Courtesy translation of D.R. n. 248/2024

For more details on the selection process, please refer to the Italian version of D.R. n.248/2024 available at http://www.hunimed.eu/it/lavora-con-noi/

SELECTION PROCEDURE FOR RESEARCH FELLOWSHIP

Research Program Title	**Development of a Microfluidic Model to Simulate the Blood-Brain Barrier for Drug Delivery and Neurotherapeutic Research**
Tutor	Prof. Roberto Rusconi
Scientific Area	09 – Biomedical Engineering or a closely related field
Gross amount of the fellowship	20.000 Euro
Duration of the fellowship	12 months
Objectives of the research	The blood-brain barrier (BBB) is a critical interface that regulates the exchange of molecules between the bloodstream and the brain, maintaining cerebral homeostasis and protecting the brain from harmful substances. However, the BBB also poses a significant challenge for the delivery of therapeutic agents to the brain, limiting the efficacy of treatments for neurodegenerative diseases, brain tumors, and other neurological conditions. This project aims to develop a microfluidic model of the BBB that closely mimics its physiological and functional characteristics. By co-culturing endothelial cells, astrocytes, and pericytes in a microfluidic device, the model will replicate the cellular architecture and selective permeability of the BBB. The model will be used to study drug transport mechanisms, evaluate potential neurotherapeutics, and explore strategies for enhancing drug delivery across the BBB. Advanced imaging and molecular assays will be employed to assess the integrity and function of the barrier under various conditions. This microfluidic BBB model offers a powerful tool for preclinical testing and could accelerate

	the development of effective therapies for central nervous system disorders.
Activities to be carried out	1. Design and build microfluidic models of the blood-brain barrier. 2. Cultivate and co-cultivate endothelial cells, astrocytes, and pericytes in the microfluidic model. 3. Evaluate the permeability and integrity of the BBB using therapeutic molecules and imaging techniques. 4. Test drugs and other therapeutic agents to assess their passage through the barrier. 5. Collect and analyze experimental data.
Work place	PIEVE EMANUELE - Milan
Mandatory requirements	• Master's degree in Biomedical Engineering or equivalent. • Adequate scientific and professional background to carry out the research activity described in this call.
Selection process	Application for admissions must be submitted at the following link**:** https://pica.cineca.it/humanitas No hard copy of the application must be sent by post. At first access, applicants need to register by clicking on "Register" and completing the requested data. If applicants already have LOGINMIUR credentials, they do not need to register again. They must access with their LOGINMIUR username and password in the relevant field LOGINMIUR. Applicants must enter all data necessary to produce the application and attach the required documents in PDF format.
Selection criteria	Selection criteria are predetermined by the Selection Committee. As part of the selection process, the Committee will evaluate the curriculum, titles and publications presented by the candidate and will consider, in particular. • Experience in microfluidics and cell culture.

	• Familiarity with imaging techniques and data analysis. • Ability to collaborate and communicate effectively with colleagues.

FURTHER INFORMATION:

In the event of any conflict between Job Opening text and Italian D.R. text, the Italian version will prevail.

For more details on the selection process please refer to the **D.R. n. 248/2024** (http://www.hunimed.eu/it/lavora-con-noi/) or send an inquiry to ufficiodocenti@hunimed.eu or telephone +39 02.8224.5642/5421.