Courtesy translation of D.R. n. 001/2023

For more details on the selection process, please refer to the Italian version of

D.R. n. 001/2023 available at http://www.hunimed.eu/it/lavora-con-noi/

SELECTION PROCEDURE FOR RESEARCH FELLOWSHIP

Research Program Title	**Elucidating the molecular mechanisms underlying Pitt-Hopkins syndrome through the generation of 3D printed vascularized cortical organoids**
Tutor	Dr. Monica Tambalo; Dott.ssa Simona Lodato
Scientific Area	05 – Biological Sciences
Gross amount of the fellowship	30.000 Euro
Duration of the fellowship	15 months
Objectives of the research	'With this project, we aim at developing a complex and reliable model of human cerebral cortex through 3D-printed vascularized cortical organoids (3D-VasCOs). These are expected to overcome the main limitations associated to the traditional reductionist models based on cortical organoids, which are generated from human pluripotent stem cells (hPSCs). Indeed, the limited architecture complexity, the reduced provision of oxygen and nutrients, and the lack of non-neural cellular components all prevent the possibility of investigating late developmental events, including synaptogenesis and circuit refinement. To achieve this ambitious goal, the first aim of this work is the development of a suitable 3D cortical model provided with perfusive vasculature. This will be achieved exploiting the latest advancements in the field of 3D bioprinting, using two-photon stereolithography (SLA) technique. We will then apply this method to model in a dish aspects of Pitt-Hopkins syndrome with the goal of elucidating its underlying molecular mechanisms.

Activities to be carried out	The candidate will carry out: - Maintenance of hPSCs and HIVEC, - generation of cortical organoids and vascularized organoids, - preparation of cells for 3D bioprinting, histology, immunofluorescence, microscopy, transcriptomics
Work place	PIEVE EMANUELE - Milan
Mandatory requirements	Master degree in scientific disciplines (i.e: Biology or Biotechnology or Medicine); PhD; Professional CV suitable to the carrying out of the research activities outlines above.
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: - background in developmental and cellular neurobiology, with previous experience in generating and characterizing 3D models of human brain diseases; - Familiarities with neural stem cells in in vivo systems (animal models) as well as in vitro (pluripotent stem cells) are required; - Bioinformatc skills (R or phyton) to analyze omic data (both transcriptomic and epigenomic) are desired;

	- Experience in whole mount sample processing and live 3D imaging is highly preferred; - Excellent communication skills (written and spoken) in English is required.

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. 001/2023** (http://www.hunimed.eu/it/lavora-con-noi/) or send an inquiry to ufficiodocenti@hunimed.eu or telephone +39 02.8224.5642/5421.