CH-317 **Drug discovery and development**

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Cursus	Sem.	Type
Chemistry	BA6	Obl.
HES - CGC	E	Opt.

Language of teaching	English
Credits	2
Session	Summer
Semester	Spring
Exam	Written
Workload	60h
Weeks	14
Hours	**2 weekly**
Courses	2 weekly
Number of positions	

Summary

This course discusses the molecular basis of diseases and how drugs work. Concepts and processes employed in today's drug discovery and development are covered. The first part of the course focuses on small molecule drugs and the second one on biotherapeutics.

Content

Lectures 1-5: The following five major disease areas as well as small molecule therapeutics applied to treat the diseases are discussed:
· cancer
· cadiovascular diseases
· neurologic disorders
· infectious diseases
· inherited diseases

Lectures 6-13: The following therapeutic formats being mostly biologics are discussed:
· blood and blood components
· enzymes
· hormones
· cytokines
· monoclonal antibodies
· antibody fragments and mimics
· macrocycles
· peptides and peptidomimetics

Keywords

pharmacological chemistry, drug discovery, biotherapeutics, biologics, small molecule drugs

Learning Prerequisites

Required courses

Basic knowledge in chemistry and biochemistry

Learning Outcomes

By the end of the course, the student must be able to:
• Describe molecular basis of diseases

- Describe small molecule drugs and biotherapeutics and their mechanism of action
- Recall drug development strategies that are discussed as case studies

Teaching methods

Each week, one of the above described topics is presented in a lecture (45 minutes) and a research paper is discussed (45 minutes).

Expected student activities

The students read each week a research paper and answer questions that are provided (at home). The students participate in the discussion of the paper in the lecture.

Assessment methods

Written exam

Resources

Notes/Handbook

The following materials are provided on Moodle:
- PPT presentation of the lectures and the case studies
- Research papers
- Questions about research papers