Université Paris-Saclay
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M2 Human Genomics in Biotherapies, Health and Disease (HuGeInBio)

Master's degree
Specialisation Biologie moléculaire et cellulaire
Enrolment type
Formation initiale
Language(s) of instruction
English

The Master **HuGeInBIO** provides cutting-edge knowledge in **cancer, disease modeling and biotherapies**, with a focus on **genomics** and its **impact on health** and precision medicine. It also covers key areas, as genome editing and large-scale genetic screening for drug development, and fosters awareness of bioethics and entrepreneurship at the crossroads of science, innovation and business. The curriculum blends theory with practice through case studies and real-world scenarios with field professionals.

The training program is structured into four blocks. The **Core block** (12 ECTS) provides principal methods in functional genomics, overview in biotherapies and highly specialized methods to characterize heterogeneity of samples and basics in mathematics and computational sciences in biology. The **Research block** (12 ECTS) includes an interdisciplinary project with a M2 in Bioinformatics, focusing on digital tools for data processing and interpretation in biology. It also features practical training in NGS data analysis and a seminar unit on diverse research topics. The **Optional block** (6 ECTS) offers a choice between units on innovation and bioethics or other biology specialties. The **Internship block** (30 ECTS) is dedicated to a research placement in industry or academia.

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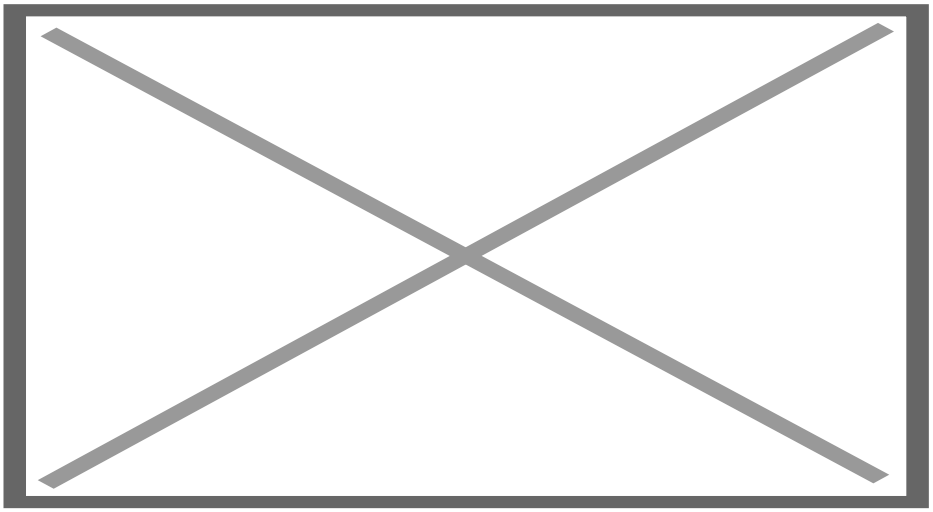

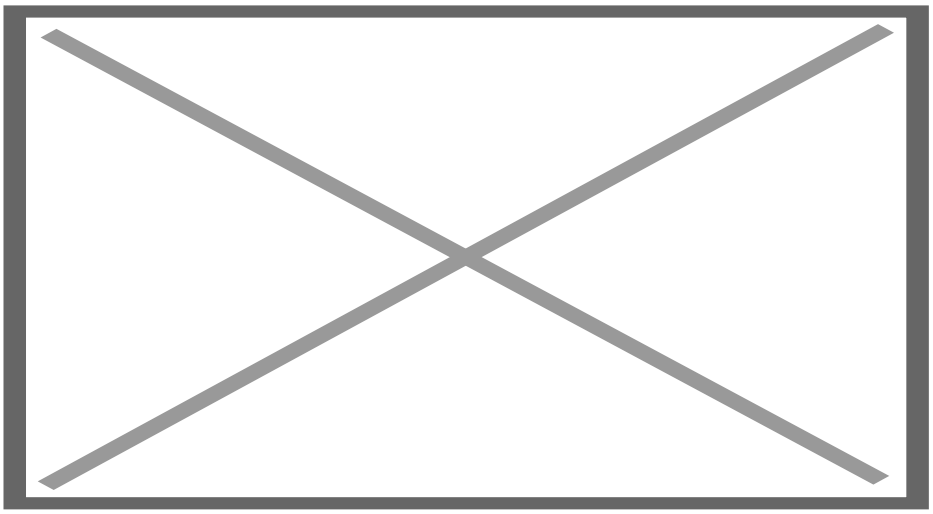

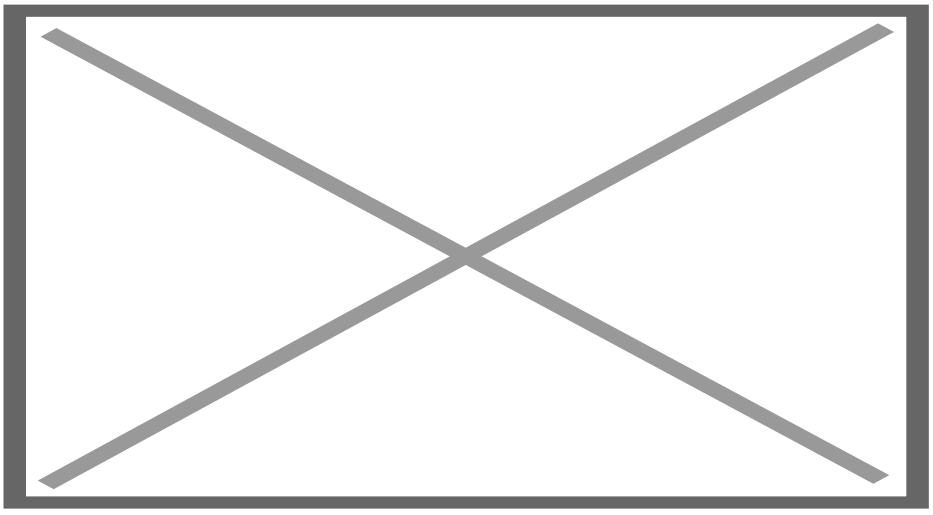

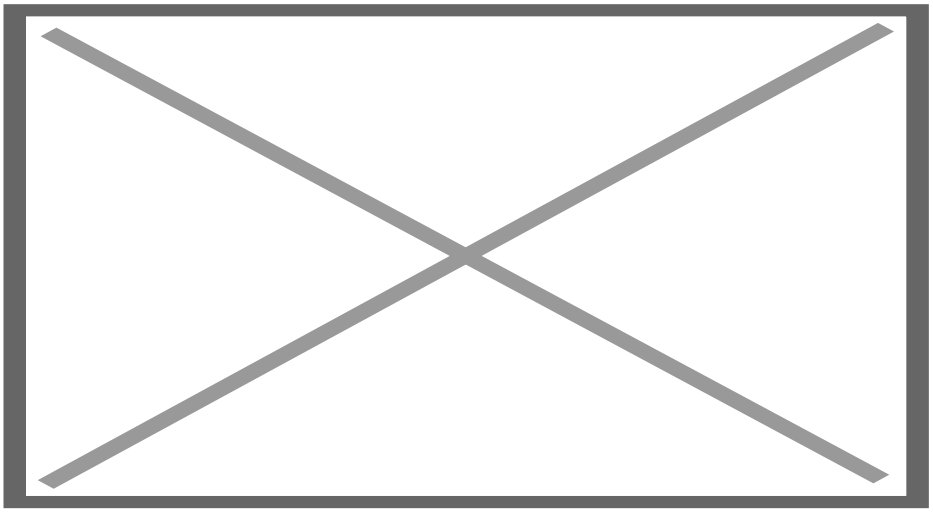

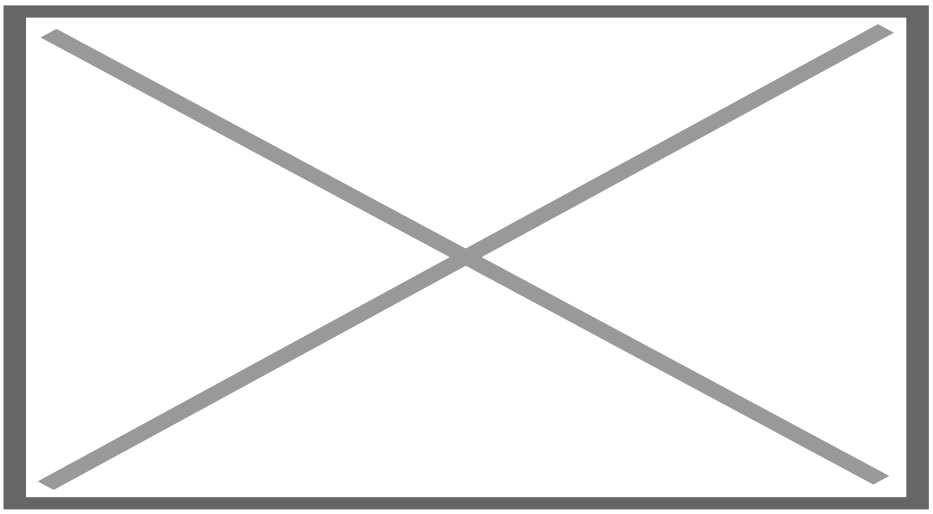

Information

- Overview
- Application requirements
- Schedule

Présentation

Skills

Students will learn to **formulate hypotheses**, **design** and **carry out** experimental projects, and generate validated scientific data. They will also develop the ability to **monitor scientific advances** and independently synthesize the state of the art on a given research topic.

Students will be trained to use new **technological tools**, **communicate** scientific data and concepts to both experts and non-specialists, justify methodological choices and interpretations, and critically **analyze scientific information** from articles or conferences in English.

Students will develop **autonomy**, **teamwork**, and time management skills to meet deadlines. They will also learn to **collaborate** with external partners—scientific or non-scientific, national or international—across

various professional contexts.

Objectives

This training will provide you with a strong foundation in modern genomics and its applications in research and healthcare. You will develop:

1. **Expertise in structural and functional genomics techniques**, with a focus on single-cell analysis and the study of spatial and temporal cellular heterogeneity in complex biological samples—essential for choosing the right approach to specific scientific questions.
2. **Hands-on skills in implementing multi-omics strategies** from an experimental point of view, enabling you to work confidently in a laboratory setting.
3. **A clear understanding of how genomic data impacts patient diagnosis, care, and treatment**, including the use of large-scale screening tools (such as CRISPR/shRNA or compound libraries) for therapeutic discovery.
4. **The ability to collaborate effectively with bioinformaticians**, guiding data processing workflows and independently performing downstream functional analysis to extract and apply relevant findings to your research projects.
5. **Awareness of the ethical and legal challenges** surrounding precision genomics and the responsible use of genomic data.
6. **An introduction to entrepreneurship in human genomics**, helping you explore the intersection between science, innovation, and business development.
7. **Insight into the broader research ecosystem**, both nationally and internationally, through seminars and courses offered in collaboration with public and private partners—including those from the EUGLOH European University Alliance.

Throughout the program, students will benefit from a cutting-edge research environment in genomics and post-genomics. This Master's program is developed in synergy with Genopole and the GenoTher biocluster, and in collaboration with the Paris Saclay Cancer Cluster.

Débouchés

Career prospects

Design/research engineer in an R&D department in the ophthalmic industry
R&D Engineer
R&D Project Manager
R and D Project Manager
Project Manager

Design engineer in the industrial sector
Design engineer in the research / scientific sector
Design engineer industry / public research
Academic staff
Design Engineer
Research & Development Engineer
Research and Innovation Manager
Project Manager
Project manager in biotechnologies, biotherapies or healthcare innovation
Research & Development Engineer
Research or Design Engineer
Lecturer (after a PhD)
Design Engineer
Research Engineer
Healthcare project engineer
Design engineer
Head of development
Research officer

Further Study Opportunities

PhD in Chemistry / Biology
PhD
PhD thesis
PhD

Admission

Admission Route

Life Sciences

Capacity

Available Places

20

Target Audience and Entry Requirements

Recruitment is open to students who hold a **Master 1 degree in Molecular and Cellular Biology** from Paris-Saclay University, particularly those who have completed the following courses: *Biologie des Génomes, Biothérapies* and *Cellules Souches et Biologie des Cancers*, or those enrolled in the Master 1 *International Track in France – parcours Évry-Paris-Saclay*, or the Master 1 *International Track Sino-French Program*.

Recruitment is also open to students holding a **French degree equivalent to the first year of a Master's in Biology**, with certified English language proficiency.

Additionally, students with a **Bachelor's degree in Science** in relevant fields such as molecular biology, biotechnology, genetics, genomics, or bioengineering are eligible to apply.

Période(s) de candidature

Inception Platform

From 30/01/2026 to 30/06/2026

Supporting documents

Compulsory supporting documents

Motivation letter.

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

Certificate of English level.

Curriculum Vitae.

Additional supporting documents

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

Programme

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class	dis lea c

Introduction to Mathematics and Computer Science for Biology	3	Semester 1	15	7.5						
Charger le détail										
UE Biotherapies, in vitro (2D 3D organoids) and animal modeling	3	Semester 1	15	7.5						
Charger le détail										
UE Single cell and spatial multi-omics, high-throughput screening	3	Semester 1	15	7.5						
Charger le détail										
Advanced Functional Genomics	3	Semester 1	15	7.5						
Charger le détail										

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed	Lecture/practical	directed study/practical class	dis lea c
Research Seminars	3	Semester 1	15	5					
Charger le détail									
UE Practical course in digital genomics	6	Semester 1	1	16.5					
Charger le détail									
NGS data processing methodology	3	Semester 1		22.5					
Charger le détail									

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practica class
Neural stem cells and neurogenesis Charger le détail	3	Semestre 1	15	5				
Bioimaging - Biological Digital Image Processing and Analysis Charger le détail	3	Semestre 1	10		15			
Innovation and entrepreneurship in biotechnology (IEB) Charger le détail	3	Semester 1	22.5					
Ethical issues in biotherapies and precision medicine Charger le détail	3	Annualisé	10	10				
Ecological Transition - M2 Charger le détail	3	Semestre 1		20				
EUGLOH events Charger le détail	3	Annualisé		22.5				
UE libre Catalogue S1 Charger le détail	2.5	Semestre 1						

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class	distan learn cour
Internship Charger le détail	30	Semester 2							

Contact

- **Contact formation**

  Support - contact
- **Marie-Anne DEBILY**

  Enseignante

http://www.universite-paris-saclay.fr/formation/master/biologie-moleculaire-et-cellulaire/m2-human-genomics-biotherapies-health-and-disease-hugeinbio