

BIO-479

Immunology

Ablasser Andrea

Cursus	Sem.	Type
Sciences du vivant	MA1, MA3	Opt.

Language of teaching	English
Credits	5
Session	Winter
Semester	Fall
Exam	Written
Workload	150h
Weeks	14
Hours	5 weekly
Courses	3 weekly
Exercises	2 weekly
Number of positions	

Summary

The students acquire knowledge regarding the fundamental aspects of the invertebrate and vertebrate immune response. Students apply this knowledge during team-based exercises and oral presentations.

Content

Each subject will be introduced by a lecture and followed by i) a presentation and discussion of a seminal publication by a student and in some cases ii) group exercises designed to test knowledge and promote conceptual thought. Topics will include:

- Historical advances in immunology
- Innate immune recognition
- Developmental immunology
- Immunological methods
- T cell subset differentiation and function
- Immunity to infectious agents (bacteria, fungi, parasites and viruses)
- Mucosal immunology
- Immune cell migration
- Allergy
- Autoimmunity
- Evolutionary immunology

Keywords

- immune cell subsets
- cellular migration
- cell-cell interactions
- infectious diseases
- inflammatory diseases
- cellular function
- pathogen recognition
- mucosa
- innate immunity
- adaptive immunity

Learning Prerequisites

Required courses

Biologie I, II, Biologie Moléculaire et Cellulaire I.

Recommended courses

Biologie Moléculaire et Cellulaire II & III.

Important concepts to start the course

cellular biology
pathogens

Learning Outcomes

By the end of the course, the student must be able to:

- Recall Recall fundamental knowledge of the immune response
- Predict Predict the necessary components of a protective immune response against a defined pathogen
- Propose Propose novel therapeutic approaches to immune-mediated inflammatory diseases
- Model Model the dynamic movement immune cells subsets within and between organs
- Characterize Characterize organ-specific immune responses
- Assess / Evaluate Assess the scientific value of a hypothesis
- Critique Critique a scientific article
- Assess / Evaluate Evaluate the value and accuracy of a recent scientific report
- Use Use available resources to generate an oral report on a immunological topic

Transversal skills

- Identify the different roles that are involved in well-functioning teams and assume different roles, including leadership roles.
- Give feedback (critique) in an appropriate fashion.
- Make an oral presentation.
- Plan and carry out activities in a way which makes optimal use of available time and other resources.
- Use both general and domain specific IT resources and tools
- Access and evaluate appropriate sources of information.
- Summarize an article or a technical report.

Teaching methods

Lectures

Group exercises (problem solving, model building, project proposals)

Preparation and oral presentations of topics and of scientific articles

Expected student activities

revision of course content

presentation of scientific topic

summarization and presentation of a scientific article

group activities (problem solving) and group presentations

assessment of student presentations

participation in group discussions

Assessment methods

Observational assessment by the professor of participation in group activities and discussions

Observational assessment by the professor of leadership and team management skills.

Observational assessment by the professor of ability to student to utilize knowledge to form new hypotheses and to develop appropriate work plans for the development of novel therapeutics

Observational assessment by the professor of the clarity and content of oral presentations outlining the students critique of a scientific article (10% of final grade)

Assessment by the professor of a written report on a topic covered in the LSS seminars given by Professor Reis de Sousa or Professor Wynn (10% of final grade)

Written assessment of acquired knowledge in an exam format (80% of final grade)