Faculty of Medicine

BIMM20, Biomedicine: Molecular Microbial Pathogenesis, 7.5 credits

Biomedicin: Molekylär mikrobiell patogenes, 7,5 högskolepoäng

Second Cycle / Avancerad nivå

Details of approval

The syllabus was approved by Committee for Biomedical, Medical and Public Health Education on 2015-06-09 to be valid from 2016-01-18, spring semester 2016.

General Information

The course is an elective component of the Master of Medical Science programme in Biomedicine.

Language of instruction: English

Main field of studies	*Depth of study relative to the degree requirements*
Biomedicine	A1N, Second cycle, has only first-cycle course/s as entry requirements

Learning outcomes

Knowledge and understanding

On completion of the course, students shall be able to use scientific discourse to

- explain the concepts of virulence, pathogenecity, commensalism, symbiosis, opportunism and parasitism and relate them to infectious diseases in humans
- explain the underlying mechanisms of bacterial colonisation and infection, and compare different bacterial strategies to evade the immune defence
- explain the concepts of bacterial evolution, gene regulation and resistance development and relate them to the bacterial ability to survive and/or cause disease in humans
- explain the underlying principles of antimicrobial agents and explain their connection to the structure and function of bacteria

- explain the molecular and cellular mechanisms on which different vaccination strategies are based and compare their effect in response to bacterial infection

Competence and skills

On completion of the course, students shall in the context of research be able to

- independently design, plan, execute and document experiments in molecular bacteriology
- independently analyse experimental results or observations in the field of bacteriology
- report and assess results of studies in bacterial pathogenesis in speech and writing
- identify, critically review and interpret relevant original published research

Judgement and approach

On completion of the course, the students shall be able to

- assess the past and potential future social implications of microbiological research
- reflect on the ethical issues of research within infection biology including animal testing and clinical studies
- identify their need of further knowledge and take responsibility for their ongoing learning

Course content

The course provides students with specialised knowledge of practical and theoretical molecular medical bacteriology. It focuses on developing the students' understanding of the molecular interaction between host and bacterium with or without intervention and/or prevention. A major aim of the course is to provide students with a specialised understanding of the development of our current knowledge of the interaction between bacterium and host and of the tools available to expand this knowledge in the future. The course is linked to current research, and published original research will be used.

Course design

The teaching is student-centred and students participate in designing substantial parts of the course content. The supporting learning activities include introductory lectures, laboratory sessions, research presentations and discussions. The activities will take place in class and/or via the electronic learning platform. During the course, the students will design and carry out a laboratory session in a research laboratory in groups. The laboratory session is to be presented in speech and writing to the other students who are invited to provide feedback. Furthermore, the students will work in pairs to design questions connected to the aims and learning activities of the course. These questions will subsequently be used for the individual written examination. Attendance is compulsory for all laboratory components.

Assessment

The learning outcomes of the course are assessed on the basis of two components: a written and oral laboratory report and a written take-home exam in two stages. Apart from the oral laboratory report, all examination takes place on the electronic learning platform. For a pass on the course,students must have passed both laboratory reports and the take-home exam.

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

Grades

Marking scale: Fail, Pass.

Entry requirements

To be admitted to course, students must have 120 first or second cycle credits in science subjects, including at least 15 credits in cell biology, 15 credits in biochemistry, 7.5 credits in immunology and 7.5 credits in microbiology.

Further information

The course largely corresponds to the previous course BIMM30 Molecular Microbial Pathogenesis.

Subcourses in BIMM20, Biomedicine: Molecular Microbial Pathogenesis

Applies from V16

1501 Written and oral laboration report, 2,5 hp
Grading scale: Fail, Pass
1502 Written open book examination, 5,0 hp
Grading scale: Fail, Pass