Université Paris-Saclay

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# M1 Cellular mechanisms and signalling - Orsay campus

Master's degree

Specialisation Biologie moléculaire et cellulaire

Enrolment type

Formation initiale

Formation continue

Language(s) of instruction

English

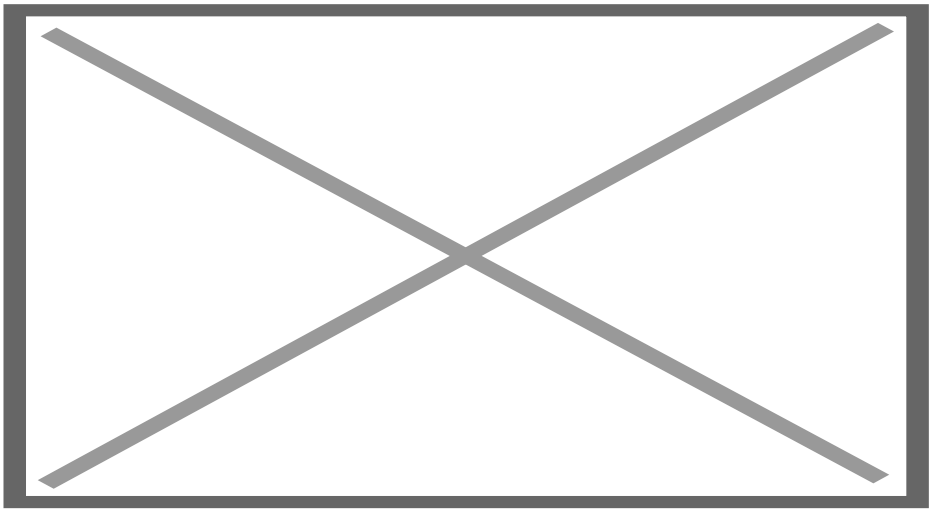
French

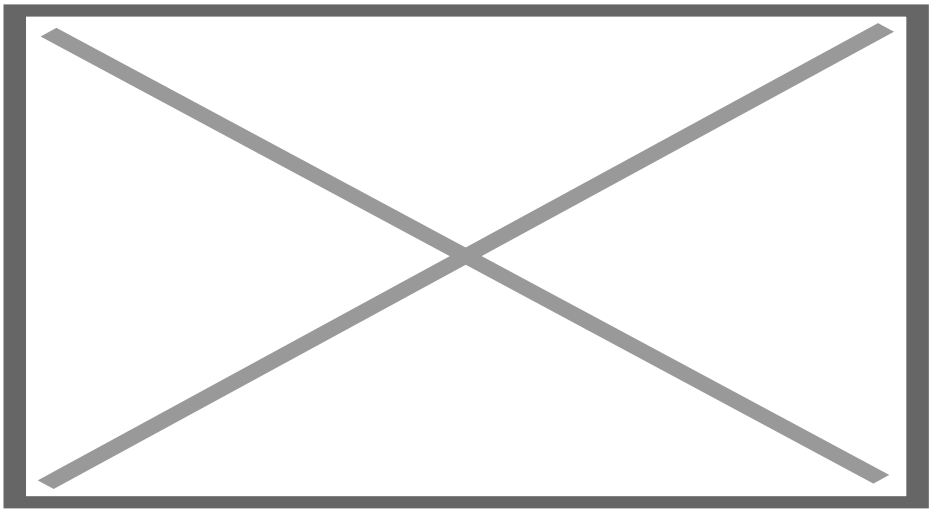
The functional organisation of the cell is behind all biological processes. Cell dysfunctions are the cause of pathologies such as developmental abnormalities, neurodegenerative diseases and cancers. The course *Cellular Mechanisms and Signalling* offers a unique opportunity to study the cellular machinery in all its complexity, combining the latest experimental approaches in biochemistry, molecular biology, genomics and imaging.

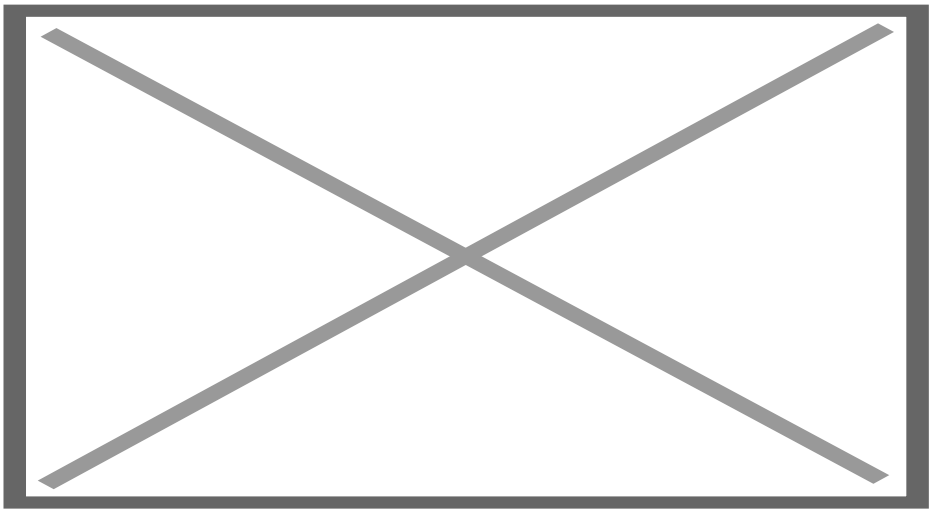
The **1st year Master's Cellular Mechanisms and Signalling** is organised around **four blocks of knowledge and competencies**: **Methods and Fundamentals for the Study of Living Organisms** (12.5 ECTS) **A springboard to an integral understanding of the life sciences**! Strengthen key disciplines (scientific English, cellular and molecular biology, biochemistry, cell signalling and genomics) while developing the essential methodological competencies for analysing biological systems. **MCS Major** (25 ECTS)** Give your 1st year Master's a specific focus by choosing from among the many TUs offered in the core of your course. **Minor (10 ECTS)** Broaden your **scientific culture** to develop a cross-disciplinary approach. **Immersion in Research (12.5 ECTS)** Dive right into the heart of research: Draft a **bibliographic dissertation** and complete an **8-week laboratory internship**. For the more inquisitive, combine the core TUs of two Majors to develop a double course.

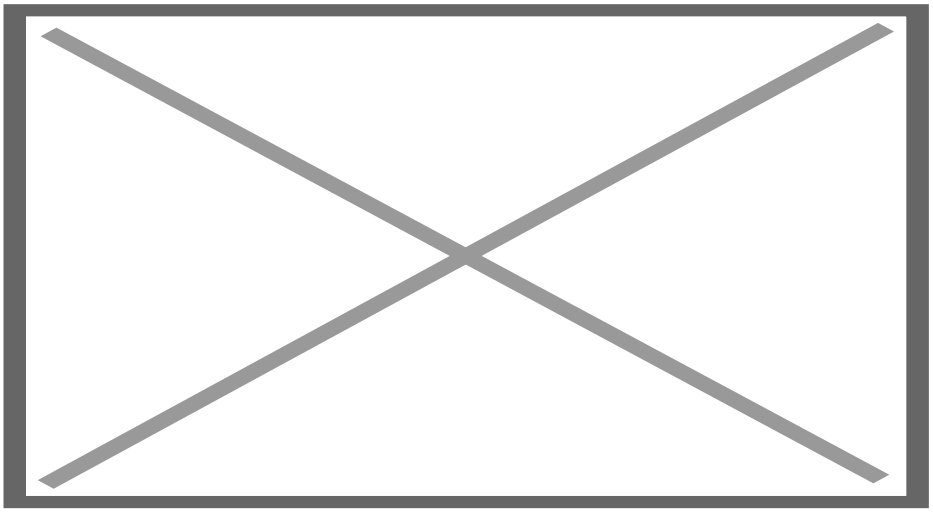
Télécharger la fiche détaillée

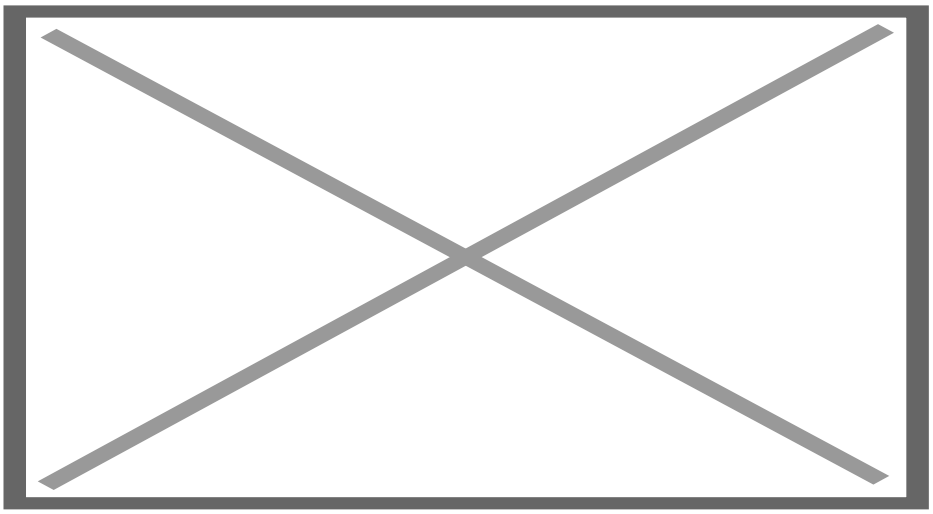
Apply Now











# Information

- Overview
- Application requirements
- Schedule

Présentation

# Skills

Competency 1: Scientific approach C1. Take a scientific approach, develop innovative ideas and produce new knowledge. Competency 2: Expertise, critical thinking and self-training C2. Acquire highly specialised disciplinary knowledge and methodologies in one field and at the interface of several fields of work (complex interdisciplinarity) Competency 3: Scientific communication C3.3: Extract and scrutinise relevant information from scientific documents or lectures in English. Competency 4: Professional soft skills C4. Analyse and adapt actions to a professional context

## Objectives

The ***Cellular Mechanisms and Signalling*** course in the Master of Molecular and Cellular Biology offers a curriculum through and for research. You will consolidate your disciplinary foundations, learn to analyse scientific literature, lead projects and work on specific problems, while enjoying the freedom to personalise your course according to your preferences and ambitions. *Plan your course now using the online tool: \https://master-biologie-sante.eu/parcours/index.php]*. In particular, the *Cellular Mechanisms and Signalling* Major allows you to explore the mechanisms that regulate the progression and functioning of cells, a key aspect in life sciences and health. In particular, this research paves the way for identifying new therapeutic targets in a range of pathological contexts. The available TUs allow you to learn about the latest techniques in biochemistry, molecular biology, genomics, biophysics and cellular and molecular imaging, and to develop a multi-level approach to cellular functioning. The topics covered include, in particular: - the morphodynamics of membranes, - the study of the cytoskeleton and its functions, - cell signalling in different models and at different scales Finally, you will explore the consequences of when these mechanisms are impaired, by studying various pathologies, reinforcing the relevance and impact of your learning for current biomedical issues. This flexibility of this course allows you to plan your curriculum and start developing targeted expertise in the disciplines that interest you and where you plan to pursue your studies for your 2nd year Master's.

# Débouchés

## Career prospects

### After a Master's + PhD: researcher or lecturer
### Research & Development Engineer
### Research and Innovation Manager
### Research or Design Engineer
### Research professions

## Further Study Opportunities

### M2 Gene, Cell, Development and Diseases
### M2 Systems and Synthetic Biology
### 2nd yea Master of Biology of ageing
### 2nd year Master of Oncology
### 2nd year Master of Endocrinology and metabolism
### 2nd year Master of Immunology

# 2nd year Master of Immune Interactions and Cellular Engineering
# 2nd year Master of Reproduction and Development
# 2nd year Master's Training in Higher Education in Life Sciences: 'Agrégation' Life Sciences - Earth and Space Sciences

Admission

## Admission Route

Life Sciences
Life and Earth Sciences

## Capacity

### Available Places

10

## Target Audience and Entry Requirements

Hold a **National undergraduate degree in Life Sciences** or Life and Earth Sciences, obtained before September 1st of the academic year for which you are applying. Have a solid foundation in the fundamentals of biology: Molecular biology, cell biology, biochemistry, genetics. Must have validated TUs in the 2nd/3rd year undergraduate degree in line with the themes of the relevant course. **For French-speaking international students**: Have a diploma equivalent to an undergraduate degree in Life Sciences, guaranteeing the same prerequisites, obtained before 1st September of the academic year for which you are applying. If your full-time academic programme is highly specialised, we recommend that you first apply for a 3rd year undergraduate degree in Life Sciences (National diploma). Required level of French: C1 (certification). For **English-speaking international students:** You may apply to the International track in France if you graduated with a Bachelor degree, major in Biology, or if you will graduate before Sept 1st of the academic year for which you apply.

## Période(s) de candidature

Inception Platform

From 15/01/2026 to 16/03/2026

From 19/06/2026 to 25/06/2026

MonMaster Platform

From February 17th to March 16th, 2026

To find out which platform you should apply through, please see the Masters' applications and enrolment page.

# Supporting documents

## Compulsory supporting documents

Motivation letter.

All transcripts of the years / semesters validated since the high school diploma at the date of application.

Curriculum Vitae.

## Additional supporting documents

VAP file (obligatory for all persons requesting a valuation of the assets to enter the diploma).

Cette fiche n'est pas demandée si vous êtes ou serez diplomé·e d'une Licence ou d'un Bachelor obtenu en France ou à l'international.
Programme

| Subjects | ECTS | Semester | Lecture | directed study | practical class | Lecture/directed study | Lecture/practical class | directed study/practical class |
|---|---|---|---|---|---|---|---|---|
| **Formation Préparatoire** | 0 | 2 | 22,5 | 7,5 | | | | |
| **Méthodes et Fondamentaux pour l’Exploration du Vivant** | 0 | 2 | 22,5 | 7,5 | | | | |
| **Immersion Recherche** | 0 | 3 | 22,5 | 7,5 | | | | |
| **Majeure 1 (Double Majeure MCS)** | 0 | 1 | 22,5 | 7,5 | | | | |
| **Majeure 2 (Double Majeure MCS)** | 0 | 5 | 22,5 | 7,5 | | | | |
| **Mineure (parcours MCS)** | 0 | 9 | 22,5 | 7,5 | | | | |


| Subjects | ECTS | Semester | Lecture | directed study | practical class | Lecture/directed study | Lecture/practical class | directed study/practical class |
|---|---|---|---|---|---|---|---|---|
| **Formation Préparatoire** | 0 | 2 | 22,5 | 7,5 | | | | |

| Subjects | ECTS | Semester | Lecture | directed study | practical class | Lecture/directed study | Lecture/practical class | directed study/practical class |
|---|---|---|---|---|---|---|---|---|
| **Méthodes et Fondamentaux pour l'Exploration du Vivant** | 0 | 2 | 22,5 | 7,5 | | | | |
| **Immersion Recherche** | 0 | 3 | 22,5 | 7,5 | | | | |
| **Majeure MCS** | 0 | 1 | 22,5 | 7,5 | | | | |
| **Mineure (parcours MCS)** | 0 | 9 | 22,5 | 7,5 | | | | |

# Training campus

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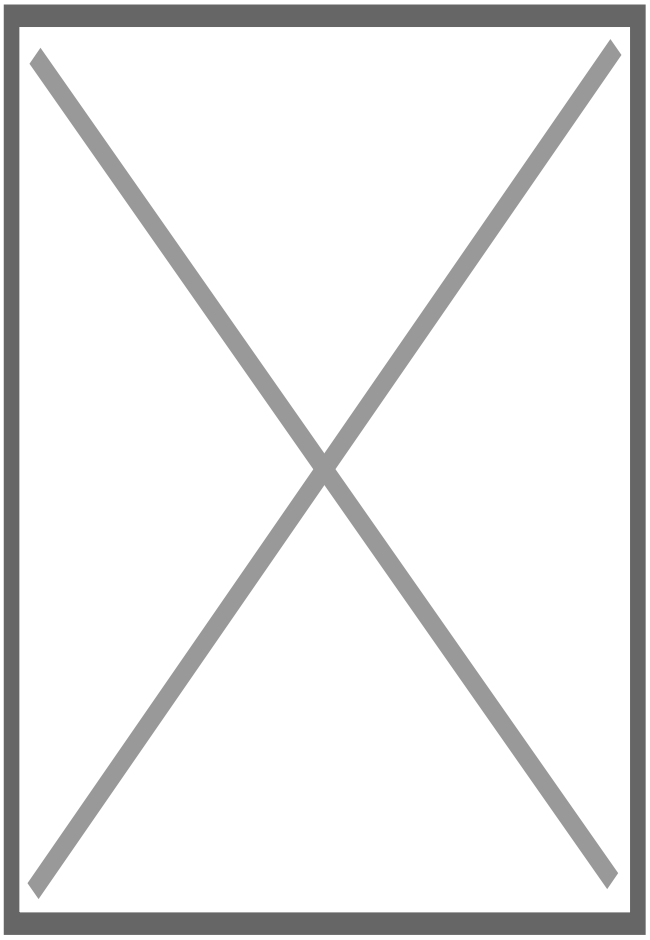
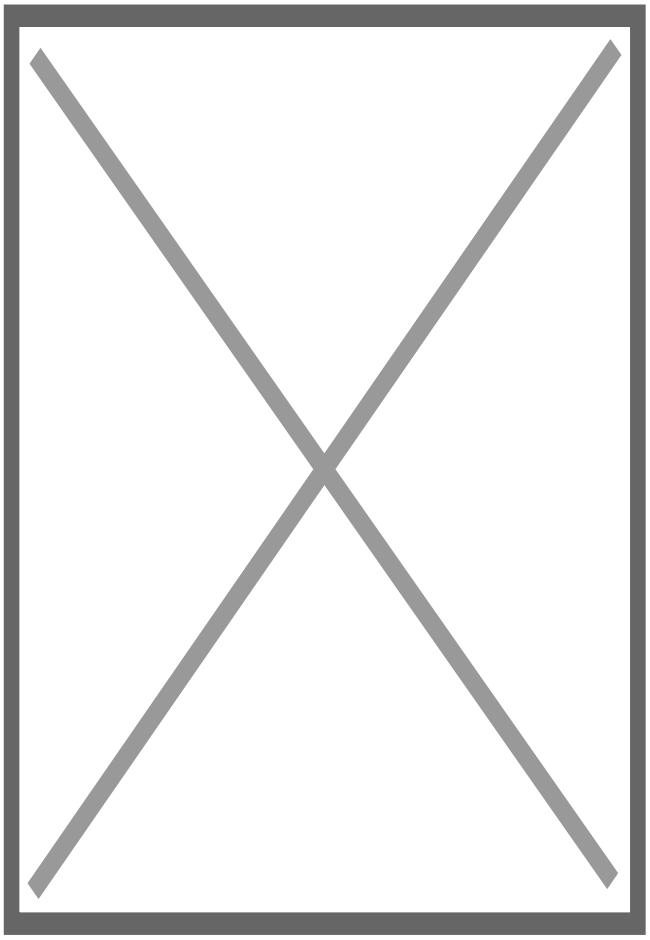


## Orsay Bures

Orsay / Bures-sur-Yvette
Bus 4607, 4626
RER B Orsay ville ou Bures-sur-Yvette
Voir
Library
Community center



**Saclay Moulon**

Saclay / Gif-sur-Yvette / Orsay
Bus 4606 / 4609 / 4611 / 5154
RER B Le guichet
Voir
Student restaurant (CROUS)
Library
Sports facilities
Student residence

# Contact

- **Frederic COQUELLE**

http://www.universite-paris-saclay.fr/formation/master/biologie-moleculaire-et-cellulaire/m1-mecanismes-cellulaires-et-signalisation-site-orsay