CH-332

Medicinal chemistry

Aye Yimon

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

Sitting at the crossroad of organic chemistry and medicine, this course outlines how an initial hit compound transitions into a lead candidate, and ultimately a drug, in the modern drug discovery world. Note: the course is held only during 2nd half of spring semester (10 - 14 h on Fri of Week 7-14)

Content

This class engages students in the latest concepts of drug development encompassing conventional as well as emerging ideas & technologies; optimization & validation strategies during preclinical studies; and unmet limitations & pitfalls in both preclinical and clinical stages. By deploying specific case examples, the course serves as a primer to help develop a core knowledge base of medicinal chemistry, which is crucial for successfully transforming a bench side hit compound to a bed-side treatment.
Featured topics:

- Selection and modular synthesis of drug-like compounds in establishing structure-activity relationships
- Biochemical and genetic assays ensuring identification of correct target, efficacy, and safety
- Pharmacokinetics and pharmacodynamic evaluations
- The choice/rationale of (pre)clinical animal models
- Mainstay and modern technologies for structrue-/fragment-based drug design and screening -- strengths & limitations
- Drug metabolism and drug-induced liver injury
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Learning Prerequisites

Required courses

Courses that cover fundamental chemical reactions, concepts, and synthetic organic chemistry

Recommended courses

Courses at the scientific interface (such as, CH-313: Chemical Biology) are strongly recommended to help strengthen overall comprehension of modern medicinal chemistry as a central field in drug discovery. Traditional courses in basic biochemistry, cell / molecular biology, and/or genetics will also prove helpful.

Important concepts to start the course

A good understanding of organic chemistry and chemical intiution is beneficial for this course but not a pre-requisite as it can be developed by active participation in the course and consistency in keeping up with lecture materials and exercises

Assessment methods

Final exam to be held at the end of the semester will be of written format. Depending on CoVID/campus-access restrictions, the exam may be either closed book or open book. Final exam will count 90% of the entire course grade. The other 10% of the course grade will come from a couple of take-home exercises which will be graded.