



**The Mechanobiology Lab** led by Prof. Manuela T. Raimondi is a multidisciplinary research group in the School of Engineering at Polytechnic University in Milano and within the Department of Chemistry, Materials and Chemical Engineering “Giulio Natta”. The successful applicant will work within a multidisciplinary project team and will also collaborate within a consolidated **research cluster** with the Group of Prof. Giulio Cerullo, Dept. of Physics at Polytechnic University, Prof. Giberto Chirico at Bicocca University, Dr. Roberto Osellame at the Italian National Research Council (CNR) and Dr. Gianni Ciofani at the Italian Institute of Technology (IIT). The aim of the Mechanobiology lab is to develop frontier tools for cell modelling, including micro-engineered stem cell niches, microfluidic bioreactors and miniaturised windows for intravital imaging. Our long-term goal is to develop the potential of engineered tissue-equivalents and organoids in cell modelling, drug discovery and regenerative medicine.

Mechanobiology Lab Webpage: <http://www.nichoid.polimi.it/mechanobiologylab/>

Applications are invited from suitably qualified candidates for the following two positions:

### **1) Full-time Postdoctoral Researcher in Advanced Tools for Intravital Imaging.**

**Project Description:** We are seeking a postdoctoral researcher for a project entitled AN IN VIVO BIOENGINEERED CHIP AS A SMART INTRAVITAL MULTIPHOTON IMAGING WINDOW. A micro-structured chip, built by two-photon laser polymerization (2PP), will be implanted in lab animals, host a biomaterial and contain micro-features that will guide the spontaneous regeneration of vascularized tissue within a thin gap in contact with the biomaterial. The micro-features will also act as beacons to correct the optical aberrations. The Postdoctoral Researcher will work full-time on the development and engineering of the implantable imaging window, and its validation in vitro/in vivo. The researcher will work closely with other members of the multidisciplinary project team including PIs and postgraduate researchers within the research cluster.

**Qualifications requested:** Applicants will possess a degree and Master of Science in Biomedical Engineering and a PhD, ideally in bioengineering or biophysics. Candidates who have experience in one or more of the following fields are preferred: characterisation of the reaction to biomaterial implantation, confocal fluorescence imaging (single-photon and two-photon), cell culture and transfection, processing of microscopy images. Candidates should have excellent communication and organisational skills; be highly motivated and passionate about developing new technological platforms; and have an excellent knowledge of the English language in terms of strong written and oral communication skills. The candidate should be able to work independently and as a part of team. A consistent, high-impact publication record and experience in reviewing journal articles or attaining grant funding would be advantageous. Candidates should also have a demonstrated ability to mentor PhD students.

**Additional skills:** Specific skills that would enhance a candidate’s application for the position include experience in some of the following areas: scaffold fabrication and modification for tissue engineering, computer programming in C/C++/Python, microfabrication, mechanical testing of synthesised materials, structural mechanics modelling, computational fluid-

dynamic modelling, multiphysics modelling, PCR, immunohistochemistry and other histological and imaging techniques, proteomics, mRNA sequencing.

**Starting Date and salary:** April 1<sup>st</sup>, 2021. Gross salary Euro 2000/month. One-year contract renewable up to three times.

**To Apply:** Applicants should apply before February 26<sup>th</sup>, 2021 through the official procedure available at the website of Polytechnic University, at the following link:  
[https://www.polimi.it/index.php?id=3971&tx\\_wfqbe\\_pi1\[ID\]=9419&L=1](https://www.polimi.it/index.php?id=3971&tx_wfqbe_pi1[ID]=9419&L=1)

Informal enquiries can be directed to [manuela.raimondi@polimi.it](mailto:manuela.raimondi@polimi.it).

## **2) Full-time Postdoctoral Researcher in 3D cell culture in microgravity.**

**Project Description:** We are seeking a postdoctoral researcher for a project entitled NICHOID IN SPACE: ADVANCED IN VITRO MODELS FOR "ON ORBIT" INVESTIGATIONS. In this project, we want to use a miniaturized 3D scaffold called "nichoid" to bring into proof of concept our idea that cell culture experiments can be performed in more realistic 3D environments also on orbit. We will develop a new microfabricated scaffold addressing the context of the European Space Agency (ESA) technology. The new scaffold will be microfabricated by two-photon laser polymerization (2PP), only few tens of  $\mu\text{m}$  thick and fully inspectable in fluorescence, on polymeric culture slides already used in bioreactors on-board the International Space Station (ISS). Use on the ISS will require a custom design for the microarchitecture and the engineering of a relevant technology of fabrication. The Postdoctoral Researcher will work full-time on the preparation and characterization of 3D micro-structured scaffolds by 2PP and on the multiphysics simulation of their operational conditions. The researcher will work closely with other members of the multidisciplinary project team including PIs and postgraduate researchers within the research cluster.

**Qualifications requested:** Applicants will possess a degree and Master of Science in Biomedical Engineering or Materials Science and Technology, and a PhD ideally in related subjects. Candidates who have experience in one or more of the following fields are preferred: structural mechanics modelling, computational fluid dynamics modelling, multiphysics modelling, computer programming in C/C++/Python, microfabrication, mechanical testing of synthesised materials. Candidates should have excellent communication and organisational skills; be highly motivated and passionate about developing new technological platforms for biological research in space; and have an excellent knowledge of the English language in terms of strong written and oral communication skills. The candidate should be able to work independently and as a part of team. A consistent, high-impact publication record and experience in reviewing journal articles or attaining grant funding would be advantageous. Candidates should also have a demonstrated ability to mentor PhD students.

**Additional skills:** Specific skills that would enhance a candidate's application for the position include experience in some of the following areas: biology research in microgravity, confocal fluorescence imaging, cell culture and analysis, data processing from microscopy images.

**Starting Date and salary:** April 1<sup>st</sup>, 2021. Gross salary Euro 2000/month. One-year contract, renewable once.

**To Apply:** Applicants should apply before February 26<sup>th</sup>, 2021 through the official procedure available at the website of Polytechnic University, at the following link:  
[https://www.polimi.it/index.php?id=3971&tx\\_wfqbe\\_pi1\[ID\]=9420&L=1](https://www.polimi.it/index.php?id=3971&tx_wfqbe_pi1[ID]=9420&L=1)

Informal enquiries can be directed to [manuela.raimondi@polimi.it](mailto:manuela.raimondi@polimi.it).