



# PhD in BIOINGEGNERIA / BIOENGINEERING - 40th cycle

**PARTENARIATO PNRR Research Field: AI-CORPS - TRUSTWORTHY, INTEGRATED ARTIFICIAL INTELLIGENCE TOOLS FOR PREDICTING HIGH-RISK CORONARY PLAQUES**

**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

<p><b>Motivation and objectives of the research in this field</b></p>	<p>Microvascular dysfunction (MVD) defines a varied set of conditions which includes vessel destruction, abnormal vasoreactivity, in situ thrombosis, and fibrosis which ultimately results in tissue damage and progressive organ failure. Microvascular dysfunction can affect different organs causing ischemic heart disease to renal failure, stroke, blindness, pulmonary arterial hypertension, and dementia. Intriguing microvascular dysfunction shares similar pathologic mechanisms and patterns that could inform novel treatment strategies.</p>
<p><b>Methods and techniques that will be developed and used to carry out the research</b></p>	<p>The project will focus on the development of new microfluidic platforms and protocols for investigating specific organ microvascular dysfunctions enabling new diagnostic technologies easily accessible to the health system for patients with inflammatory, metabolic degenerative vascular disorders</p>
<p><b>Educational objectives</b></p>	<p>The PhD candidate will learn 1) how to use CAD as well as photolithographic techniques for microfluidic platform design; 2) how to run, and supervise microfluidic tests 3) how to analyse results using fluoroscopic and confocal imaging, ELISA tests, spectrophotometry and cytofluorimetry and 4) how to relate to biologists in order to make the process of transferring skills and information effective in both directions</p>



<b>Job opportunities</b>	The PhD student will acquire useful skills for a future employment in a) academic contexts, b) in research contexts in clinical laboratories, c) in companies that deal with biological tests.
<b>Composition of the research group</b>	1 Full Professors 2 Associated Professors 2 Assistant Professors 3 PhD Students
<b>Name of the research directors</b>	Alberto Cesare Luigi Redaelli

<b>Contacts</b>	
Alberto Cesare Luigi Redaelli Alberto.redaelli@polimi.it – 02 23993375	

<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>	
The PhD student will be hosted in the doctoral open space and will receive a laptop for daily activities; he will also have access to the biomechanics research laboratory and to the computational facilities of the research group	