HUMANITAS UNIVERSITY

Selection procedure for a Type B Research Fellowship in Life Sciences in compliance with art. 22 of law 240/2010

Humanitas University invites applications for a position as Research Fellow in Life Sciences.

Research Program Title	Study of the role of the GBA-mediated lysosomal impairment in Parkinson's disease
Research supervisor - Tutor	Dott.ssa Giulia Soldà
Scientific Area	05 – Biological sciences
Gross amount of the fellowship	25.000 Euro
Duration of the fellowship	12 months
Objectives of the research	1) Preparation of sequencing libraries to perform NGS targeted resequencing of probands/families with PD. 2) Preparation of RNAseq libraries (poly-A, total RNA) 3) Bioinformatics analysis of NGS data using standard or in-house developed pipelines. 4) Functional characterization of genes/mutations/microRNAs using overexpression/silencing experiments in cell model systems

The work place is in Pieve Emanuele - Milano.

A brief description of the: project, activities to be carried out, mandatory requirements to take part into the selection process, information on the application procedure and on the selection criteria are presented in the following.

RESEARCH PROJECT:

Parkinson's disease (PD) is a progressive neurodegenerative disorder affecting >1% of people over the age of 65. Up to now, the most common genetic cause of PD is

represented by mutations in the GBA gene, coding for the lysosomal β-glucocererebrosidase enzyme (GCase). In fact, 3-5% of PD patients are heterozygous GBA mutation carriers. Moreover, several pieces of evidence indicate that a reduction in the GCase activity in PD is directly correlated with α-synuclein (Syn) accumulation in neuronal cells. Despite these new insights into pathogenic events causing PD, the precise mechanisms leading to neurodegeneration are still unknown. In this frame, the project is aimed to study the mechanisms explaining how the progressive lysosomal impairment triggered by the glucosylceramide (GlcCer)/Syn accumulation, caused by defective GCase activity, determines the outcome of a neurodegeneration process in GBA-dependent PD. In particular, we will pursue three main objectives: i) elucidate the molecular mechanisms involved in the onset of cell damage occurring in GBA-PD; ii) in-depth characterize the RNA-based regulatory network including the GBA gene, its pseudogene GBAP1, and the microRNA miR-22, and verify its dysregulation in PD; iii) analyze the genetic contribution of lysosomal genes (other than GBA) in PD pathogenesis.

ACTIVITIES TO BE CARRIED OUT:

The successful candidate will deal with:

1) Preparation of sequencing libraries to perform NGS targeted resequencing of probands/families with PD.

2) Preparation of RNAseq libraries (poly-A, total RNA)

3) Bioinformatics analysis of NGS data using standard or in-house developed pipelines.

4) Functional characterization of genes/mutations/microRNAs using overexpression/silencing experiments in cell model systems

MANDATORY REQUIREMENTS:

In order to be considered for the post candidates must hold a Bachelor's degree obtained in accordance with DM 270/2004 or an equivalent Italian University degree or a comparable academic title granted by a foreign University (usually referred to as a Master's Degree) in in Biotechnologies, Degree in Medicine and Surgery, or Master degree in Biological Sciences; a PhD in Biomolecular Sciences.

SELECTION PROCESS:

The application for admission must be submitted at the following link**:**

https://pica.cineca.it/humanitas

No hard copy of the application must be sent by post.
At the 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.

As part of the selection process, a Selection Committee will evaluate the curriculum, titles and publications presented by the candidate.

SELECTION CRITERIA:

The candidate should master the main cellular and molecular biology techniques (nucleic acid extraction, molecular cloning, transfections in eukaryotic cells, PCR, RT-PCR, qPCR, digital PCR, Sanger sequencing).

The candidate should have experience in the preparation of sequencing libraries (DNA and RNA sequencing), and at least some knowledge on the analysis of NGS data (whole exome, whole transcriptome).

Preference will be given to candidates who:

1) have previous experience in the identification of disease-causing genes/mutations using omics approaches

2) have attended to international courses in the field of genomic data analysis;

3) have previous experience in the study of RNA metabolism, including microRNA

4) have previous experience in the functional characterization of genes/mutations using cell model systems

FURTHER INFORMATION:

For more details on the selection process please refer to the Rectoral Decree n. 73/2017 (http://www.hunimed.eu/it/lavora-con-noi/) or send an inquiry to ufficiodocenti@hunimed.eu or telephone +39 02.8224.5642.