



INTERNSHIP PROGRAM FOR INTERNATIONAL STUDENTS

INTERNSHIP SUBJECT FORM

Name of the Host Laboratory	LadHyX
Website of the Host Laboratory	https://www.ladhyx.polytechnique.fr/en/
Research Group	Vascular Biomechanics and Bioengineering
Internship Supervisor	Prof. Abdul Barakat
Internship Subject	Machine Learning-Enhanced Characterization of Nuclear Shape in Various Cell Types
Student's level	<input checked="" type="checkbox"/> Advanced Undergraduate Students (3 rd or 4 th year) <input checked="" type="checkbox"/> Master's students (1 st or 2 nd year) <input checked="" type="checkbox"/> PhD students
Proposed Duration	<input checked="" type="checkbox"/> 3 months <input checked="" type="checkbox"/> 4 months <input checked="" type="checkbox"/> 5 months <input checked="" type="checkbox"/> 6 months
Prerequisites	Experience in quantitative image analysis and machine learning algorithms/tools is highly desirable.
Internship description (max. 15 lines)	<p>A number of diseases are associated with abnormal morphologies of the nuclei of various cell types. For instance, various types of cancers lead to abnormal nuclear shapes. Laminopathies, a broad category of genetic diseases that involve mutations in the lamin gene, are also associated with abnormal nuclear shapes within cardiac, muscle, and skin cells. The goal of this internship is to use a combination of image analysis tools and machine learning algorithms to quantify changes in nuclear shape in several of these diseases. The goal is to explore if the use of advanced machine learning tools allows capturing subtle differences that would otherwise not be captured using standard image processing techniques.</p> <p>For this internship, experience in image analysis and machine learning tools is not absolutely required but would certainly be a plus. No previous training in biology is needed.</p>

The boxes marked with cross implies eligible