Courtesy translation of D.R. n. 127/2023

For more details on the selection process, please refer to the Italian version of D.R. n. 127 /2023 available at http://www.hunimed.eu/it/lavora-con-noi/

SELECTION PROCEDURE FOR RESEARCH FELLOWSHIP

Research Program Title	**Decoding chromatin structure and phenotypic changes in X-linked hypopituitarism using human iPSC-derived 3D pituitary cultures**
Tutor	Dr. Giampaolo TRIVELLIN
Scientific Area	05 – Biological Sciences
Gross amount of the fellowship	23.000,00 Euro
Duration of the fellowship	24 months
Objectives of the research	'There is a fundamental gap in understanding how copy number variants (CNVs) involving the SOX3 gene cause a rare genetic condition called X-linked hypopituitarism (XH). This project investigates the hypothesis that the CNVs disrupt the chromatin structure at the SOX3 locus, causing its misexpression and disease. Three aims will be pursued: 1: Characterise genome topology at the SOX3 locus in patients with XH. 2: Reprogram patient-derived leucocytes to induced pluripotent stem cells (iPSCs). 3: Generate and characterise patient-specific hypothalamo-pituitary 3D cultures. A large series of patients with XH has been collected. Structural organisation of chromatin will be investigated using UMI-4C, a chromosome conformation capture technique. Several confirmatory analyses will characterise the iPSC clones derived from leucocytes. Multiple functional analyses will be performed in the differentiated hypothalamus-pituitary cells. Knock-in cell

	lines for a representative SOX3 duplication will be generated using control iPSCs. By executing this project, we anticipate determining the etiology of XH and providing a platform for testing novel treatments.
Activities to be carried out	Experimental activities related to aims 2 and 3: • Reprogramming of leukocytes into iPSCs using the Sendai virus and characterisation of the clones: STR and karyotype analysis, pluripotency test, trilineage differentiation test. • Differentiation of iPSCs into hypothalamic and pituitary cells using 3D culture and their functional characterisation: expression and secretion of pituitary hormones, expression of receptors for hypothalamic releasing hormones, cell proliferation and apoptosis, transcriptomic analysis. Creation of a SOX3 gene duplication in control iPSCs using CRISPR-Cas9.
Work place	PIEVE EMANUELE - Milan
Mandatory requirements	• Master degree in Biological Sciences, Molecular Biology, Medical, Industrial, Veterinary or Pharmaceutical biotechnologies • PhD in Cellular and Developmental Biology 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: • Technical skills and theoretical knowledge concerning reprogramming, culture, maintenance, differentiation and characterization of stem cells, • experience in the use of routine molecular and cellular biology techniques (nucleic acid and protein extraction from eukaryotic cells, PCR and qPCR, western blotting, ELISA, immunofluorescence, cell proliferation and apoptosis assays), • work experiences/training abroad, • good knowledge of English (writing, reading, and speaking)

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. 127/2023** (http://www.hunimed.eu/it/lavora-con-noi/) or send an inquiry to ufficiodocenti@hunimed.eu or telephone +39 02.8224.5642/5421.