

# MASTER STUDIES IN AGEING AND LONGEVITY AT SORBONNE UNIVERSITE

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## MASTER BIP – AGEING AND LONGEVITY

### WHY?

The Master BIP-Ageing and Longevity program introduces the broad multi-disciplinary subject of ageing, with its associated disease processes and societal impact. As a domain that is not addressed in undergraduate teaching, our program progresses over 2 years from the fundamental concepts of cellular ageing and their effects on body systems, individual people and our society as a whole, to a deep understanding of age-related vulnerability to disease, resilience, tissue repair and the maintenance of good health.

With the increasing life expectancy of the population, the maintenance of quality of life has become a major issue for our society. Ageing is, thus, a major field encompassing crucial issues in terms of both basic science (understanding the biological processes of aging) and multiple applications (particularly in the domain of health). An understanding of these issues and the optimization of quality of life in the elderly require improvements in our comprehension of the mechanisms underlying ageing and the increasing vulnerability of major physiological functions during the course of life.

Ageing affects all body systems, so our program trains students in multiple scientific fields:

- *cellular biology and biochemistry*
- *integrated systems physiology*
- *cognitive ageing*
- *neurodegenerative diseases*
- *psychosocial effects of ageing*
- *mechanisms of tissue repair*
- *gerontechnology*
- *clinical geriatrics*



Thus, during this master program students will acquire:

- knowledge of the physiological mechanisms underlying ageing and longevity, from the molecule to the whole body and from the gene to the environment.
- an understanding of the relationships between normal and pathological ageing of the major organs and changes in the functions of these organs.
- comprehension of the consequences of increasing life expectancy for public health and society.

In parallel, the Master BIP - Ageing and Longevity program uses small group teaching, student mentoring and 2 research/industry internships to develop research and generic transferable skills applicable to a range of future professions:

- *Critical thinking*
- *Business enterprise*
- *Scientific communication*
- *Clinical research*
- *Project management*
- *Scientific development*
- *Data analysis*

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## WHEN?

The program begins at M1, but can be entered directly in the 2nd year depending on previous experience.



## WHO?

Students who have a Bachelor degree in biological sciences or equivalent experience, also health care professionals (e.g. doctors, pharmacists).

## HOW?

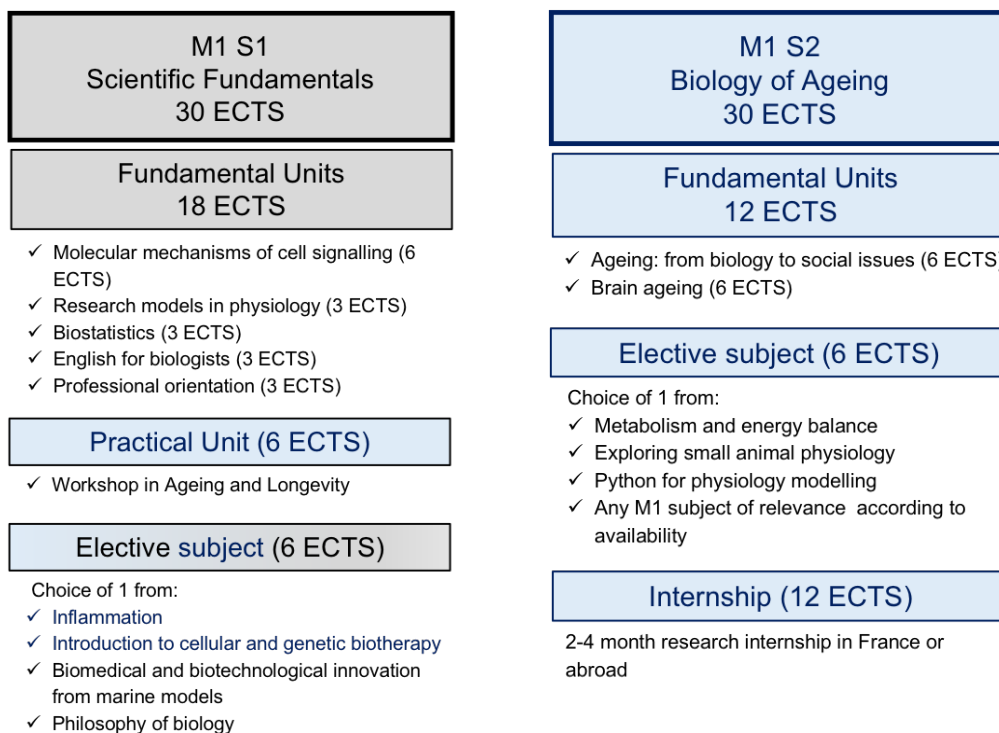
To provide training in the multi-disciplinary field of ageing and longevity, our program is based on:

- teaching modules delivered by recognized specialists in the biology of ageing (researchers, university academic, clinicians, ...)
- French and international research teams, which routinely contribute to our program.
- close collaboration, for teaching and research training, with Sorbonne Université centres of excellence (Institute of Biology – Paris Seine, Institute of Longevity-Charles Foix, Institute of Cardiometabolism and Nutrition, Brain and Spinal Cord Institute), the Pasteur Institute and research laboratories of the Paris hospital group (AP-HP)
- 2 practical research or industry internships, 2-4 months at M1 and 6 months at M2, in internationally-recognized laboratories in France or abroad

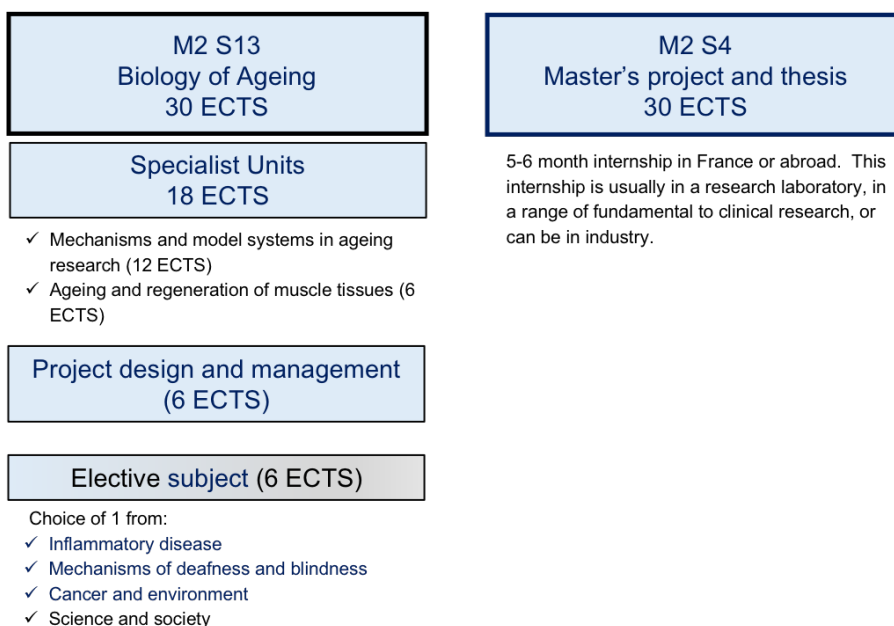
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## COURSE ORGANIZATION

The **first-year program (M1)** provides fundamental knowledge necessary to develop scientific rigor and introduces the biology of ageing and its physiological and societal impacts:



The **second-year program (M2)** is designed to provide a unique opportunity for each student to acquire in depth theoretical and practical knowledge in their field of interest.



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## RESEARCH TRAINING:

An important component of training at the Master's level is in research; both its methodology and through practical experience in a laboratory.

## RESEARCH PROJECT DESIGN AND MANAGEMENT (6 ECTS)

This course is directly linked to the student's laboratory internship project undertaken in semester 4. With the help of their internship supervisors, students acquire the necessary background to write a short letter-of-intention presenting the scientific question they will address during their internship and the design and feasibility of their experimental plan. Evaluation will be through an oral presentation and response to questions before a jury of experts.

## MASTER'S THESIS (30 ECTS)

- 5 to 6 month internship performed in an internationally recognized research laboratory in France or abroad (financial support is available from the Master and/or the University to assist student mobility).
- The M2 research project is a professional experience that allows students to acquire scientific and technical expertise in their speciality as well as general skills (ability to carry out a project, to research and analyse information, to work in a team, to display creativity and critical thinking, to present information in a written and/or oral form ...) which are also valuable in non-research contexts.
- A list of projects proposed by French and foreign laboratories participating in our training program is available on our website, but students can also apply to other research teams that work in their field of interest.
- At the end of the internship a written dissertation and oral presentation is evaluated by a jury at the end of June.

## CONTACTS :

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