POLITECNICO DI MILANO

PhD in BIOINGEGNERIA / BIOENGINEERING - 41st cycle

THEMATIC Research Field: BEACONSANDEGG. AN ORGANISM-ON-CHIP PLATFORM TO MODEL BREAST CANCER PROGRESSION. PLATFORM VALIDATION

Monthly net income of PhDscholarship (max 36 months)
1400.0 In case of a change of the welfare rates during the three-year period, the amount could be modified.

Context of the research activity	
Motivation and objectives of the research in this field	The overarching goal of this project is to create an innovative platform capable of modeling the fibrotic microenvironment of invasive breast cancer in order to better understand its progression and design better targeted cancer therapies. When this goal is met, it will be possible to validate the efficacy and specificity of therapeutic agents at various stages of tumor fibrosis. The long-term goal is to improve our understanding of incurable cancers and to provide a standardized testing platform for new therapeutic products. https://www.nichoid.polimi.it/beaconsandegg /
Methods and techniques that will be developed and used to carry out the research	The goal of this project is to validate the platform “tumor on chip” in vivo, meanings using chichken embrio. Different stage of fibrosis will be produced by the implanted and cellularized 3D microstructured platform and measured by optical microscope (confocal and 2photon) technique or biochemical assay. The efficacy and cancer selectivity of FDA approved and investigational anticancer drugs, will be tested at the different stage of the tumor progression by 2photon microscopy. Evaluation of median lethal dose (Id50) respect to those reported in the literature in vitro, animal, and in human models will provide a quantitative validation of the platform

Educational objectives	The program will be part of the international project ERC, acronym BEACONSANDEGG, G.A. 101053122 funded by the European Uninon. The candidate will take part to the research meetings and to the different phases of the project, working in the EU context. Besides acquiring specific expertise on research methodologies, and publishing the obtained results, the candidate will improve on team collaboration, deadline compliance, research reporting.
Job opportunities	The acquired expertise will lead to various job opportunities as a researcher and/or research manager in public research institutions, as well as pharmaceutical and instrumentation companies. Collaborations with a PhD with this level of experience will also benefit companies and institutions interested in applying Nanoscience and Nanoengineering to Regenerative Medicine.
Composition of the research group	1 Full Professors 1 Associated Professors 3 Assistant Professors 2 PhD Students
Name of the research directors	Prof. Manuela Raimondi - Emanuela Jacchetti

Contacts
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Additional support - Financial aid per PhD student per year (gross amount)	
Housing - Foreign Students	--
Housing - Out-of-town residents	--

Scholarship Increase for a period abroad	
Amount monthly	700.0 €
By number of months	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
Educational activity: The student will be encouraged to attend to courses at POLIMI or abroad 2 / 3in International Schools. Teaching assistantship: There are various forms of financial aid for activities of support to the teaching practice. The PhD student is encouraged to take part in these activities, within the limits allowed by the regulations. Computer and desk availability: the student will be allowed to access facilities of the DEIB.