

GRADUATE SCHOOL

Life Sciences and Health

université
PARIS-SACLAY



The **Life Sciences and Health Graduate School** (LSH GS) brings together and coordinates the Master's degrees, doctoral schools and research teams at Université Paris-Saclay in the fields of **Biology, Bioinformatics and Medicine**. It aims to **understand the fundamental mechanisms in Life Sciences and lead innovation in Biotechnology and Medicine**.

Graduate Programmes

- Biochemistry & Structural Biology
- Bioinformatics
- Oncology & Biotherapy
- Cell Biology, Development, Ageing, Reproduction
- Clinical Sciences
- Endocrinology, Biosignaling, Metabolism & Physiology
- Evolutionary Biology
- Genetics & Genomics
- Immunology
- Microbiology
- Neurosciences
- Systems & Synthetic Biology
- MD-PhD Programme

3 Master's tracks

- Life Sciences and Health
- Bioinformatics
- Vision Sciences

6 Doctoral Schools

Primary:

- ED 1: Structure and dynamics of living systems
- ED 2: Signalling and integrative networks in biology
- ED 3: Oncology, Biology, Medicine, Health

Secondary:

- ED 4: Therapeutic Innovation: from the Fundamental to the Applied
- ED 5: Agriculture, Food, Biology, Environment, Health
- ED 6: Plant sciences: from genes to ecosystems

70
laboratories

70
start-ups

60
licensed patents

320
research teams

3
Master's tracks
> 1,000 students

- Life Sciences and Health
 - Bioinformatics
 - Vision Sciences

6
Doctoral Schools
> 500 students



Platforms and organisations/ promotion

- The Life Sciences and Health GS provides a shared space that fosters interaction between the **multiple aspects of Life Sciences**, and establishes a fruitful relationship between **fundamental and applied research**. Its actions are in line with major scientific and societal challenges and lie at the heart of the European University, EUGLOH's objectives on **Global Health**. Furthermore, the School's focus on **Biotechnology and Health** is particularly well suited to innovation, an area in which the Graduate School's community excels (> 230 patents filed in the last 5 years, > 60 licensed patents, > 50 free licenses, > 25 start-ups).

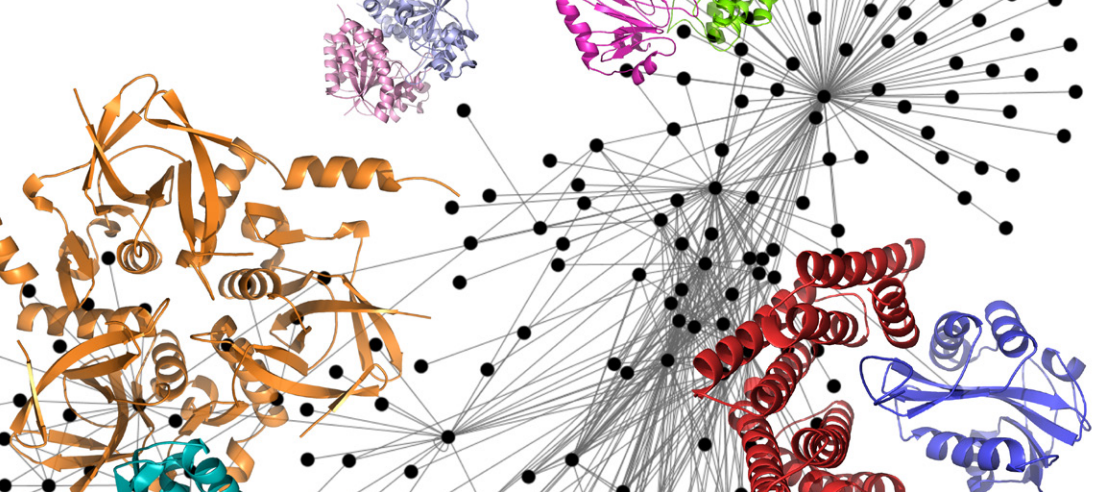
Contributors to the Life Sciences and Health GS:

- **Operators:** AgroParisTech, ENS Paris-Saclay, Université d'Évry, the Faculty of Medicine (Head), the Faculty of Pharmacy, the Faculty of Science (Coordinator) and Université de Versailles Saint-Quentin-en-Yvelines

- **Partnering national research organisations:** the French Alternative Energies and Atomic Energy Commission (CEA), the French National Centre for Scientific Research (CNRS), the French National Research Institute for Agriculture, Food and Environment (INRAE), and the French National Institute of Health and Medical Research (Inserm)
- **Associated operators:** CentraleSupélec and the French Institute for Research in Digital Science and Technology (INRIA)
- **Associated national research organisations:** ONERA

The following are also involved in the Life Sciences and Health GS:

- **Major research centres:** I2BC (Institute for Integrative Biology of the Cell), IDEEV (Institute for the Diversity, Ecology and Evolution of the Living World), IDMIT (Infectious Diseases Models for Innovative Therapies), Institut Curie, IGR (Gustave Roussy Institute), ISTEM (Institute for Stem cell Therapy and Exploration of Monogenic diseases), Genethon, MICALIS (Food Microbiology for Health), Neuro-PSI, NeuroSpin, SAPS (Animal Sciences Paris-Saclay), SOLEIL
- **The Life Sciences and Health Master's partnership:** Institut Pasteur
- Saclay Plant Sciences – Graduate School of Research
- **University Hospital Departments (DHU):** Hepatinov, TORINO
- **University Hospital Health Research projects (RHU):** BioArt LUNG 2020, Destination 2024, iLite, LUMIERE, MyProbe, RECORDS
- **University Hospital Institutes (IHU):** PACRI, Handimedex, PRISM
- **University Hospital Federations (FHU):** CARE, PACEMM, PHENIX
- **Biocluster:** Genopole



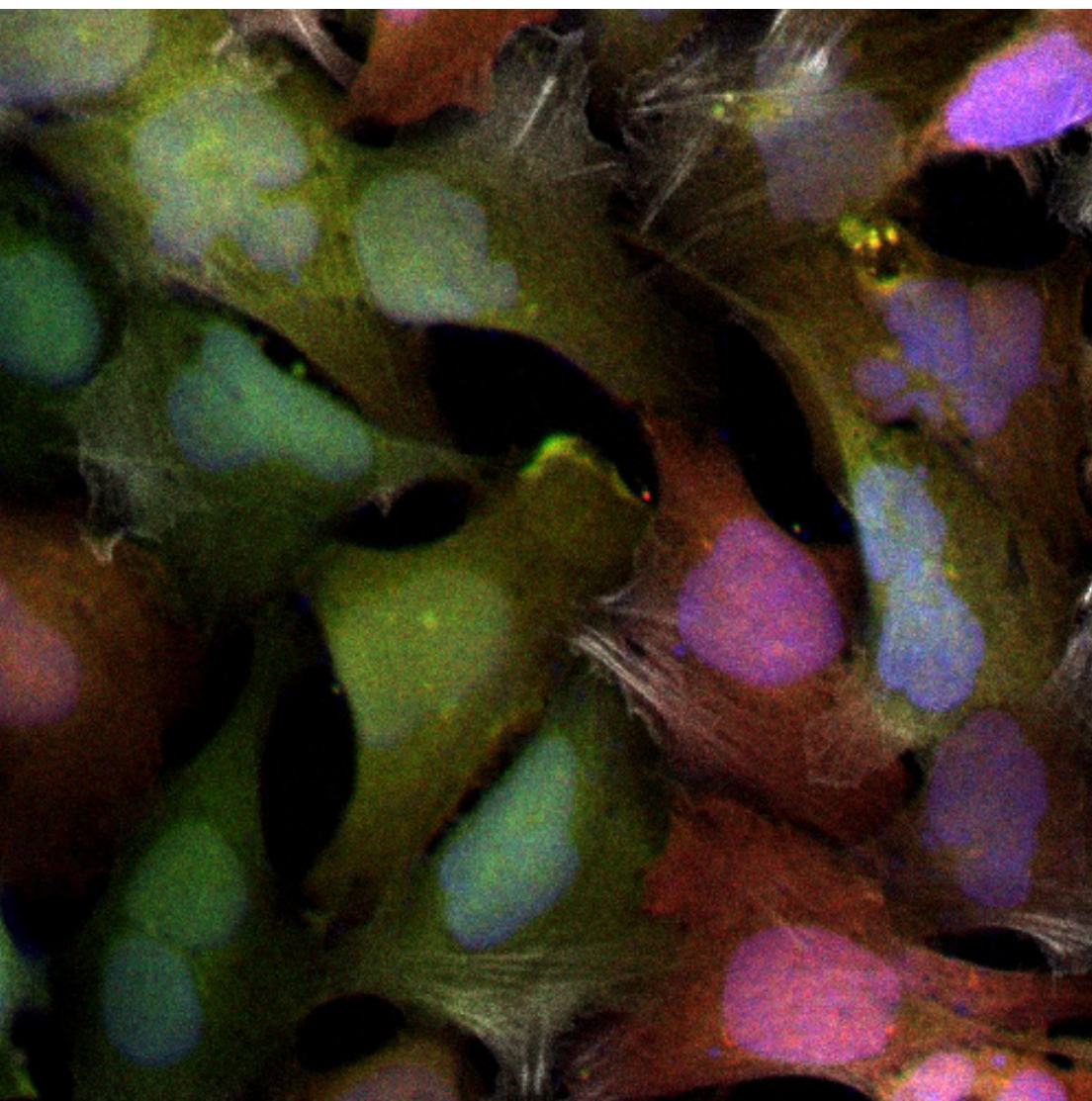
The Life Sciences and Health Graduate School promotes an **integrative approach to Life Sciences** that strives to understand how the molecular mechanisms governing biological systems work and interact, and their integration on all scales, from molecules to cells, organisms and populations, including evolutionary, pathophysiological and biotechnological dimensions.

The Graduate School brings together laboratories and teaching focused on:

- the study of **basic mechanisms** using models that reflect the **biodiversity** of living organisms,
- the application of this knowledge to human and animal **health** and **biotechnology**,
- the development of **data science** and advanced **technologies** for the exploration, targeting (modulation, control) and **engineering** of living organisms.

The Life Sciences and Health GS is organised into **12 disciplinary and/or thematic graduate programmes** that bring together Master's and Doctorate study paths and research teams. In addition, it also offers a MD-PhD graduate programme (AVERROES), dedicated to obtaining two doctorates: MD and PhD.

The Life Sciences and Health GS significantly contributes to several ambitious **multidisciplinary initiatives combining education, research and innovation**, such as: BrainViews (Towards an integrated vision of the normal and pathological functioning of the brain - from cell to brain), Bioprobe (Combining Physics and Chemistry to explore living organisms), HEALTHI (Health and Therapeutic Innovation), LivingMachines@Work (Understanding the fundamental molecular mechanisms of life for innovation in Health and Biotechnology), MICROBES (Center for Interdisciplinary Microbial Sciences @Paris-Saclay) and PASREL (Paris Saclay Research & Hospital Training).



Graduate programmes	Master's courses "Life Sciences and Health" and "Bioinformatics" Masters 3 M1 and 11 M2 curricula taught in English =	Doctoral schools						Research teams
		1	2	3	4	5	6	
Biochemistry & Structural Biology	<ul style="list-style-type: none"> Engineering and Chemistry of Biomolecules 							✓
Bioinformatics	<ul style="list-style-type: none"> Computational Biology: Analysis, Modeling and Engineering of Biological and Medical Information Genomics informatics and Mathematics for Health & Environment 							✓
Oncology & Biotherapy	<ul style="list-style-type: none"> Cancerology: Gene, Cell, Development Biotherapies: Tissue, Cell & Gene Immunology Biomedical imaging Aging biology 							✓
Cell biology, Development, Aging, Reproduction	<ul style="list-style-type: none"> Aging biology Gene, Cell, Development Reproduction & Development 							✓
Clinical Sciences	<ul style="list-style-type: none"> Surgical sciences and new interventional technologies Biomedical imaging Host-graft relationship Neurological disability Health Studies Coordinator 							✓
Endocrinology, Biosignaling, Metabolism & Physiology	<ul style="list-style-type: none"> Endocrinology & Metabolism Cell Signaling & Integrative Neurosciences 							✓
Evolutionary biology	<ul style="list-style-type: none"> Genetics, Genomics, Epigenetics, Evolution 							✓
Genetics & Genomics	<ul style="list-style-type: none"> Genetics, Genomics, Epigenetics, Evolution Gene, Cell, Development Fundamental Microbiology 							✓
Immunology	<ul style="list-style-type: none"> Immunology: Host-graft relationship Infectiology: Biology of Infectious Diseases (Cambodia) Infectious agents, host & environmental interactions Fundamental Microbiology 							✓
Microbiology	<ul style="list-style-type: none"> Microbiology and bioengineering Microbiology (bacteria, viruses, parasites): Microbiota, pathogens & anti-infectious therapeutics Infectiology: Biology of infectious Diseases (Cambodia) Cell Signaling & Integrative Neurosciences Biomedical imaging Computational Neurosciences and Neuroengineering 							✓
Neurosciences	<ul style="list-style-type: none"> Cell Signaling & Integrative Neurosciences Biomedical imaging Computational Neurosciences and Neuroengineering 							✓
Systems & synthetic biology	<ul style="list-style-type: none"> Systems and synthetic biology 							✓
MD-PhD programme	<ul style="list-style-type: none"> Curriculum dedicated to obtaining both a PhD and a Doctorate degree in Medicine 							

The wide range of courses available up to doctorate level are adapted to the preferences and professional projects of each student, allowing them to work in the private or public sector with either a Master's degree, (e.g. engineer in life sciences, pharmaceutical industry or biotechnology company executive) or with a PhD (e.g. research engineer, researcher, university professor, hospital doctor). A vast array of research-related professions are open to graduates, including Research & Development, medicine, data

analysis (data scientist, biostatistician), quality control, management, marketing, scientific communication, optometry, and the coordination of studies in Health or Education.



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