UNIVERSITY OF GOTHENBURG

INSTITUTE OF BIOMEDICINE

BCG820 Molecular Genetics and the Development of Recombinant Protein Biopharmaceuticals, 7.5 credits

Molekylär genetik och utveckling av rekombinanta proteinläkemedel, 7,5 högskolepoäng

Second Cycle

Confirmation

This course syllabus was confirmed by Committee for Study Programmes in Pharmacy on 2010-05-20 and was last revised on 2020-11-11 by Institute of Biomedicine to be valid from 2021-01-18, spring semester of 2021.

Field of education: Pharmacy 100%
Department: Institute of Biomedicine

Position in the educational system

The course: Molecular genetics and the development of recombinant protein biopharmaceuticals, 7.5 credits, is an elective advanced course at second cycle level in the pharmacy programme. The course is given during semester 8.

The course can be part of the following programmes: 1) Programme in Pharmacy (F2APP), 2) Programme in Pharmacy (F2APO), 3) Programme in Pharmacy (MAPTY) and 4) Programme in Pharmacy (MAPOY)

Main field of studies	*Specialization*
-	A1F, Second cycle, has second-cycle course/s as entry requirements

Entry requirements

For admission to the course, passed courses up to semester 5 and completed courses on semester 6-7 in the pharmacy programme or the equivalent.

Learning outcomes

Upon completion of the course the student will be able to:

Knowledge and understanding

- Explain the principle for common molecular genetic methods.

- Use example to explain how different methods can answer various types of experimental issues in molecular genetics, molecular cell biology and production of recombinant protein biopharmaceuticals.

- Understand the practical possibilities and problems that can be associated with the experimental methods that are taught during the course.

Competence and skills

- Be able to compile analyse, discuss and present scientific results about how different methods work and can be used.

- Present, discuss and evaluate own experimental results in relation to earlier published studies and in connection with this use a scientific language.

- Apply several different laboratory techniques to solve scientific problems related to molecular genetics, molecular cell biology and production of recombinant protein biopharmaceuticals, as well as be aware of the limitations of each respective technology.

Judgement and approach

- Identify, formulate and discuss problems and possibilities with different methods that are used for development work in molecular genetics, molecular cell biology and production of recombinant biopharmaceuticals.

- Identify, formulate and discuss social and ethical issues in relation to research and development work in molecular genetics. Demonstrate an understanding of the possibilities and limitations of the science and its role in the society.

- In dialogue with others show a reflecting attitude to own and others' values and priorities as well as choices of perspective.

- Identify and concretize his/her own need of additional knowledge as well as take responsibility for his/her knowledge development in a lifelong learning.

Course content

The course consists of laboratory sessions, demonstrations and lectures. During the laboratory sessions, the students will learn to use different advanced molecular genetic methods to study DNA and RNA in cells and tissues. The student will learn to design,

modify and analyse plasmids for expression of recombinant proteins. The student will learn to handle and cultivate cells in small and large scale. Course aims primarily to a methodological training in modern molecular genetic methods and contains much own laboratory work. During lectures, laboratory sessions and demonstrations, a run-through of several different methods is given and its usability to answer different issues and produce recombinant protein biopharmaceuticals.

Form of teaching

The teaching is conducted in the form of lectures and compulsory supervised laboratory sessions where written laboratory reports should be submitted.

Language of instruction: Swedish and English
The course can when necessary be given completely in English. If the course is given in Swedish, it can happen that certain parts are still given in English.

Assessment

The course is examined through written laboratory reports and a written examination. The laboratory sessions are components with compulsory attendance. The grading is based on the achievements in the written laboratory reports and the examination.

A student who has taken two exams in a course or part of a course without obtaining a pass grade is entitled to the nomination of another examiner. The student needs to contact the department for a new examiner, preferably in writing, and this should be approved by the department unless there are special reasons to the contrary (Chapter 6 Section 22 of the Higher Education Ordinance)

If a student has received a recommendation from the University of Gothenburg for special educational support, where it is compatible with the learning outcomes of the course and provided that no unreasonable resources are required, the examiner may decide to allow the student to sit an adjusted exam or alternative form of assessment.

In the event that a course has ceased or undergone major changes, students are to be guaranteed at least three examination sessions (including the ordinary examination session) over a period of at least one year, but no more than two years, after the course has ceased/been changed. The same applies to placements and professional placements

(VFU), although this is restricted to just one additional examination session

Grades

The grading scale comprises: Pass with Distinction (VG), Pass (G) and Fail (U).
The grade is based on the performance of the written laboratory reports and the exam, in equal parts.

To qualify for Pass (G) for the entire course, minimum grade G (> = 60%) is required for both the exam and each individual laboratory report.

To qualify for Passed with Distintion (VG) for the entire course, VG (> = 80%) is required for both the exam and the overall result of the laboratory reports. In addition, VG requires that the laboratory reports have been submitted at the first submission date.

Course evaluation

The course evaluation takes place in the form of an anonymous questionnaire on the site of the course on the University of Gothenburg's learning management system. The compilation of the questionnaire is done by the course coordinator and the results then become objects for discussion between course administration and student representatives at a Course Board where also any proposals for development of the course are discussed. Notes from the Course Board meeting should be taken and delivered to the course administration for archiving, and to the management as well as the Pharmacy Education Counsel, AUR, for awareness. Compilation of the course questionnaire and any changes of the set-up of the course should be made available for both earlier and future students.

Additional information

The course can when necessary be given completely in English. If the course is given in Swedish, it can happen that certain parts are still given in English.