DEPARTMENT OF CLINICAL SCIENCE, INTERVENTION AND TECHNOLOGY

H9F3049 Cellular Signalling, 1.5 credits (hec)

Cellulär Signalering, 1,5 högskolepoäng

Third-cycle level / Forskarnivå

Approval

This syllabus is approved by the The Committee for Doctoral Education on 2023-11-16, and is valid from Spring semester 2024.

Responsible department
Department of Clinical Science, Intervention and Technology, Faculty of Medicine

Prerequisite courses, or equivalent

No prerequisite courses, or equivalent, demanded for this course.

Purpose & Intended learning outcomes

Purpose

The purpose of the course is to enable the student to acquire a broad view of various signalling pathways and to identify common themes on protein-protein and protein-lipid interactions in human disease. The students shall learn how signal transduction occurs through a highly regulated cascade of events inside cells. The student will be given the opportunity to learn to identify and reflect on the knowledge (general methodology and theoretical concepts) gained with the benefit for the student's own research.

Intended learning outcomes

After completed course, the student should be able to:
- show adequate knowledge on general concepts in the field of signal transduction
- discuss common methods and techniques in the field of signal transduction
- apply some of the conceptual knowledge in his/her own research project(s)
- choose relevant scientific questions, analysis methods and design a general plan to study this

Course content

The course brings up current aspects in cellular signalling and the developments in methodology that has cultivated the understanding of the function of the different signalling pathways in various model systems and diseases. The course will cover major aspects of protein and lipid kinases, heterotrimeric G-proteins, small GTPases, cytokine and growth hormone receptors, secondary messengers, transcriptional regulation and signal transduction in cell-specific responses to stimuli. The course will cover the molecular basis of certain diseases related to the abrogation of signalling pathways.

Forms of teaching and learning

On-campus lectures or live webinars by invited lecturers within the field. Student-focused activities to facilitate interaction and discussions on additional new topics and resources to retrieve information about a particular issue within the field of signal transduction. Self-studies and home assignment to prepare for oral examination.

Language of instruction
The course is given in English.

Grading scale

Pass (G) /Fail (U)

Compulsory components & forms of assessment

Compulsory components

All lectures and activity moments are compulsory, missing lectures must be compensated by written résumé, while activity moments should be taken again in the next course occasion.

Forms of assessment

Oral presentation on how concepts and methods/techniques in the field of signal transduction is, or could be, integrated into own research project. The presentation should clearly represent the knowledge gained during the course. One peer will be assigned as a critical friend to review the proposal. Oral presentation is compulsory, and it is essential to be an active participant in the follow-up discussions. It must be shown that all the intended learning outcomes of the course are achieved.

Course literature

Recommended literature:

Up-to-date review articles covering the lecture topics and/or the subject will be provided by the lecturers.