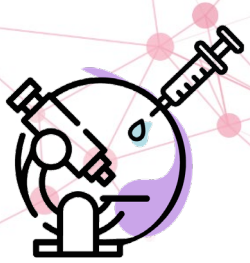
Physiopathology & Regenerative Medicine (PPaRmed)



Explore this IDIL Master's track in detail, including its academic objectives, curriculum, research opportunities, admission requirements and career prospects.

TRACK OVERVIEW & LEARNING OBJECTIVES

The PPaRmed program (from IDILgraduate program) is intended for students of Science, Medicine, Pharmacy, Dentistry, and those from the National Veterinary Schools, Chemistry and Engineering.

This program forms part of the thematic priorities supported by the Biology and Health cluster at the University of Montpellier. It draws on the expertise of specialists from research units in Montpellier and across France.

This program, which differs from a traditional course, is characterised by an interdisciplinary programme of 'InterDisciplinary and In Lab' (IDIL) organised over two years, centred on physiology and its dysfunctions, with an emphasis on the most advanced methods for innovative therapies. This translational approach is made possible by the numerous interactions between basic researchers and clinicians.

Over the course of two years, students will be supported by a mentor (support provided throughout both years) and a tutor (in the first year), whose role is to guide students as effectively as possible in their career choices, share their professional networks and supervise them in their research.

In the first year, students will undertake a personal project and complete laboratory-based modules (In Lab). In the second year, they will undertake a multidisciplinary group project.

Over the two years, students will take PPaRmed-labelled modules, as well as transdisciplinary and non-PPaRmed modules, chosen from the IDIL catalogue. The aim of this program is a two-year immersion, rather than two separate six-month periods, in order to prepare students for innovative research.

This program is primarily dedicated to students wishing to continue their studies by undertaking a university PhD in the field of physiology/pathophysiology, with a focus

specifically on modern therapeutic methods whilst incorporating cross-disciplinary knowledge.

It also aims to train competent professionals wishing to pursue careers in the pharmaceutical industry and biotechnology companies upon completion of the Master's degree.

Students will be immersed in a cutting-edge and exciting scientific environment. Training will rely on important personal investment of the students through experimental projects, article analysis and case studies. Communication skills will also be developed through oral presentations and written reports

KNOWLEDGE, SKILLS & COMPETENCIES

C1 – Understanding analysing integrated physiological and pathophysiological mechanisms
C2 – Formulating research questions transforming a biological question into a scientific research question
C3 – Experimenting designing and carrying out a rigorous experimental approach
C4 – Select select the appropriate model and methods for a scientific question
C5 – Quantify collect, organise and analyse biological data
C6 – Interpret compare results with hypotheses and the literature
C7 – Innovate identify emerging therapeutic approaches and assess their potential
C8 – Communicate present and write up scientific results in English
C9 – Collaborate work effectively within a multidisciplinary research team
C10 – Act responsibly integrate ethics, regulations, safety and reproducibility into one's practice
C11- English Be able to read, speak and understand English with a minimum B2 level
C12- Integrate Have a comprehensive view of multidisciplinary and transdisciplinary aspects in their field

DETAILED CURRICULUM

- **Semester 1 (S7) (30 ECTS)**
  - Pathophysiology (5 ECTS) (resp M Demion)
  - Cell communication and signaling (5 ECTS) (resp M Vignes)
  - 1 optional unit among * (4 ECTS)
  - IDIL Transversal training unit (2 ECTS)
  - 1 Non-core (2 ECTS)
  - 1 In Lab (2 ECTS)
  - Personal project (10 ECTS)
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*Neural Basis of Behavior

*Neurodevelopment

*Neuropsychopharmacology

*Imaging the cells at Macro and Nanoscales

*Structural Biology or Cellular Biology au choix

*Molecular and Cellular Bases of Infectious Diseases

- **Semester 2 (S8) (30 ECTS)**
  - Research Internship (30 ECTS)

- **Semester 3 (S9)**
  - Nutrition (4 ECTS) (resp K Lambert)
  - Cardiac and muscular pathologies (5 ECTS) (resp JY Le Guennec)
  - Integrated Physiology (5 ECTS) (resp F. Perrin)
  - IDIL Transversal training unit (2 ECTS)
  - 2 Non-core (4 ECTS)
  - Multidisciplinary project (10 ECTS)

- **Semester 4 (S10)**
  - Research Internship (10 ECTS)

In-Labs :

- How to arm NK cells to target cancer (D Gitenay, IRMB)

The use of Zebrafish as a model for cardiac development and disease(A Faucherre, IGF)

ADMISSION REQUIREMENTS & STUDENT PROFILE

The PPaRmed program is primarily intended to students who hold a Bachelor's degree in life sciences or a related field and who wish to specialise in understanding physiological and pathophysiological mechanisms and exploring them through an experimental approach, with a view to research or biomedical innovation.

- Bachelor's degree in Life Sciences / Biology
- Bachelor's degree in Cell Biology and Physiology
- equivalent qualifications in France or abroad.

Admission to the PPaRmed program requires a fundamental understanding of cellular and molecular biology, biochemistry, genetics and the physiology of the body's major systems. A basic knowledge of pathophysiology and statistics applied to biology are also expected.
Students must have some prior experience of the scientific method and be able to understand an experimental protocol, interpret simple biological data and apply their knowledge to explain a physiological or pathophysiological mechanism.
The ability to talk, read and understand scientific English is expected (level B2).
Prior mastery of specialised experimental techniques, regenerative medicine models or innovative therapeutic approaches is not required: these skills are acquired and developed throughout the programme.
Prior training in integrated physiology and/or pathophysiology, a basic understanding of statistical analysis of biological data, familiarity with reading scientific articles, and a good level of scientific English.

CAREER OPPORTUNITIES

Further study typically leads to a PhD in the fields of health biology, physiology, pathophysiology, biotechnology, regenerative medicine or related disciplines.
The program also offers the opportunity to undertake further training to develop dual expertise in scientific, managerial, regulatory, statistical or entrepreneurial areas.
The program's international focus facilitates progression to doctoral studies or joining research teams abroad.
In particular, students can highlight their international experience, their training in scientific English and their research experience when applying for international doctoral programmes.

The skills acquired enable graduates to enter the fields of research and innovation in biology and health, notably:

- academic research;
- research and development in the pharmaceutical industry;
- biotechnology companies;
- companies developing innovative technologies and therapies;
- technology platforms;
- organisations specialising in research transfer and commercialisation.

RESEARCH LABORATORIES & ACADEMIC PARTNERS