Post-doc position in K. Jagla lab www.jagla-lab.com

Characterization of molecular determinants and cellular pathways controlling muscle fiber splitting

www.gred-clermont.fr
Clermont-Ferrand, France

In advanced stages of muscular dystrophies, including Duchenne Muscular Dystrophy (DMD), a large subset of muscle fibers shows longitudinal splitting or branching. However, despite critical impact on muscle cytoarchitecture, on vulnerability to contraction-induced damage and on muscle weakening, mechanisms of muscle fibers splitting remain largely unexplored. The goal of this project is to identify molecular determinants and characterize cellular pathways controlling muscle fiber splitting. Our preliminary data in Drosophila model (Bertin et al., bioRxiv, 2019) indicate that affected muscle identity information and/or locally induced excessive myoblast fusion could result in split muscle phenotype. Consistent with this observation, we identified Gelsolin as muscle identity realisator gene, which acts to limit fusion events and prevents muscles from splitting. Gelsolin belongs to the conserved family of actin severing proteins whose impact on muscle formation remains unknown. Within this project it is expected to: i) apply Drosophila model to functionally dissect the role of Gelsolin and Gelsolin-like proteins in regulation of myoblast fusion arrest and in preventing split phenotype; ii) analyse single nuclei RNAseq datasets from split fibers of *mdx* mutant mice (collaboration with C. Birchmeier, MDC Berlin) and determine associated gene expression signature(s); iii) analyse functionally the potential *mdx*-split hits in Drosophila model and on the “split fiber on the dish” system of differentiated iPSCs (collaboration with O. Pourquié, Harvard, Boston).

Motivated candidates with background in Drosophila genetics, the main experimental model, and/or in developmental muscle biology, are encouraged to apply.

iGReD is highly dynamic biomedical research institute with up to date imaging and model organisms platforms and stimulating scientific environment.

Clermont-Ferrand is located in the center of France in the heart of the « Chaîne de Puys » vulcanoes – The UNESCO World Heritage Center.

Send your application (motivation letter with indication of contacts for reference) to christophe.jagla@uca.fr before September 1st 2020.

Position is available for 2 years from October 2020 with a possibility of extension.