation (students) / Genetically modified organisms / Medical molecular biology / Conclusions
Assessment	<p>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 before each session (beginning at session 2). For those presentations, students will be asked to pair up (depending of participants number) and choose the paper to present before each session (starting session 2). The choice of presentation papers will be done at the end of session 1.</p> <p>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.</p>

- 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/94640944027>

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

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