CH-634

Chemical Probes for Imaging in Biology

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Cursus	Sem.	Type
Chemistry and Chemical Engineering		Obl.

Language of teaching	English
Credits	1
Session	
Exam	Oral presentation
Workload	30h
Hours	**15**
Lecture	12
Exercises	3
Number of positions	

Frequency

Every year

Remark

Next time : 23.6-1.7.2020 (Zoom)_Course material : via Moodle

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 six lectures à 2 hours around these topics. At the end of the course, participants will a short report how one of the approaches discussed during the course could potentially benefit their research.

Keywords

Chemical Biology, Imaging, Fluorescent probes

Learning Prerequisites

Required courses

Basic Chemical Biology

Assessment methods

Write a report; this report should outline/discuss how one of the topics discussed in the course might be of relevance for the PhD thesis of the participant