PhD Position 16 job vacancy

Reference:	**PP16**
Title:	**Dystrophin and the Muscle Stem Cell Niche: Deciphering Early Mechanisms of Duchenne Muscular Dystrophy**
Hiring institution:	**Université Clermont Auvergne (UCA)**
Location:	Clermont-Ferrand, France
Start date:	As from 01st January 2027
Duration:	36 months
Application deadline:	6th May 2026

Job description

Objective:	Dystrophin is best known for its role in Duchenne Muscular Dystrophy (DMD). While most studies have focused on its structural function in differentiated muscle fibers, it is now clear that altered Muscle Stem Cell (MuSC) behavior contributes significantly to disease progression. However, how dystrophin loss affects MuSCs remains highly debated. Two main hypotheses dominate the field: a direct role in asymmetric stem cell division versus an indirect role through regulation of the stem cell niche.
	Mutations in dystrophin in *Drosophila melanogaster* reproduce progressive locomotor defects similar to those observed in DMD patients, making it a powerful in vivo model. During development, flight muscle progenitors reside in a well-defined epithelial niche. We have found that dystrophin is strongly enriched at the interface between progenitors and their niche. In parallel, single-cell RNAseq data reveal misregulation of ECM genes associated with abnormal progenitor commitment. Given increasing evidence that dystrophin organizes the cell–ECM interface, we hypothesize that defective interactions between muscle progenitors and their developmental niche alter cell fate and contribute to DMD onset.
	This project aims to uncover the mechanistic links between dystrophin, ECM organization, and stem cell fate control.
	The **recruited doctoral fellow** (DF16) will address three key questions:
	1. **How does dystrophin loss affect progenitor fate and niche organization?** Using single-cell RNAseq and spatial transcriptomics, we will define gene regulatory networks altered in DMD conditions. Tissue-specific control of dystrophin expression in Drosophila will allow us to disentangle its role in progenitors versus niche cells—an approach not feasible in mammals.
	2. **How does dystrophin regulate ECM architecture at the niche?** Super-resolution and live imaging of DAPC and ECM fluorescent knock-in lines developed in the lab will reveal how cell–ECM organization shapes stem cell–niche interactions and ECM deposition dynamics.
	3. **What controls progenitor self-renewal?** We will test whether asymmetric division or alternative mechanisms—such as ECM contact or ligand proximity—govern fate decisions, and define the contribution of dystrophin to this balance.
	This project combines genetics, single-cell omics, and advanced imaging to address a fundamental and timely question in stem cell biology and muscular dystrophy.
Collaborations and co-supervisions:	The project will be **co-supervised** by **Cedric Soler**, with a strong expertise on limb muscle development, and by **Vincent Mirouse** with a longstanding interest on Dystrophin and ECM. It will be also in collaboration with **Jonathan Enriquez'** lab (Lyon, IGFL) for spatial transcriptomics.
Supervisors:	Cedric Soler - cedric.soler@uca.fr Vincent Mirouse - vincent.mirouse@uca.fr
Place of work:	**Institute of Genetics, Reproduction and Development (iGReD)**, CNRS - INSERM- UCA – Clermont-Ferrand. GReD Institute provides a highly stimulating research environment. DF16 will benefit from direct access to high-technology platforms enabling single-cell approaches, advanced microscopy and integrated bioinformatics supported by expert engineers. We are located next to the Chaine des Puys – Limagne, listed as a UNESCO World Heritage, in the city of Clermont-Ferrand that hosts 40 000 students.

Required degree	Master's degree or equivalent in biology or related fields (developmental biology, cell biology, genetics…)
Skills/Experience:	**Essential qualifications:** - Solid background in molecular and cellular biology - Strong analytical thinking and problem-solving skills - Excellent communication skills in English (oral and written) **Desirable technical experience (not all required):** - Experience with genetics and/or model organisms - Molecular biology techniques (RNA work, etc.) - Microscopy (confocal imaging; experience in live or super-resolution imaging is a plus) and quantitative approaches - Transcriptomics or bioinformatics analyses (RNA-seq, single-cell RNA-seq) - Quantitative approaches and data analysis We welcome candidates from diverse backgrounds. Previous experience in all techniques is not expected—motivation, rigor, and willingness to learn are essential. **Personal and professional skills:** - Ability to work both independently and as part of a collaborative team - Openness to interdisciplinary interactions (genetics, imaging, computational biology) - Strong organizational skills and attention to detail - Capacity to discuss results critically and engage in scientific exchange - Enthusiasm for contributing to a dynamic and international research environment We are particularly keen to recruit a candidate who values collaboration, intellectual curiosity, and constructive scientific dialogue.
Keywords	Dystrophin, ECM, stem cells, Drosophila, single cell, spatial transcriptomics, advanced imaging

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 €3,500.** This amount corresponds to a <u>gross</u> monthly salary estimated to € 2,500.36, and to an estimated net monthly salary before income tax of € 2,008.53. On top of the monthly salary, the doctoral fellow will receive a **mobility allowance,** including employer and employees' social charges of €132 per month during 36 months which constitutes gross monthly allowance estimated to €94,3 and net monthly allowance estimated to €75,75.
Other benefits:	**Social Protection**: The doctoral fellow 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 doctoral fellow may choose to subscribe to complementary health insurance plans (MGEN). Host institutions will provide 15 euros per month. **Paid Leave**: The doctoral fellow is entitled to up to **44 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 doctoral fellow benefits from significantly **reduced fares on public transport**, available in all partner cities. Additionally, the host institution will cover 75% of the monthly transportation costs.