

## Advanced Cell Biology (C003306)

Due to Covid 19, the education and evaluation methods may vary from the information displayed in the schedules and course details. Any changes will be communicated on Ufora.

Course size (nominal values; actual values may depend on programme)  
Credits 5.0 Study time 150 h Contact hrs 40.0 h

Course offerings and teaching methods in academic year 2020-2021

Deze cursus is 2-jaarlijks en wordt niet aangeboden

Lecturers in academic year 2020-2021

van Loo, Geert

WE14 lecturer-in-charge

Offered in the following programmes in 2020-2021

crdts offering

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Teaching languages

English

Keywords

cell signaling, signal transduction, pathways, protein interactions, signaling enzymes, post-translational modifications, ubiquitination, phosphorylation, methylation, acetylation, subcellular localization, protein degradation.

Position of the course

The course Advanced Cell Biology covers the principles and components that underlie all known signaling processes. The course discusses the conceptual tools needed to understand pathways used by the cell to communicate by emphasizing the common design principles, components, and logic that drives all signaling. Many specific examples are provided throughout to illustrate common principles, and provide a comprehensive overview of major eukaryotic signaling pathways.

Contents

- Introduction to Cell Signaling
- Principles and mechanisms of protein interactions
- Signaling enzymes and their allosteric regulation
- Role of post-translational modifications in signaling
- Subcellular localization of signaling molecules
- Second messengers: small signaling mediators
- Information transfer across the membrane
- Regulated protein degradation
- Detailed analysis of prototype signaling cascades

Initial competences

Basic knowledge about Cell Biology including technology must be available. The student must have successfully accomplished Bachelor in Biology with course Basic Cell Biology (or studies at the same level with similar content). The student must be capable of critically analysing the international literature.

Final competences

- 1 Students have acquired a specialised knowledge about all aspects of cell biology covered in the course.
- 2 They must be able to extrapolate this knowledge to other research fields.
- 3 Students must be capable of analysing the international literature related to cell biology and present this in a structured way.

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

## Conditions for exam contract

This course unit cannot be taken via an exam contract

## Teaching methods

Lecture, seminar

## Extra information on the teaching methods

Classroom lectures

Classroom problem solving sessions: discussion and evaluation of articles from the international literature, either as a written report, either as a classroom presentation.

## Learning materials and price

English syllabus and power-point presentations will be available at no charge through Ufora.

## References

- Cell Signaling - Principles and mechanisms (Lim, Mayer and Pawson), Garland Science
- First Edition, 2015
- Signal transduction: principles, pathways, and processes (Cantley, Hunter, Sever and Thorner), CSH Press
- First Edition, 2014

## Course content-related study coaching

Apart from the classroom lectures, the possibility exists to raise questions to the teacher. The questions can also be raised through e-mail or in a personal contact.

## Evaluation methods

end-of-term evaluation and continuous assessment

## Examination methods in case of periodic evaluation during the first examination period

Written examination with open questions, oral examination

## Examination methods in case of periodic evaluation during the second examination period

Written examination with open questions, oral examination

## Examination methods in case of permanent evaluation

Assignment, report

## Possibilities of retake in case of permanent evaluation

examination during the second examination period is possible

## Extra information on the examination methods

- Evaluation will be based on the ability to develop an insight in the matters covered by the course. Written examination with open questions. If wanted, there is possibility for oral clarification.
- Evaluation of the literature assignment/classroom presentation.

## Calculation of the examination mark

- Periodical evaluation (80%)
- Non-periodical evaluation (20%)

The second examination chance can also involve the non-periodical evaluation.