

## Aims

Immunology is a branch of biomedical sciences that studies the physiological and pathological functioning of the immune system. Its study makes it possible to solve complex pathological problems of great importance in public health. Its great methodological development has made it an essential tool in biotechnology, in the development of drugs, diagnostic tools and in multiple therapeutic applications (immunotherapies). Immunology is a key area in worldwide biomedical research. In fact, in the last 150 years is directly related to the most important advances in health such as vaccines, transplants, antibody production, antitumor therapy and anti-inflammatory drugs. Immunology is therefore a key area in global biomedical research.

The potential of the knowledge that is structured around the Master in Advanced Immunology opens up a wide range of possibilities in different areas, including activities related to the knowledge of the immune system, of its cellular and molecular components, functional processes and cellular and molecular interactions within the different anatomical structures and general physiology. The comprehensive knowledge of the immune system will provide the ability to evaluate those pathological processes in which the immune system is directly or indirectly involved. The areas in which this knowledge is developed are:

- Research and Academic teaching
- Pharmaceutical-Biotechnology Industry
- Medicine and Public Health
- Veterinary

## Academic Year 2025/2026

Universitat de Barcelona

Coordinator: Dr. Jorge Lloberas

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Facultat de Biologia

Departament de Biologia Cel·lular Fisiologia i Immunologia

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Facultat de Biociències

Departament de Biologia Cel·lular, de Fisiologia i d'Immunologia

Campus Bellaterra

# MASTER IN ADVANCED IMMUNOLOGY

On-Line PRE-REGISTRATION links:

[LINK 1](#)

[INFORMATION](#)

[SELECTION CRITERIA AND PROCESSES](#)

[DATES](#)

[DOCUMENTS](#)

[TUITION FEES](#)

First period of pre-registration:

from February 3th until June 8th, 2025

Second period of pre-registration:

from June 9th until September 2nd, 2025

Any administrative doubt address to

[mastersoficialsbio@ub.edu](mailto:mastersoficialsbio@ub.edu)



UNIVERSITAT DE  
BARCELONA

**UAB**  
Universitat Autònoma  
de Barcelona



Excellent teaching quality rating given by AQU  
and ANECA Official Quality Agencies (2022)

## Applicants

The Master course is suitable for students with knowledge and training Life Sciences, Health Sciences, Experimental Sciences and/or Veterinary Sciences.

## Available Positions

There are 44 positions available. Student selection is based upon academic records and taking academic and professional experience into account.

## Requirements

Applicants should hold a Graduate Degree of at least 180 ECTS in Life Sciences, Health Sciences, Experimental Sciences or Veterinary Sciences. Graduate students from a European or a non-Spanish university should have the approval of the coordinating universities.

## Profiles

There are two established profiles:

- Immunobiotechnology and Research
- Advanced Immunopathology

Each Profile composed:

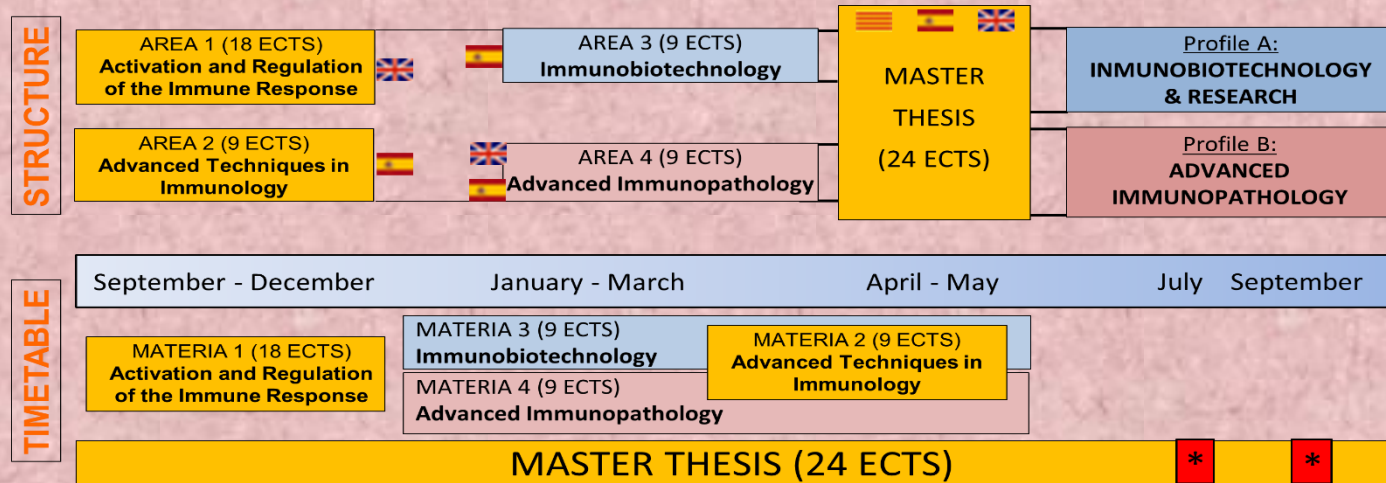
35 ECTS academic activity + 25 ECTS of Master Thesis. This master's degree enables in-depth knowledge of immunology (applicable in Research, Clinical, Academy and Pharmaco-Biotechnological fields).

## MAI globalization

Since August 31, 2015, the Master in Advanced Immunology is part of the Erasmus Plus Mundus JMD Master in VACCINOLOGY, approved by the European Education, Audiovisual and Culture Agency (EACEA). This consortium combines 3 official master's degrees from 5 universities, such as the Master in Advanced Immunology from the [University of Barcelona](#) and the [Autonomous University of Barcelona](#), the Master in Infectious & Tropical Diseases from the [Universiteit Antwerpen](#) and Master in Genetics & Cell Biology-Fundamental Infectiology of the Universities of [Claude Bernard Lyon 1](#) and [Jean Monnet Saint-Etienne](#), to give rise to the [Erasmus Plus Master in Vaccinology \(LIVE\)](#).



# MASTER IN ADVANCED IMMUNOLOGY



\*There are two time windows for Master Thesis public defense

**Teaching Contents** m and connection with the rest of the body. Activation and signal transduction in immune system cells: understanding cell signalling in the immune system. Anatomy of the immune system. Understanding the induction systems and maintenance of central and peripheral tolerance. Knowledge of immune system genes, genetic polymorphisms (Ig and TCR), MHC systems and genes for NK receptors, cytokines and cytokine receptors. Molecular mechanisms involved in the generation and use of vaccines. Design of experiments for specific or general manipulation of the cellular and molecular components of the immune system. Current uses of immune system components for specific therapies. Animal models for the study of Immunology and Immunopathology. Production of specific antibodies: monoclonal and polyclonal. Flow cytometry technology. Functional analysis of T and B lymphocytes. Proliferation, cytotoxicity, PCR techniques applied to Immunology: rearrangements of immunoglobulin genes and T cell receptors. Basis for the recognition and updating of knowledge of the various immunopathologies: autoimmunity, inflammatory diseases, immunodeficiencies, allergy. Neuroimmunology: interaction between the immune system and the nervous system. Immunohematology and transplantation.

Collaborating centers for the completion of the Master Thesis

