



**MASTER**

**Biology – Health**

**Specialization**

**Signaling and Function in  
Pathological conditions  
(SFP)**

**Specialization**

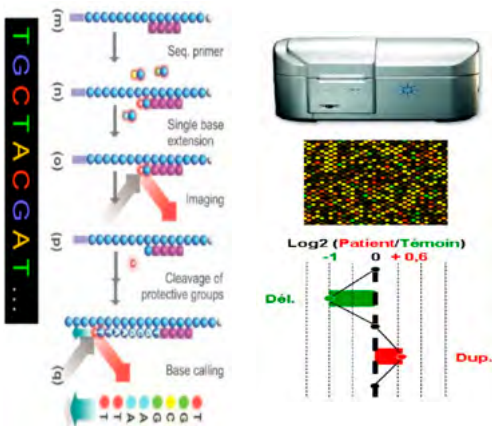
**Cancer, Differentiation,  
Genetics and BioTherapies  
(CDG BioTher)**



## ADMISSION

Access to the Master 1 depends on the acceptance of the students' application file by the admittance committee (maximum 20 scientific students in M1). Students must have a Bachelor's degree in Health Sciences or Life Sciences or international equivalent. Applications to the M1 is also open to medicine and pharmacy students who have validated their third year and to students from Engineering School with the necessary skills in the field.

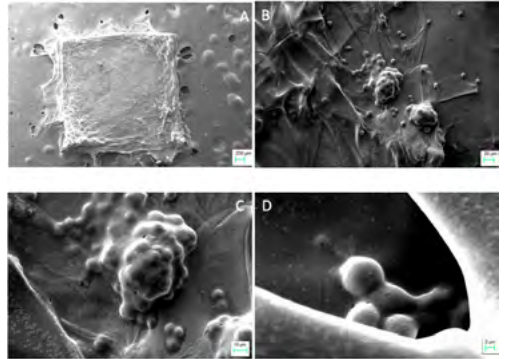
Access to the M2 depends on the obtention of the M1 Biology – Health or for outside candidates on the acceptance of the application file by the admittance committee. Applications to the M2 is open to holders of another M1, to pharmacy students who have validated their fifth year and to students who have validated their second cycle of medical studies. For clinical students, the M2 can be performed in two years, with the theoretical part (first semester of M2) the first year and the practical part (second semester of M2) the following year.



## GOALS

- To offer fundamental knowledge, a modern education in physiology and in technical, diagnostics and therapeutic innovations
- To give (and evaluate) a practical training in a research laboratory (public or private) or in a company (6-month internship in M2 and 2-month internship minimum in M1 in France or abroad)

The teaching language is French.



## SKILLS

Acquire knowledge in scientific and technological fields

Produce and analyze experimental data

Communicate results (written reports, summaries, oral presentations) to a group and defend a project in front of a jury

Master computerized data processing and manage information networks

Formulate working hypotheses, set up protocols and carry out a project

Share theoretical and technical competence with collaborators, technicians and other students

Communicate information and ensure their valorization within an international context: master written and oral English

# ORGANIZATION

## M1

### Semester 1

- English
- Private sector & professional insertion
- Statistical modeling for biology
- Introduction to biotherapies
- Technologies in cell imaging and image processing
- 1 course among 3:  
Biomembranes and signaling  
Cell differentiation and oncogenesis  
Developmental biology
- Human genetics
- Molecular pathophysiology
- Fundamental immunology and immunoregulations
- Regulation of gene expression in eukaryotes & epigenetics

### Semester 2

- Cell-extracellular matrix interactions
- Neuro-immune regulations, immunopathologies
- Intestinal physiology
- Oncogenetics
- Laboratory rotations
- Laboratory animal experimentations or bioethics
- Internship

## M2

### Semester 3

- Private sector & professional insertion
- Stem cells and applications in biotherapy
- Inflammation, immunoregulation, immunopathologies
- “-omics” approaches
- Bibliographic and research project
- 3 specialization courses among 4

### CDG BioTher specialization

- Phenotypic plasticity, environment and cancer
- Molecular, cell and tissue biotherapy
- Genetics: from molecular bases to pathologies
- Cancer: from molecular bases to therapy

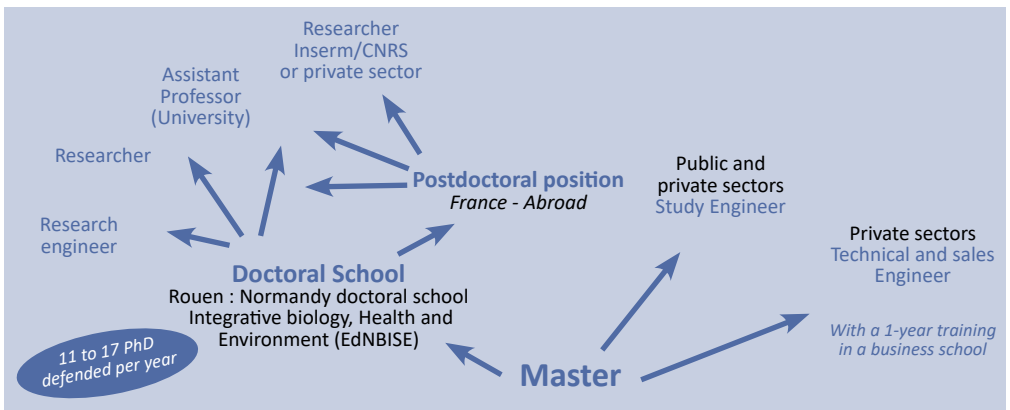
### SFP specialization

- Hormonal pathophysiology
- Nutrition, inflammation, gut-brain dysfunction
- Signaling & reproduction
- Molecular targets of cardiovascular dysfunction

### Semester 4

- Internship

# CAREER OPPORTUNITIES



# RESEARCH LABORATORIES

## Rouen

- Inserm UMR-S 1096 EnVI – Endothelium, Valvulopathy & Heart Failure
- Inserm UMR-S 1073 ADEN – Digestive Tract Environment and Nutrition
- Inserm UMR-S 1234 PANTHER – Pathophysiology, Autoimmunity, Neuromuscular diseases and regenerative Therapies
- Inserm UMR-S 1079 GPMCND – Genomics and Personalized Medicine in Cancer and Neurological Disorders
- Inserm UMR-S 1239 DC2N – Neuronal and Neuroendocrine Differentiation and Communication
- Inserm U918 – Genetic and clinic of mature lymphoid neoplasms
- EA 4651 ToxEMAC-ABTE – Environmental Toxicology, Aerial Environments and Cancer
- EA 3830 GRHV – Research Group on Ventilatory Handicap
- EA 4308 GQG – Gametogenesis and Gamete Quality
- EA 2656 GRAM 2.0 – Research group on antimicrobial agents and microorganisms

## Caen

- EA 3917 – Mobilities, cognition, temporality
- EA 4258 CERMN – Study and research center on medication
- EA 4656 BioTICLA – Biology and Innovative Therapeutics of Locally Aggressive Cancers
- CNRS UMR 6301 – Imaging and Therapeutical Strategies in Cerebral and Tumoral pathologies
- Inserm ERI 3 – Cancers and populations
- Inserm U 919 – Serine Proteases & Physiopathology of the Neurovascular Unit

Co-accreditation with



## PEDAGOGICAL DIRECTORS

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