BIOMEDICAL SCIENCES
Immunology and Host Defence

Radboud Universiteit Radboudumc

Immunology and Host Defence

A specialisation in the Biomedical Sciences Master's

Study how our immune system combats disease, uncovering its complex defence mechanisms.

Specialisation Coordinators

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The BMS Master's

Our Master's programme in Biomedical Sciences offers eight specialisations and four career profiles. In the first semester, each specialisation starts with four courses that reflect its central topics and methodology, followed by an elective course. In the second semester of the first year students do a research internship.
In the second year students follow elective courses and courses of their career profile, followed by a profile internships.
Furthermore, the course 'Personal & Professional Development' runs throughout the entire programme under the guidance of a coach. It covers topics such as personal learning goals, responsible research & innovation, well-being, and career prospects.

The specialisation

The specialisation Immunology and Host Defence (IHD) focuses on understanding how the immune system protects the body and what occurs when it malfunctions, leading to disease. The courses cover inflammatory diseases, drug development, cancer immunity, and cell movement. Some of the questions you will deal with:

- How do different immune cells protect us from disease?
- How can inflammatory diseases be studied using cell cultures and animal models?
- How are genetic and immunological targets used in drug development?

Internship possibilities

You will choose a research, consultancy or communication profile and you will do two internships of your own choice. One research internship and one profile internship. Internships in the field of immunology and host defence can be done at different world renowned research groups from various departments of the

Radboudumc, but there are also plenty opportunities at other locations in the Netherlands or abroad. We have many connections with research institutes, companies, and universities all over the world. So, the possibilities are endless!

Career perspective for Immunology and Host Defence alumni

Alumni work for example as researchers or PhD-candidates at hospitals or university medical centers. Many pursue PhDs in fields like immune therapy, dermatology, medical oncology, and autoimmunity at universities and research institutions. Others work as scientists or research associates at biotech firms, or as quality assurance specialists at pharmaceutical companies. In healthcare consulting, alumni take roles as consultants and account managers. They also find positions in project management and coordination, overseeing healthcare projects and securing funding for medical research.

Specialisation courses

ADVANCED IMMUNOLOGY

This course explores the current state of the art in the immunological field, where immune cells, molecular and cellular interactions, and new concepts are discussed. You will experience that the immune system is not a black and white network, as was most likely taught in your Bachelor programme. It contains more cell subsets than you knew so far, and that context can determine the diversity and plasticity of the immune cells and their interactions.

Internship example: Exploring the impact of galectin-9 on T cell function

"I focused on unravelling the function of galectin-9 on dendritic cell-mediated T cell function. I loved the fundamental focus of this project and I enjoyed working in the department of Medical BioSciences a lot."

1st year IHD student

APPLIED IMMUNOLOGY

In this course, you start with deepening your knowledge on diseases in which the immune system plays a major role. You will learn how to unravel major immune players for particular diseases. This will enable you to define the underlying disease mechanism as well as blind spots therein. After that you will learn which model systems (stretching from in cell to in vitro organ systems to animal models) you can use to study these mechanisms with the ultimate goal to unravel the underlying mechanism in order to eventually find a target for therapy.

THERAPY DEVELOPMENT IN A NUTSHELL

In this course, you will zoom out and go through the preclinical steps of the pipeline of therapy development. This will cover several model systems for target identification and validation, and understanding the development of key assays to test and optimize a drug candidate.

IMMUNE THERAPY

In this course, you will focus on how immune cells migrate through our body, how the immune system can recognize and attack malignant cells, how the tumor microenvironment is involved in the development of malignancies and therapeutic effects, and how this can be applied to different therapeutic strategies.

Other courses

In your elective space you can take additional courses at other faculties or universities if you want. Many students choose to do courses outside of the Radboudumc, for example at the other biomedical sciences programmes in the Netherlands. Also, some students choose to go abroad to follow courses.

Internship example: Identifying IgG epitopes in mice against Haemophilus influenzae

"I was very curious about the immune system and vaccine development in practice. I worked on identifying the binding epitopes of IgG produced after vaccination with a new non-typeable Haemophilus influenzae vaccine in mice. I learned lots of different techniques such as PCR, Western blotting, SDS-PAGE, creating mutants, the production of outer membrane vesicles and flowcytometry."

1st year IHD student

Please email us for more information about the programme, the specialisation or the application process.
Admissions@radboudumc.nl

For general information, or a chat with current students, please visit our website.
www.ru.nl/masters/bms

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