



# PhD in BIOINGEGNERIA / BIOENGINEERING - 39th cycle

**PARTENARIATO PNRR Research Field: 3D IN VITRO MODELS FOR INVESTIGATING THE INTERACTIONS BETWEEN AIRWAYS AND LUNG AND ENVIRONMENTAL PARTICLES**

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

<b>Context of the research activity</b>	
<b>Motivation and objectives of the research in this field</b>	<p><i>In vitro 3D models represent an essential tool to investigate the effect of pollutants, particles, nano-plastics on health. We will design biomaterials and fabrications technique to develop macro-scale 3D models to mimic the chemical-physical and mechanical environment of lower airways and lungs (both healthy and pathological). A channel network diffused throughout the model will act as a vascularization system to 1) support oxygenation of embedded cells and/or bacteria 2) locally deliver selected drugs and evaluate their potential in counteracting the effect of contaminants.</i></p> <p><i>This project research is in the framework of?ANTHEM: AdvaNced Technologies for Human-centrEd Medicine?Codice PNC0000003 CUP B53C22006720001PIANO NAZIONALE COMPLEMENTARE (PNC)Decreto Direttoriale n. 931 del 6 giugno 2022 AVVISO PER LA CONCESSIONE DI FINANZIAMENTI DESTINATI AD INIZIATIVE DI RICERCA PER TECNOLOGIE E PERCORSI INNOVATIVI INAMBITO SANITARIO E ASSISTENZIALE da finanziare nell?ambito del PNC</i></p>
<b>Methods and techniques that will be developed and used to carry out the research</b>	<p><i>For the design and the development of the research topic, polymeric material background, knowledge on additive manufacturing techniques and related software for the acquisition of patients' images will be used and</i></p>



	<i>acquisition of patients' images will be used and implemented where necessary to match the final aim of the research.</i>
<b>Educational objectives</b>	<i>During the PhD program the PhD student will improve her/his skills, working group interactions, know-how in biomaterials and their possible modification for improving the mimicking of biological tissues, advanced technological processing, chemical-physical investigation techniques, in vitro biological studies</i>
<b>Job opportunities</b>	<i>Post-doc in high-level universities (Italian and European) Researchers in start-up or spin-off developing new ideas in the bioengineering field Consultancy in engineering industries</i>
<b>Composition of the research group</b>	3 Full Professors 3 Associated Professors 3 Assistant Professors 9 PhD Students
<b>Name of the research directors</b>	PROF. SILVIA FARE'

<b>Contacts</b>	
<i>Silvia Farè</i> <i>Silvia.fare@polimi.it</i>	

<b>Additional support - Financial aid per PhD student per year (gross amount)</b>	
<b>Housing - Foreign Students</b>	--
<b>Housing - Out-of-town residents (more than 80Km out of Milano)</b>	--

<b>Scholarship Increase for a period abroad</b>	
<b>Amount monthly</b>	700.0 €
<b>By number of months</b>	6

<b>Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information</b>
<p>Educational activity: the PhD student will follow courses offered by the Bioengineering PhD program and PhD School. In addition, the PhD student will have the opportunity to participate at National and International School on topics related to her/his research topic</p> <p>Teaching assistantship: the PhD student will assist some professors and researchers of the team in the class activities in the courses offered at the Biomedical Engineering Bachelor and Master</p>



Course Computer availability: no personal computer is available, but there are computers connected to the different instruments the PhD student will work on during her/his PhD Desk availability: a desk for the PhD student will be available

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