

High-end image acquisition and data analysis automation

Aim To acquire (3D) images of bioprinting process and bioprinted outcomes, and automate their analysis

Description During this project, the student will learn how to work with various imaging tools available in our labs in order to characterize the biofabrication of tissue-engineered constructs. The subject can be adjusted to the student preferences.

Skills to be learned The student will get familiar with various microscopic and imaging techniques such as confocal microscopy and high speed imaging systems. The goal will be to characterize the mechanisms of Laser induced forward transfer (LIFT), which is a state-of-the-art bioprinting tool, and its bioprinted outcomes. In brief, in LIFT, a laser is used to irradiate a thin layer of ink (donor), which generates a jet that is deposited onto a receiver plate placed in front the donor. This direct writing technique will be used to micropattern cells or hydrogel with high spatial control. Images and videos acquired will focus on the jet and on the deposited material.

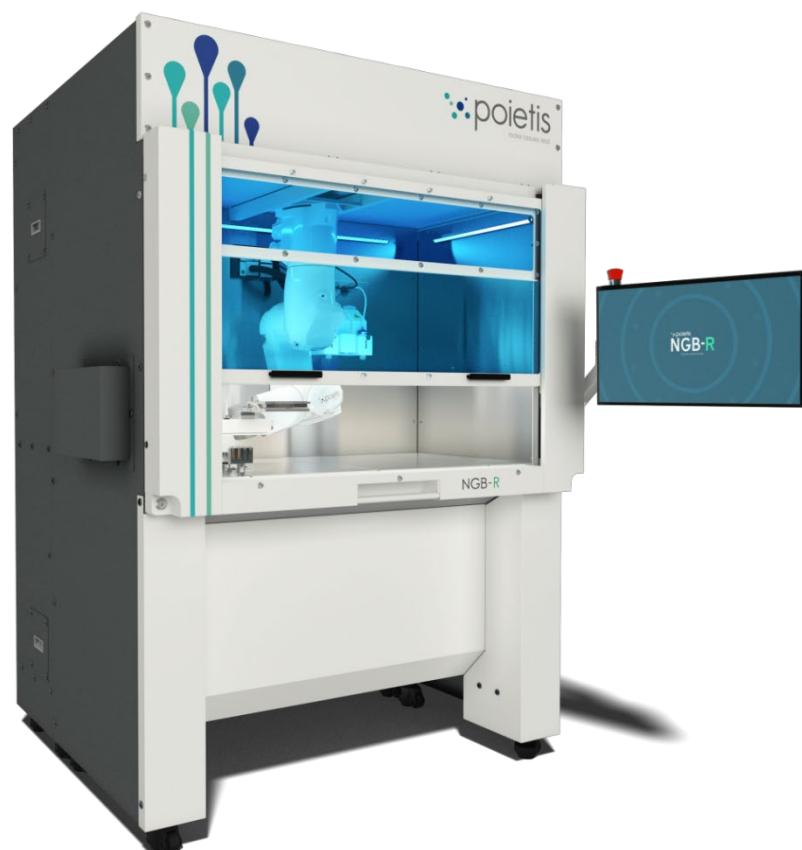


Figure 1 LIFT bioprinter

This work involves both wet and dry bench work. The student will work independently after a training period. They will be expected to take initiatives in the conceptualization and design of the experiments and the tools to use for the data analysis such as Matlab, Imaris, ImageJ, machine learning tools, etc.

Daily supervisor

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