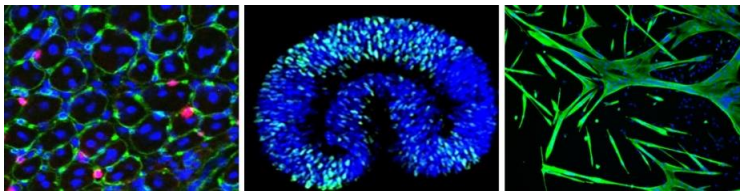
PhD in translational skeletal Muscle Stem Cell biology



Nestlé Research, Nestlé Institute of Health Science **PhD studentship (4 years)**
Lausanne, Switzerland

Muscle Stem Cells (MuSCs) are tissue resident stem cells driving the growth, maintenance, and repair of skeletal muscle. MuSC function declines during aging and muscle wasting disorders, leading to regenerative failure and loss of muscle mass and strength. Our lab has recently identified specific nutritional solutions that stimulate MuSC activity in vitro and in vivo to accelerate muscle repair after muscle injury and has discovered a new subpopulation of MuSCs which could modulate life-long muscle plasticity in response physical activity. In this context, the PhD student will study the molecular and cellular mechanisms through which energy metabolism cross-talks with cell fate decisions to regulate stemness and regenerative potential. The project will assess stem cell metabolism at the single cell level using state of the genomics, flow cytometry and data science technologies, and will apply lineage tracing, cell fate assays and histology procedures available in the lab to study how nutrition and intracellular metabolism influence the fate of MuSCs. Through this work, the student will discover a repertoire of metabolic profiles linked to specific stem cell states, will characterize the role of a new population of MuSCs during exercise and aging, and will deliver translational solutions to enhance the regenerative capacity of skeletal muscle in health and aging.

Key words: Stem Cell Biology; Regeneration; Skeletal Muscle; Aging; Nutrition; Metabolism; Translational Research

Key responsibilities

- Design and lead the experimental activities of the project
- Analyze, interpret and present scientific results
- Integrate the literature in the field & propose translational perspectives
- Interface with team members and collaborators
- Present at scientific conferences & publish scientific papers

Required profile

- Masters Degree in biology or equivalent with deep understanding of muscle biology
- Training and laboratory experience in cellular metabolism and/or molecular/cellular biology and/or stem cell biology
- Experience with primary cell cultures, flow cytometry, and in-vivo experimentation will be considered a plus
- Passion for science with a collaborative mindset
- Enthusiasm, curiosity and a pro-active attitude are essential
- Good time management and organizational skills
- Fluency in English, French would be a plus.

The student will be affiliated to the EPFL doctoral school of biotechnology and bioengineering and the position will be homed on the EPFL campus at the Nestlé Institute of Health Sciences (NIHS). NIHS is one of the four major research institutes of Nestlé Research, and delivers innovative translational research in biomedical science to maintain and improve health through nutrition. We offer a truly international working environment with an internal PhD program where the candidate will work at the interface between academia and industry and will interact with other students and post-docs. For more details, please contact Dr. Pascal Stuelsatz (pascal.stuelsatz@rd.nestle.com).