

BIOR75, Biology: Cellular and Molecular Immunology, 15 credits

Biologi: Cellulär och molekylär immunologi, 15 högskolepoäng
Second Cycle / Avancerad nivå

Details of approval

The syllabus was approved by Study programmes board, Faculty of Science on 2014-03-03 to be valid from 2014-03-03, autumn semester 2014.

General Information

Language of instruction: English

Main field of studies

Molecular Biology

Biology

Depth of study relative to the degree requirements

A1F, Second cycle, has second-cycle course/s as entry requirements

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Learning outcomes

Knowledge and understanding

On completion of the course the student shall be able to:

- account for how the human immune defence is organised
- explain the cause of and compare the role of the innate immune defence at infection and sterile tissue damage
- understand which effect the activation of the innate immune defence has on the subsequent adaptive response
- describe the development and selection of the lymphocytes at the cellular level and explain how the genes of the antigen receptors are expressed at the molecular level during development
- describe the principles of how the immune response is induced: communication between different defence cells, molecular mechanisms for how antigen is

processed and presented, how the defence cells are activated, the effector functions of the activated cells and how these cells combat infections

- describe the principles of how resting and activated defence cells migrate to and from lymphoid organs and non-lymphoid tissue
- describe primary and secondary immune responses and explain the principles of vaccination
- explain how the immune responses are regulated, and the tolerance mechanisms of the immune system
- describe at a general level the symptoms and disease mechanism for some common autoimmune diseases
- describe at a general level the symptoms and disease mechanism for hypersensitivity

Competence and skills

On completion of the course the student shall be able to:

- identify and present relevant information from scientific publications with cellular and molecular immunological issues and evaluate and relate the information to the subject area
- apply some current experimental methods that are used within cellular and molecular immunology research, and summarise the laboratory results in writing

Judgement and approach

On completion of the course the student shall be able to:

- critically evaluate and review media information (radio, TV, daily press, blogs and web pages) concerning immunological issues

Course content

The course consists of theme weeks that treat different immunological subjects. During the theme weeks, different teaching methods are integrated, including lectures, self-study in a team, and teacher-supervised group and discussion exercises.

The first theme weeks are organised as introductory sections that aim to introduce the students to the subject areas to be treated during the course. To this section, two laboratory sessions are performed to increase the understanding of basic technologies that are used in the field.

The remaining part of the course is a specialisation in the immune defence, with theme weeks treating the different course objectives with linked laboratory sessions and scientific seminars.

The aim of the lectures is to introduce, supplement and update selected parts of the textbooks. The ambition is that the lecturers should integrate new research results

into the teaching. The students read supplementary scientific articles that are discussed during the group work.

Course design

The teaching consists of lectures, group and discussion exercises as well as laboratory sessions.

Participation in laboratory sessions and teacher-supervised group work, and thereby other integrated teaching, is compulsory.

The expected learning outcomes concerning knowledge and understanding are examined through the written examination.

The intended learning outcomes with respect to competence and skills as well as judgement and approach are examined through the written examination, participation in group work, scientific seminars as well as participation in laboratory sessions and submission of laboratory reports.

Assessment

Written examination and participation in compulsory parts. For students who have not passed at regular examinations further examinations in close connection to these are offered.

Subcourses that are part of this course can be found in an appendix at the end of this document.

Grades

Marking scale: Fail, Pass, Pass with distinction.

The grades awarded are Pass with Distinction, Pass and Fail.

The final grade is decided through a weighing of the grades of the different parts that are included in the examinations. The laboratory reports and the group work have the grades Pass and Fail. The written examination has the grades Passed with Distinction, Passed and Failed. The student's activity during group work and laboratory sessions are taken into account and can compensate results near the threshold for Pass with Distinction.

Entry requirements

For admission to the course, 120 credits of scientific studies including knowledge corresponding to 30 credits of cell and molecular biology/biochemistry, 5 credits of genetics, 5 credits of microbiology, 15 credits of human physiology, 5 credits of immunology, and 15 credits of chemistry, are required. Furthermore, 30 credits of second-cycle courses in molecular biology, as well as English B, are required.

Further information

The course may not be included in a degree together with BIOR40 Cellular and Molecular Immunology 15 credits.

Subcourses in BIOR75, Biology: Cellular and Molecular Immunology

Applies from V14

- 1401 Theory, 10,0 hp
Grading scale: Fail, Pass, Pass with distinction
- 1402 Laboratory Work and Seminars, 5,0 hp
Grading scale: Fail, Pass