

M2-Immunology

Through 4 themes proposed, the Immunology course of the "Molecular and Cellular Biology" mention aims to provide students from scientific and medical fields with theoretical and practical training centred on:

- For the Immunology Immunopathology (I2P) theme, the fundamental bases of the immune response, in particular in the fight against infectious agents and cancers as well as the dysfunctions of the immune system (innate and acquired immune deficiencies, autoimmunity, allergy)
- For the Translational Immunology and Biotherapies (ITB) theme, therapeutic strategies targeting the immune system. A large place is given to diagnostic and therapeutic tools from immunology such as monoclonal antibodies, vaccines, gene and cell therapy.
- For the Integrative and Systemic Immunology (I2S) theme, systems biology is applied to understanding the functioning of the immune system in physiological or pathological conditions. This field now offers new perspectives in fundamental and translational research.
- For the Immunology, Genetics and Oncology (IGO) theme, the acquisition of solid training in integrative and systemic research including cancer genetics, translational immunology, and gene and cell therapy. This theme, in partnership with the theme of the "Genetics and Epigenetics" course, offers a double specialisation in genetics and immunology.

The teaching involves researchers and lecturers, physicians, and industry leaders, involved in research and development, thus offering a broad vision of the discipline and enabling recent discoveries, both in the field of fundamental and applied/translational research.

Part of the teaching and evaluation will be conducted in English, and is also offered as part of the Sorbonne University International Course.

The training includes internships in university laboratories, research institutes and hospitals, as well as in companies, in France or abroad.

The training may also have a "professionalizing" objective aimed at preparing future graduates for professional integration. This option will be based on courses linked to the world of business and entrepreneurship as well as a 6-month internship in a company.

SKILLS

Disciplinary competences: to have a thorough knowledge in basic biology and specialised knowledge in certain disciplinary fields, particularly immunology; to master the basic techniques and equipment used in molecular biology, biochemistry and cell biology; to know how to apply them in the different fields of biology; to know how to implement an experimental approach

Cross-cutting skills : know how to manage bibliographic resources (databases, online scientific journals) and master the scientific literature related to the biological field concerned; have the ability to synthesise; know how to make a critical analysis of scientific results; know how to use their knowledge and show creativity in order to identify and solve a scientific problem; the ability to learn and adapt; the ability to organise individual as well collaborative work; the ability to communicate results (oral or poster

presentation, written report) and to defend a project in front of opponents; the ability to assess the quality and relevance of a scientific work or approach; the ability to speak scientific English (certified level B2).

KEY WORDS

Biology, immunology, immunopathology, biotechnology, biotherapies, systems immunology, translational research.

PROFESSIONAL OPPORTUNITIES

All the themes of the course lead to fundamental or applied research, in either public or private sectors, in the scientific, medical, pharmaceutical or veterinary fields, in order to prepare a PhD or in the context of direct professional integration after obtaining the Master's degree. The fields concerned range from basic immunology to medical immunology, including immunity to infectious diseases, autoimmunity, transplantation, allergy, and oncology, vaccines and immunotherapy and systems immunology.

ORGANISATION

The face-to-face teaching takes place in the form of lectures, practical workshops and tutorials, in French or English, depending on the speakers and activities. Validation of learning is established on the basis of written examinations, oral presentations and/or reports (also in French or English).

In the first year of the "Molecular and Cellular Biology" Master's degree, immunology is approached in the first semester (S1) in a fundamental course "Immune system / microbiology / environment interface" (MU4BM003, 6 ECTS), then the course proposes in the second semester (S2) immunology courses such as "Fundamental and integrated immunology" (MU4BM123, 6 ECTS) or "Immunophysiology and Immunotherapies" (MU4BM124, 6 ECTS).

Student can integrate the training from the second year of the Master's programme (see above and flyers describing the different immunology themes I2P, ITB, I2S and IGO). In addition to the specialisation course (12 ECTS), students have to follow the M2 BMC transversal courses (Scientific Analysis 6 ECTS, Project 6 ECTS, Opening 6 ECTS and Internship in an academic laboratory or company 30 ECTS).

Several opening courses in immunology (lectures or technological workshops) are offered in M1 and M2.

TARGETED STUDENTS

The course is open to students from the scientific and medical streams of Sorbonne University and other universities, depending on their course of study. Students from engineering schools can be integrated directly into M2 according to their curriculum.

This course is also open to continuous training.

ADMISSION

Applications should be sent to the secretariat of the field between mid-April and June through the dedicated platform.

For more information, see the dedicated page.