CH-455

Methods in drug development

Heinis Christian

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
Hours	**2 weekly**
Lecture	2 weekly
Number of positions	

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 particiate 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
- Macrocycle drugs
- siRNA and lipid naoparticles
- 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, rational 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 patriciate in presenting and discussing the research paper.

Expected student activities

The students have to read each week a research paper provided and they will patriciate 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