

CH-455 **Methods in drug development**

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Cursus	Sem.	Type
Chimiste	MA1, MA3	Opt.
UNIL - Sciences forensiques	H	Opt.

Language of teaching	English
Credits	3
Session	Winter
Semester	Fall
Exam	Written
Workload	90h
Weeks	14
<b>Hours</b>	<b>2 weekly</b>
Lecture	2 weekly
<b>Number of positions</b>	

**Summary**

The course discusses methods in modern drug development. Each week, a short introduction to a drug development method / field is provided and a recent research paper is discussed in depth. Students participate in presenting and discussing the research publications.

**Content**

- Introduction and basic concepts
- Phenotypic screening
- Target identification
- Target validation
- Gene editing
- Antibody engineering
- DNA-encoded chemical libraries
- Macrocyclic drugs
- siRNA and lipid nanoparticles
- Covalent drugs
- RNA targeting
- Protein structure prediction
- Patenting

**Keywords**

Drug development, drug discovery, therapeutics, methods

**Learning Prerequisites****Required courses**

A basic knowledge in molecular sciences is of advantage (e.g. bachelor training in chemistry, biochemistry, molecular biology or related).

**Learning Outcomes**

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

- Recall the discussed methods in drug development.
- Explain the motivation, rationale and principle of each method discussed.
- Recall the technical procedures of all discussed methods.

- Assess / Evaluate the opportunities and limitations of the drug development methods.
- Recall diseases and targets to which the methods were applied.
- Recall problems that were solved with the discussed methods and describe the outcome.
- Recall and explain the data in figures of all research papers discussed.

### Teaching methods

Each week, a short introduction to a drug development method / field is provided and a recent research paper is discussed in depth. The students have to read each week a research paper provided and they will participate in presenting and discussing the research paper.

### Expected student activities

The students have to read each week a research paper provided and they will participate in presenting and discussing the research paper.

### Assessment methods

Written exam at the end of the course (80%)  
Oral presentations during the course (20%)

### Supervision

Office hours	No
Assistants	No
Forum	No

### Resources

#### Virtual desktop infrastructure (VDI)

No

#### Bibliography

All course material and papers will be provided on Moodle.  
For additional reading, please consider (not required for exam): Basic Principles of Drug Discovery and Development, Benjamin Blass, 2nd Edition - March 30, 2021

#### Ressources en bibliothèque

- [Basic Principles of Drug Discovery and Development / Blass](#)

#### Moodle Link

- <https://go.epfl.ch/CH-455>