Université Paris-Saclay
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M2 Genetics, Genomics, Epigenetics and Evolution (GenE2)

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

The international Master 2 GenE2 provides training in cutting-edge technologies in **genetics, genomics, and epigenomics**. Combining theory with hands-on workshops (**ChIP-seq**, **Big Data**), it develops highly sought-after skills in **high-throughput sequencing data analysis**.

A distinctive feature of this program is its innovative approach, which integrates the latest techniques (**single-cell omics**, **spatial transcriptomics**, **ChIP-seq**) with advanced training in data analysis.

The **Master 2 GenE2** is a program entirely taught in English.
It is a **research-based training program** that combines scientific lectures, research projects, hands-on workshops and an internship.

Students develop autonomy through individual or group work under the supervision of specialists.

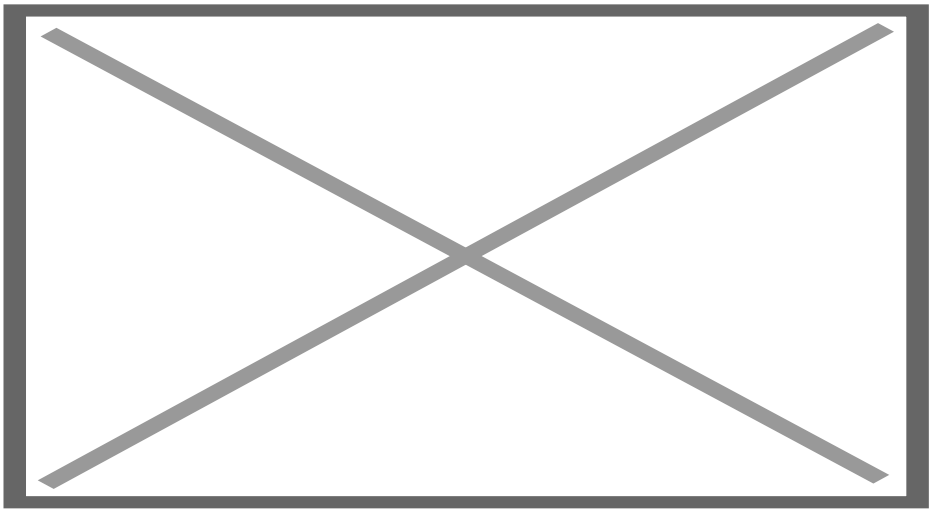
The program is structured around three skill blocks:

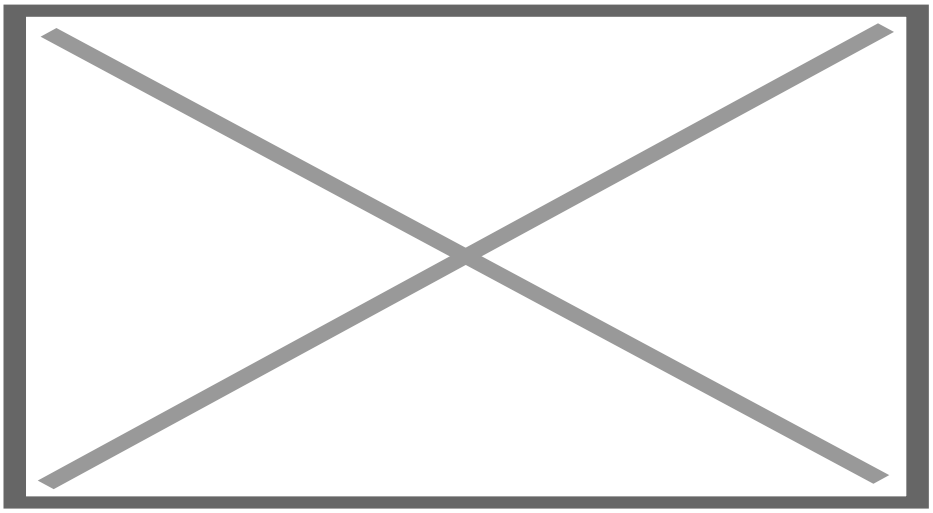
- **Theoretical block (15 ECTS):** organized as scientific lectures.
  - 4 mandatory courses:
    - Functional Genomics
    - ncRNA and Epigenetics
    - Genome Stability and Evolution
    - Genomes, Phenotypes and Populations
  - 1 optional course (choose one):
    - Single-cell omics and spatial transcriptomics
    - Metagenomics
    - Scientific Project
- **Experimental block (15 ECTS):** two innovative practical workshops:
  - ChIP-seq

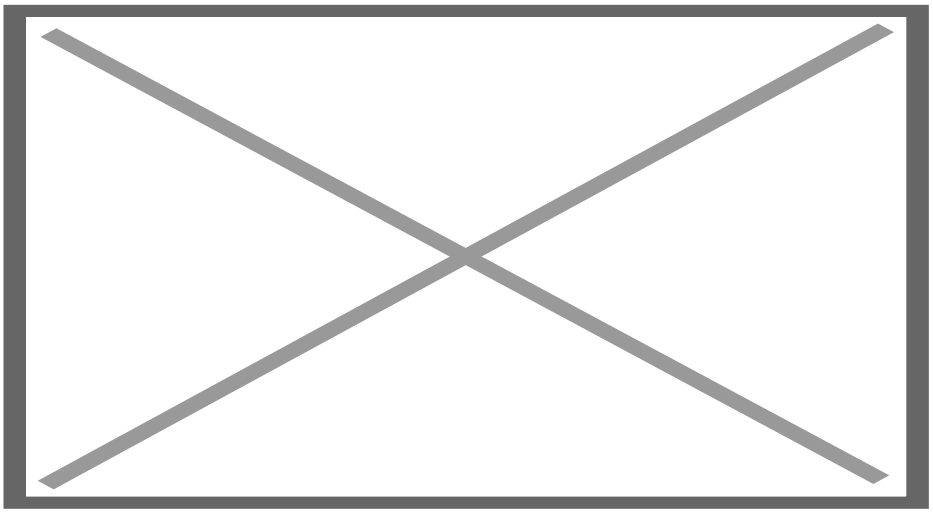
    - Big Data
- **Research immersion block (30 ECTS):** a six-month laboratory internship in France or abroad.

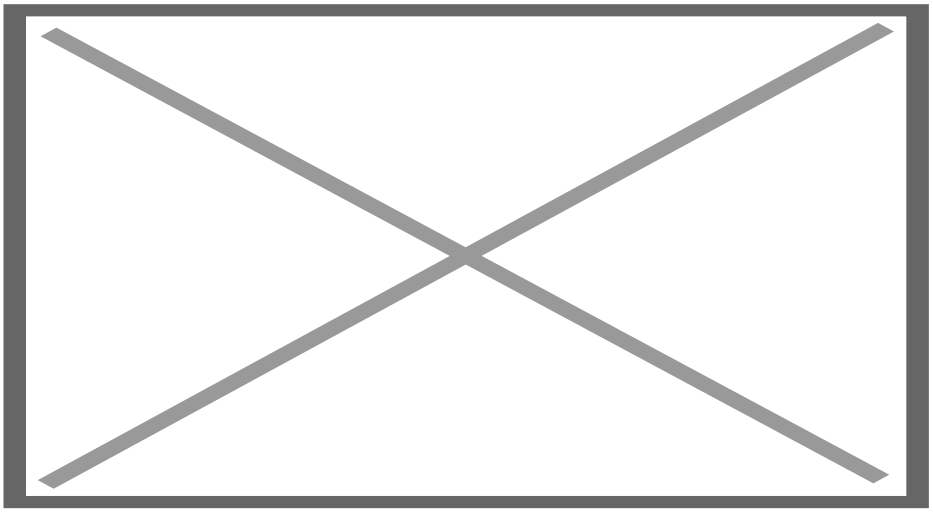
Website: http://www.gene2.fr/

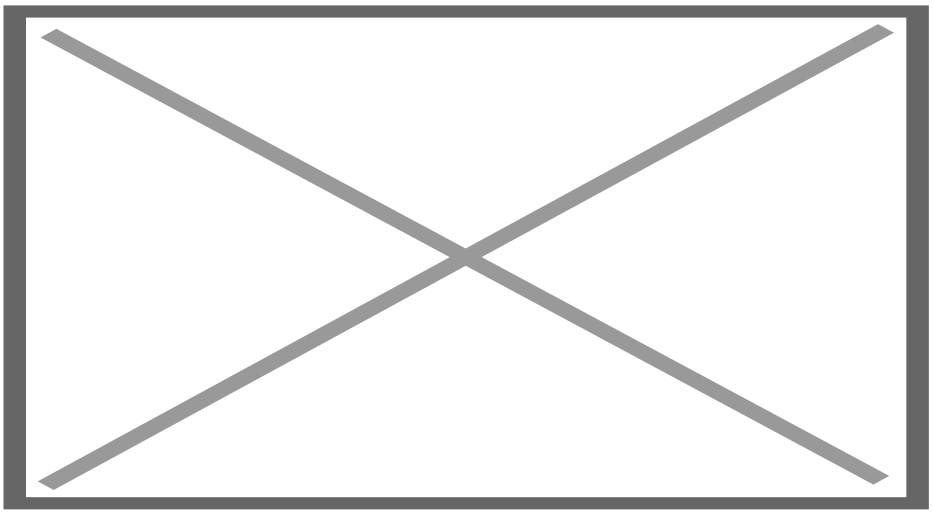
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Information

- Overview
- Application requirements
- Schedule

Présentation

Skills

1. Scientific and Technical Skills

- Mastery of fundamental concepts and methods in **genetics, genomics, epigenetics, and evolution**.
- Design, execution, and analysis of **genomics and epigenomics experiments**.
- Use and interpretation of **high-throughput sequencing data**.
- Mastery of **modern sequencing techniques** (ChIP-seq, single-cell omics, spatial transcriptomics…).
- Application of **bioinformatics and biostatistics tools** to analyze complex datasets.
- Creation, management, and **visualization of large biological datasets**.

2. Analytical and Methodological Skills

- Synthesis and integration of scientific knowledge and results.
- Development of a **scientific critical mind**, with the ability to identify the limits of an analysis.
- Design and planning of **innovative scientific projects**.

3. Professional and Organizational Skills

- Work **independently and collaboratively** in a research environment.
- Adherence to **scientific rigor**, protocols, and laboratory safety rules.
- Project management and organization in an **international and multidisciplinary context**.

4. Communication and Scientific Dissemination Skills

- Writing and oral presentation of scientific results.
- Ability to communicate results to diverse audiences, including for **scientific publication**.

Objectives

By following this program, students will be able to:

- **Master** the fundamental concepts and methods in **genetics, genomics, epigenetics, and evolution**.
- **Define and carry out** all steps of an experimental approach in **genomics**.
- **Apply** basic concepts of **high-throughput data analysis**.
- **Design and analyze** experiments using **modern sequencing technologies**.
- **Identify, select, and apply** existing tools in **bioinformatics and biostatistics** to analyze high-throughput sequencing data.
- **Acquire skills** in creating, managing, manipulating, and **visualizing complex data**.
- **Apply knowledge** to **biomedical, applied, or fundamental research problems**.
- **Synthesize and integrate** knowledge and results to present them **in writing and orally**, developing a **scientific critical mind** to understand the limits of high-throughput genomic analyses.
- **Develop the ability** to **design and plan innovative scientific projects**.
- **Master laboratory practices**: teamwork, scientific rigor, autonomy, communication, and laboratory safety.
- **Develop the ability** to work in an **international and multidisciplinary environment**.
- **Strengthen skills** in **scientific publishing and communication** to diverse audiences.

Débouchés

Career prospects

After a Master's or Master's + PhD: engineer (R&D, control, production, etc.)

After a Master's or Master's + PhD: researcher or lecturer
After a Master's or Master's + PhD: engineer (research and development, control, production, etc.) in the fields of health, pharmaceuticals, agri-food, biotechnologies, instruments and reagents, cosmetics, pollution control and the environment.
Sectors of activity: fundamental or applied research in Biology, Health or Ecology in academia or the private sector
Fields: health, pharmaceuticals, agri-food, biotechnologies, instruments and reagents, cosmetics, pollution control and the environment.
After a Master's + PhD: researcher or lecturer
After a Master's or Master's + PhD: engineer (Research & Development, control, production, etc.)
Environment / Biodiversity Officer
Data Scientist
Bioinformatics Engineer (Research and Development)
After a Master's degree: Data scientist
After a Master’s degree: Research analyst
R&D Engineer
Quality assurance manager
R&D Project Manager
Project Manager
Consulting
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
Secondary school teacher
Cultural outreach professions

Laboratory Manager
Research or Design Engineer

Further Study Opportunities

Biology-Agrosciences
Biodiversity, Ecology and Evolution
Master of Bioinformatics
Master of Biology-Agrosciences
Master of Molecular and Cellular Biology
Master of Microbiology
Master of Education and Teaching Professions
PhD in Ecology / Evolution / Ecosystem Functioning
PhD in Ecology, Evolution
PhD in Chemistry / Biology
PhD in Bioinformatics
PhD
Engineering school
PhD thesis
Graduates can be recruited under private or public sector employment contracts, but can also take part in public sector competitive exams and professional examinations.
Students in this track can turn to research at the end of the 2nd year Master's.
Specialised Master’s programmes (MBA in Project Management, Business, and Innovation Management in the Bio-industries)
Master of Teaching Professions
Engineering, research and development
Engineering in agriculture and the natural environment
Master of BioMedical Engineering
Master of Innovation Management
train international specialists, producing competitive work within reputable teams from public scientific and technological institutions (EPST), in particular the French National Institute of Health and Medical Research (Inserm) and French National Centre

Multidisciplinary Engineering School
Generalist Engineering School through Apprenticeship
fields of statistical learning, artificial intelligence and advanced data analysis
the curriculum also enables students to enter the corporate world directly after their graduation, in positions such as Data Scientist, Data Analyst or Machine Learning Engineer.
Data Scientist, Data Analyst, Ingénieur·e en Machine Learning dans des secteurs innovants (tech, finance, santé, énergie, etc.) ;
R&D researcher or data modelling and analysis expert in leading-edge companies or laboratories.

Admission

Capacity

Available Places

20

Target Audience and Entry Requirements

- Students in **Biology** (Master degree or 4-year BSc), **Medicine**, **Pharmacy**, **Veterinary Sciences**, **Biotechnology** or **Agri-food**, or any other **relevant scientific background**.
- Professionals who wish to acquire skills in the **manipulation, processing, and statistical analysis of high-throughput sequencing data**.
- Researchers, engineers, or technicians in **biology, biotechnology, genomics, epigenomics, or biomedical research laboratories**, wishing to specialize in **sequencing data processing and analysis** .
- Hospital staff or clinicians in **continuing education** interested in **medical genomics** and **patient data analysis** for translational or clinical research.

Période(s) de candidature

Inception Platform

From 09/02/2026 to 04/05/2026

From 15/05/2026 to 29/06/2026

Supporting documents

Compulsory supporting documents

Copy diplomas.

Copy of passport.

Motivation letter.

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

Curriculum Vitae.

Document indicating the list of local M2 choices available here : https://urlz.fr/i3Lo.

Additional supporting documents

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

Supporting documents :
- Residence permit stating the country of residence of the first country
- Or receipt of request stating the country of first asylum
- Or document from the UNHCR granting refugee status
- Or receipt of refugee status request delivered in France
- Or residence permit stating the refugee status delivered in France
- Or document stating subsidiary protection in France or abroad
- Or document stating temporary protection in France or abroad.

Programme

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class	
Functional Genomics	3	Semester 1	20	5					
Charger le détail									
Structure and Evolution of Genomes	3	Semester 1	25						
Charger le détail									
Genomes, Phenotypes and Populations	3	Semester 1	22						

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class	
Charger le détail									
Non-coding RNAs and epigenetics	3	Semestre 1	25						
Charger le détail									
Single-cell omics and spatial transcriptomics	3	Semester 1	25						
Charger le détail									
Introduction to Metagenomics	3	Semester 1	10	10					
Charger le détail									
Introduction to Metagenomics	3	Semester 1							
Charger le détail									
UE libre	3	Semestre 1		25					
Charger le détail									

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class	distan learn cour
Big Data Workshop	9	Semester 1	30		45				
Charger le détail									
ChIP-seq Worksop	6	Semester 1	10		36				
Charger le détail									
UE libre	3	Semestre 1		25					
Charger le détail									

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class	distan learn cour
GenE2 Scientific Project	3	Semester 2		30					

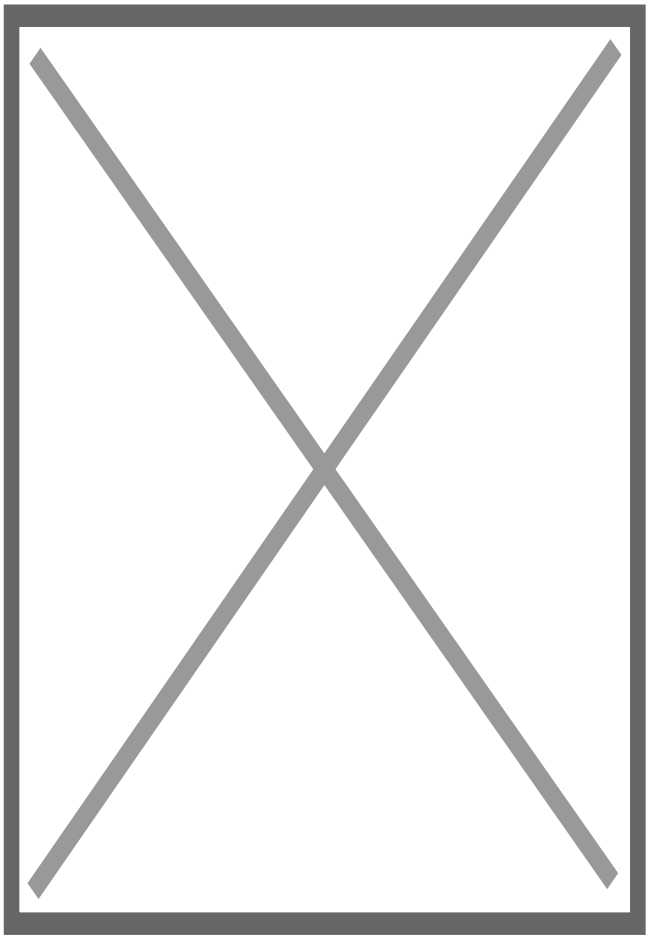
Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class	distan learn cour
Charger le détail									
Lab internship	27	Semester 2		30					
Charger le détail									

Teaching Location(s)

ORSAY
GIF SUR YVETTE
PARIS 05
PARIS 15
EVRY

Training campus

Javascript est requis pour visualiser cette carte.



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

- **Sébastien BLOYER**

  PR

http://www.universite-paris-saclay.fr/formation/master/biologie-moleculaire-et-cellulaire/m2-genetics-genomics-epigenetics-and-evolution-gene2