

Specialization

# IMMUNOLOGY

3 programs :

**Immunologie ImmunoPathologie (I2P)**

**Immunologie Translationnelle & Biothérapies (ITB)**

**Immunologie Intégrative & Systémique (I2S)**

**Immunology**  
Immunotherapies  
Translational science  
Immunooncology  
Innovation  
Cancer  
Vaccine  
Pathology  
Immuno-monitoring  
Monoclonal antibodies  
Valorization  
Immune repertoire  
Biotherapies  
Omics  
Bioinformatics  
Interface  
Research  
Allergy  
Autoimmune diseases  
Systems Immunology  
Tolerance  
Graft  
Immunodeficiency  
Modelling  
Flow cytometry  
Biotechnologies

Through three programs, Immunology Master specialization aims at providing to scientific and medical students a theoretical and practical training on either:

(i) **Basic immunology and immune responses in pathology**, including infectious diseases, cancers and immune disorders such as inflammatory and autoimmune diseases (**I2P program**) ;

(ii) **Translational research and therapeutic strategies targeting the immune system**, with a focus on immunology-based diagnostic and therapeutic tools such as monoclonal antibodies, vaccines, gene and cell therapy (**ITB program**) ;

(iii) **Systems biology approaches applied to the immune system**, including a training on analysis and modelling tools and methods for understanding the complexity of the immune system as a new perspective in basic and translational research (**I2S program**).



## Programs' structure & content

Program Specialization (12 ECTS)	Scientific Analysis (6 ECTS)	Scientific Project (6 ECTS)	Open courses (6 ECTS)
Internship in a laboratory/company (France or abroad) (30 ECTS)			

### Program specialization

Immunologie ImmunoPathologie (I2P)  
Immunologie Translationnelle & Biothérapies (ITB)  
Immunologie Intégrative & Systémique (I2S)

### Scientific Analysis

Towards scientific analysis expertise: review, analyze and summarize a scientific topic in the field of immunology research and development

### Scientific Project

Towards project management expertise: design, production and implementation of a project (individual or collaborative)

### Open courses

**Workshops** : Immuno-monitoring, Advanced flow cytometry, Data analysis...

**Lectures** : Allergy, Monoclonal antibodies, Immunodeficiency, Systems Immunology...

**Professionalization** : Biotechnology companies, valorization, entrepreneurship, project management,....

### IMMUNOLOGIE – IMMUNOPATHOLOGIE

Contact : Sophie Sibéril ; [sophie.siberil@sorbonne-universite.fr](mailto:sophie.siberil@sorbonne-universite.fr)

**Capacity**: 20 students

**Aims**: Advanced courses on basic and clinical immunology for scientific and medical students including conferences on the different aspects of the physiopathology of the immune response.

**Organization** : 4 weeks of conferences and seminars. Different themes: Autoimmunity and inflammation; Immunodeficiency and immuno-senescence; Mucosal immunity; Transplantation; Anti-tumor immunity; Anti-viral immunity

Courses are jointly organized with the Université de Paris. Some students could have the opportunity to take the Advanced Immunology course at Pasteur Institute.

### IMMUNOLOGIE TRANSLATIONNELLE ET BIOTHERAPIES

Contact : Véronique Mateo; [veronique.mateo@sorbonne-universite.fr](mailto:veronique.mateo@sorbonne-universite.fr)

**Capacity**: 20 students

**Aims**: Theoretical and practical courses for scientific and medical students on translational immunology and biotherapies.

**Organization** : 4 weeks of conferences and seminars. Translational Medicine: Tools and Techniques; Genetic, cellular and molecular immunotherapies; Monoclonal antibodies; New vaccine strategies

### IMMUNOLOGIE INTEGRATIVE ET SYSTEMIQUE

Contact : Encarnita Mariotti-Ferrandiz ; [encarnita.mariotti@sorbonne-universite.fr](mailto:encarnita.mariotti@sorbonne-universite.fr)

**Capacity** : 20 students

**Aims**: Theoretical and practical interdisciplinary training for scientific and medical students to omics data integrative analysis in translational research and precision medicine. This program includes lectures and training on modelling approaches (statistics, mathematics and bioinformatics) used in the field of systems biology.

**Organization** : 2 weeks of conferences and seminars: Translational Medicine: Tools and Techniques; Systems Immunology. 2 weeks workshops: Advanced flow cytometry; Data analysis

## Immunology Master: What's next?

PhD Academic Laboratory	Industry and companies R&D	Complementary training Intellectual property, Quality, Marketing, Management...
	PhD in industry	

## Professionalization towards Industry & Company

A professionalization training towards jobs in industry and companies can be acquired through **professionalization open courses** (biotechnology companies, valorization, entrepreneurship, project management....)

## General organization

The courses are handled by Professors, Assistant-Professors, PhDs MDs and researchers from both academic laboratories and companies, involved in research and development in the field of immunology and related domains.

Part of the courses lectures and assessment will be in English and proposed as part of the Sorbonne University International Specialization.

The training includes internships in laboratories located at the university, research institutes, hospitals, industry and companies in France or abroad.

### Manager (Discipline):

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### Manager (Specialization):

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