MuSkLE PhD programme
Building, maintaining and repairing the functional locomotor system

Co-funded by the European Union

PhD Position 18 job vacancy

Reference:	**PP18**
Title:	**Epigenetic control of muscle repair: the role of Lysine Demethylases in sex-specific skeletal muscle regeneration**
Hiring institution:	**UGA**
Location:	University of Grenoble Alpes, Grenoble, France.
Start date:	As from 1st September 2027
Duration:	36 months
Application deadline:	15th January 2027

Job description

Objective:	Muscle stem cells (MuSCs) possess remarkable plasticity, dynamically adjusting metabolic and transcriptional programs to adapt to environmental cues. Sexual dimorphism represents a fundamental biological phenomenon across species, including humans. Although females generally exhibit lower muscle mass and strength than males, they display superior regenerative capacity following muscle injury. Transient estrogen signaling is a key contributor to these sex-specific differences, and epigenetic mechanisms are essential for fine-tuning estrogen-dependent transcriptional programs. We recently demonstrated that lysine-specific demethylase 1 (LSD1), a known enhancer of estrogen receptor alpha (ERα) transcriptional activity in cancer, regulates MuSC fate during regeneration in males. However, the epigenetic mechanisms through which LSD1 modulates estrogen signaling in MuSCs during muscle regeneration remain unknown. The recruited doctoral fellow (DF18) will investigate how/whether LSD1 controls estrogen-mediated signaling in MuSCs and contributes to sex-specific differences in skeletal muscle regeneration. To address this question, the doctoral fellow will integrate complementary multi-omics approaches with *in vitro* (primary muscle stem cell cultures), *ex vivo* (Myofiber cultures), and *in vivo* (WT and LSD1-MUSC specific Knock out mouse model) of muscle regeneration. The in vivo regeneration model used throughout the project will be exercise-induced muscle damage (EIMD) according to the Dr. J. Gondin protocol. Transcriptomic, epigenomic, and proteomic analyses will identify LSD1-dependent estrogen-responsive pathways and substrates. Key LSD1-specific targets dysregulated in females will be further tested using gain- and loss-of-function strategies combined with estrogen (E2) treatments. Functional readouts will include ER-mediated transcriptional activity, MuSC quiescence exit, and proliferation rate.
Collaborations and co-supervisions:	The PhD project will be implemented in collaboration with Dr. Julien Gondin.
Supervisors:	Dr. Isabella Scionti - isabella.scionti@inserm.fr
Place of work:	Institute for Advanced Biosciences, Site Santé, All. des Alpes, 38700 La Tronche, Grenoble, France.
Required degree	MSc diploma in an area of biological sciences. (Cell Biology, Molecular Biology).

Skills/Experience:	Skills in biochemistry, cell culture, molecular biology, statistics, and animal experimentation. Motivation and interpersonal skills necessary for teamwork. <u>Techniques:</u> FACS-sorting, Primary muscle stem cell culture, molecular biology, histology, immunofluorescence, imaging, CUT&RUN, single muscle stem cell RNA-seq, proteomic approaches and animal experiments.
Keywords	Epigenetics –protein methylation– transcription – muscle regeneration – primary muscle stem cell and myofiber culture.

Mandatory requirements

Eligibility:	The doctoral fellow: - should not have resided or carried out his/her main activity (work, study) in the country where he/she is being recruited, i.e., France, **for more than 12 months in the 3 years before the application call deadline,** unless this time was part of a compulsory national service or a procedure for obtaining refugee status under the Geneva Convention. - must be **a doctoral candidate** (not already in possession of a doctoral degree at the date of the application call deadline).
Languages:	Oral and written skills must meet the standards of academic English used in international research.

Job details

Type of contract:	Full time position
Gross salary:	The monthly **living allowance, including employer and employees' social charges, is €3,800.** This amount corresponds to a <u>gross</u> monthly salary estimated to 2717€, and to an estimated net monthly salary before income tax of 2184€. On top of the monthly salary, the candidate will receive a **mobility allowance,** including employer and employees' social charges of €4752 over the 36 months of the working contract. This amount corresponds to a <u>gross</u> monthly allowance estimated to €132 and to an estimated net monthly allowance before income tax of approximately €119.
Other benefits:	**Social Protection**: The candidate will benefit from **full social security coverage**, including health insurance, unemployment insurance, and pension contributions. He/she will also have access to occupational health services (*médecine du travail*), as required by French labour law. **Additional Insurance**: The candidate may choose to subscribe to complementary health insurance plans, such as LMDE or SMERRA, at affordable rates (approximately €42 *per* month). Host institutions will provide 15 euros per month. **Paid Leave**: The candidate is entitled to up to **45 days of paid leave annually**, in accordance with national labour law, and will enjoy the same employment rights as other public-sector employees, including student union membership. **Transport**: The candidate benefits from significantly **reduced fares on public transport**, available in all partner cities. Additionally, the host institution will cover 50% of the monthly transportation costs.