CH-634

Chemical Probes for Imaging in Biology

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Cursus	Sem.	Type
Chemistry and Chemical Engineering		Opt.

Language of teaching	English
Credits	1
Session	
Exam	Term paper
Workload	30h
Hours	**15**
Courses	12
Exercises	3
Number of positions	

Frequency

Every year

Remark

Online course

Summary

The goal of this course is to provide an overview on recent developments in the design and synthesis of fluorescent and bioluminescent probes for applications in basic research and medicine. Through the discussion of recently published advances, general design principles will be reviewed and criteri

Content

The course “chemical probes for imaging in biology” focusses on the visualization and manipulation of biological activities in live cells. While the in vivo localization and quantification of protein activities, metabolites and other important parameters has become a central quest in biology, the majority of cellular processes still operate invisibly, not illuminated by even the brightest laser beams. We will discuss approaches to address this challenge by reviewing new tools to unravel the complexity of living cells. Topics discussed in the class will be (i) the design of new fluorescent probes for live-cell imaging, including superresolution microscopy; (ii) methods for the localization of chemical probes in living cells; and (iii) the design of semisynthetic protein sensors for basic research and diagnostics. The class will be comprised of four lectures à 3 hours around these topics. On the last day of the course, each participant will introduce a recent paper to the other participants of the course which will then be discussed in the class.

Keywords

Chemical Biology, Imaging, Fluorescent probes

Learning Prerequisites

Required courses

Basic Chemical Biology

Assessment methods

2021: written term paper

Resources

Moodle Link

- https://go.epfl.ch/CH-634