

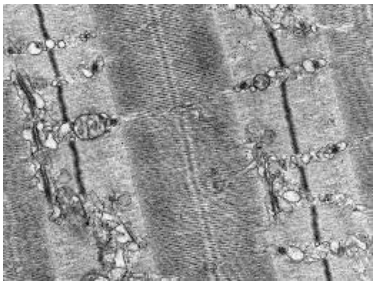

Quantitative 3D imaging of skeletal muscle in health and disease

Research project for Engineer or Master students

Congenital myopathies are a class of rare genetic diseases characterized by muscle weakness from birth and abnormalities in skeletal muscle biopsies. There is currently no curative treatment for these diseases as the understanding of the pathological mechanisms remains limited.
Our team previously identified the genetic basis of several myopathies and characterized corresponding mouse models at the molecular and phenotypic levels. Defects in **skeletal muscle structure and organization** have been observed on muscle sections but they were never quantified in three dimensions.
Using Focused Ion Beam-Scanning Electron Microscopy (FIB-SEM), our team generated high resolution (voxel size of a few nanometers) **3D images of mammalian skeletal muscle**. To better understand the impact of the myopathies on skeletal muscle fibers, the student will analyze and compare the structural organization of healthy and pathological muscles at the subcellular level. More specifically, the student will use **image processing** techniques to identify and segment several organelles (nuclei, mitochondria, sarcoplasmic reticulum) and muscle-specific structures (sarcomeres, triads), and will **detect and quantify defects in myopathic muscles**.

Candidate profile: you are a highly motivated and talented student (Engineer final year or Master 2), with strong interest in cellular mechanisms and human disease. Proven expertise in image analysis. English is the communication language in the team.

The internship will take place in Strasbourg at the **IGBMC** institute that is one of the main European centers in Biomedical research and offers a unique environment with 50 research teams, 45 different nationalities and a dozen of state-of-the-art platforms.
Strasbourg is a cosmopolitan city in a beautiful countryside, close to Germany and less than 2 hours from the center of Paris by train.

Applications:
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