



Exchange programme Vrije Universiteit Amsterdam

Vrije Universiteit Amsterdam - Exchange programme Vrije Universiteit Amsterdam - 2024-2025

Exchange

Vrije Universiteit Amsterdam offers many English-taught courses in a variety of subjects, ranging from arts & culture and social sciences, neurosciences and computer science, to economics and business administration.

The International Office is responsible for course approval and course registration for exchange students. For details about course registration, requirements, credits, semesters and so on, please [visit the exchange programmes webpages](#).

Innovative Cell Biology and Immunology

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| Course Code | AB_1266 |
| Credits | 6 |
| Period | P1 |
| Course Level | 300 |
| Language Of Tuition | English |
| Faculty | Faculty of Science |
| Course Coordinator | prof. dr. S. Gibbs |
| Examiner | prof. dr. S. Gibbs |
| Teaching Staff | dr. J.M.M. den Haan, dr. H.J. Bontkes, dr. ing. S.J. van Vliet, prof. dr. S. Gibbs |
| Teaching method(s) | Lecture, Study Group, Seminar, Practical |

Course Objective

- Know where there is room for improvements within the drug discovery pipeline and why
- Understand why a transition to animal free innovations (TPI) is taking place in the Netherlands and Europe
- Know and understand the theory of the newest animal and in vitro models as well as biomedical and immunological techniques
- Use acquired knowledge to design an in vitro human organoid model, including organ-on-chip, to study human disease. Include readouts of the model
- Get practical experience in non-animal techniques used for drug and substance testing including interpretation of experimental results
- Extract knowledge from scientific literature and the lectures to design an animal free method for answering a research question, and present this in a powerpoint presentation

Course Content

Biomedical Scientists are trained to develop novel therapies for patients for which, at the moment, no optimal therapy exists. Their future career will involve identifying new drug targets, developing these further into novel drugs and therapies, and develop in vitro methods to evaluate responses to these therapies. In order to do this, the biomedical scientist needs to learn about the 'toolbox' of models and methods which exist and which represent as much as possible the human healthy and disease (patho)physiology.

The main goal of this course is to introduce students to the current techniques used and also to introduce them to novel methods and models under development within academia and industry. This will include animal models, human organoid models and organ-on-chip models together with a multitude of analysis methods (readouts). Hands-on experience with several techniques will be included. The practical training is based around the theme of allergic contact dermatitis and includes 1) immunohistochemistry on skin biopsies, and 2) chemical exposure of dendritic cells followed by flow cytometry analysis.

The student will be introduced to interactive activities in the form of workshops and discussions. In addition, this course will advance the immunological knowledge already obtained in bachelor courses. The course will prepare students for biomedical science internships and the master specialization Immunology.

Additional Information Teaching Methods

Lectures, experimental training (practical classes) and presentations:

- Lectures which will address the current techniques used and also novel methods and models under development within academia and industry for drug discovery and testing. Lectures are divided over several themes. Q&A sessions will be based around themes (approx. 20 hours).
- Experimental training to gain 'hands-on' experience with immunological techniques (approx. 30 hours).
- Students will have to take part in an escape room activity, and workgroups to discuss together the use of animal versus human organoid models and present their findings to fellow students (8 hours plus preparation).

Method of Assessment

Written exam, one final exam (85%), with open questions and multiple choice questions. Discussion workgroup presentation (15%), experimental training (presence required). Note: this course is live on the VU campus. Attendance of experimental training and workshops compulsory. Lectures will be live on VU campus, Attendance of theme group Q&As is compulsory. A minimum score of 5.50 for the written exam and the workgroup presentation is required in order to pass.

Entry Requirements

Since this course involves immunology, students should have passed the bachelor course 'Immunology' (Biomedical Sciences) or 'Celbiologie en Immunologie' (Gezondheid en Leven) or similar.

Literature

- Parham: The Immune System, 4th edition. ISBN: 9780815345275
- Additional literature and experimental protocols will be supplied by Canvas two weeks before the start of the course or prior to a group activity.

Additional Information Target Audience

3rd year Bachelor students Biomedical Sciences that have passed the course 'Immunology' and 3rd year Bachelor students Gezondheid en Leven that have passed the course 'Celbiologie en Immunologie' and have chosen the biomedical specialization or similar students.

Recommended background knowledge

Parham: The Immune System. ISBN: 9780815345275.