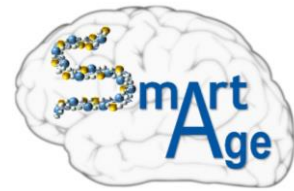




Institut  
d'Investigació  
Biomèdica  
de Girona  
Dr. Josep Trueta



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## **ANNOUNCEMENT REF.: 080-2022 SmartAge ESR project 8**

### **BASES OF THE CALL.**

#### **POSITION ANNOUNCED.**

The selective process is open for the coverage of 1 vacancy for a PhD student at the BIOMEDICAL RESEARCH INSTITUTE OF GIRONA DR. JOSEP TRUETA (IDIBGI) in the Department of Endocrinology (head of project: Prof. Dr. José Manuel Fernández-Real). IDIBGI offers a PhD position for an Early-Stage Researcher (ESR) for the project: Impact of the gut microbiome on cognitive function in middle-aged subjects. Effects of weight loss. The position is part of the EU-funded Innovative Training Network SmartAge (“Gut-brain-axis: Targets for improvement of cognition in the elderly”)

#### **Objective of the project:**

To analyze the impact of age on gut-microbiome, brain microstructure and cognition, we will evaluate 200 subjects at both gender aged >65-80 years from the general population (100 men, 100 women). Longitudinal data and biological sample collection have been completed in April 2018 – as a subgroup - within the Horizon 2020 SHARE project - [www.share-project.org/](http://www.share-project.org/). Different domains of cognition will be explored: attention, memory and executive function, in association with metabolic variables and MRI scans with diffusion tensor imaging (DTI). Gut barrier function and inflammatory brain markers (LBP) will be analysed on plasma samples by ELISA. Blood samples will be collected to measure various markers of microbial translocation/gut barrier function (LBP), inflammation (progranulin, CRP, IL-6) and to process for metabolomics. Exploiting data from a previous large-scale trial is a great advantage and will support us in examining the hypotheses presented here. The effects of weight changes will be scrutinized before and one year after an interventional approach aiming to lose weight (bariatric surgery). A subgroup of longitudinal data from the IRONMET and IRONMET-CGM cohorts will be collected to examine the effects of weight changes on the gut microbiota and cognition (n=90). A first subgroup with obesity that underwent bariatric surgery (n=30), a second subgroup of patients with obesity but without any intervention (n=30) and a third subgroup of patients without obesity and any intervention (n=30). Weight loss is expected to impact on cognitive improvement, the gut-microbiome, barrier function and inflammaging even at older age.

The PhD student will join a research group with extensive experience in the study of the pathophysiology of obesity, type 2 diabetes mellitus and their complications. The main traditional lines of research are focused on innate immune system, inflammatory pathways, and metabolic diseases. Furthermore, the group has done significant work evaluating the biology of human adipose tissue and the role of the microbiome on the cognitive profiles of individuals with obesity and type 2 diabetes. Currently, the group is elucidating the complex interplay among the gut microbiome, the metabolome (including microbial-host co-metabolites), brain microstructure, and cognitive performance (memory, inhibitory control, etc.), and its modulation by obesity.

#### **Requirements:**

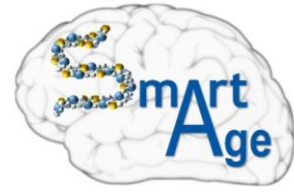
We expect a Master's degree (accrediting between 60 and 120 ECTS credits at the official university master's degree level or equivalent) in Health and/or Life Sciences (Systems Biology, Bioinformatics, Computational Neuroscience,). Furthermore, the applicant should be able to perform team-oriented as well as independent work. Desirable methodological skills include: excellent background in systems biology, bioinformatics, and metabolism, as well as experience in analysing large omics datasets data.



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This will include the use of a variety of R and Python statistical packages (machine learning algorithms, microbiome compositional data analysis, and pattern recognition methods (PCA, PLS, sPLS)) to extract relevant biological information from individual omics datasets (metabolomics, transcriptomics, and metagenomics) and their integration.

Very good language skills in English are required. Fluency in Spanish will be also considered.

Please note the eligibility criteria for researchers: Candidates must be in the first four years of his/her research career, not have a doctoral degree, and not have resided in Spain for more than 12 months in the 3 years immediately before the recruitment date.

#### **We offer:**

- Week: 40 hours per week from 8:00 until 17:00 with flexibility.
- Duration: 24 months
- Expected incorporation: December 2022- January 2023
- The annual gross remuneration inherent to the vacancy subject to this call, will be determined based on the experience provided and the skills of the candidates.
- The organization offers measures to promote the conciliation between work, family, personal life and gender equality: Flexibility of hours, Internal Telework Policy, Professional Development and Training, Equality Plan, etc.

#### **Selection process:**

Interested candidates please send a motivation letter, a CV including publications (if available), copies of university degrees and courses (including obtained grades), and the names and e-mail addresses of two scientists who can provide references (all summarized in one pdf) to [borsadetreball@idibgi.org](mailto:borsadetreball@idibgi.org)

Preferential treatment will be given to applications received before December 4<sup>th</sup>, 2022

#### **Terms:**

The recruitment will be carried out in accordance with the provisions of article 15 of Royal Legislative Decree 1/1995, of March 24, which approves the revised text of the Workers' Statute Law, in accordance with which has the art 2 of Royal Decree 2720/98, of December 18 (O. of January 8, 1999), Law 12/2001, of July 9 (O. of July 10) and concordant provisions.

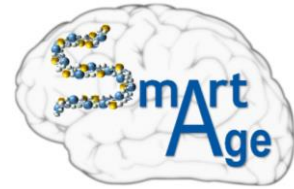
The principle of equal treatment for men and women, in accordance with article 14 of the Spanish Constitution, is taken into account, Directive 2006/54/EC of the European Parliament and the Council and the provisions of Organic Law 3/2007, of March 22, and Law 17/2015, of July 21, for the effective equality of men and women.



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The universal accessibility of people with disabilities is considered in accordance with Legislative RD 1/2013, of November 29, which approves the Revised Text of the General Law on the rights of people with disabilities and their inclusion social, making special reference to articles 35 and following where the guarantees of the right to work are regulated.

Salt, November 17<sup>th</sup>, 2022

Sra. Anna Ribas

Gerent