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HR EXCELLENCE IN RESEARCH



BRAIN RESEARCH CENTER

Postdoctoral researcher position

Multimodal analyses of biomarkers in Alzheimer's disease

Fluid Biomarkers and Translational Neurology Research group in the BarcelonaBeta Brain Research Center

About the employer

The BarcelonaBeta Brain Research Center (BBRC) is a research center dedicated to the prevention of Alzheimer's disease and the study of cognitive functions affected in healthy and pathological aging. It was created in 2012 by the Pasqual Maragall Foundation, with the support of the Pompeu Fabra University.

The mission of the BBRC is to provide innovative solutions to decipher and prevent biological changes and cognitive dysfunction associated with neurodegenerative diseases. Due to the aging of the world population, these diseases constitute a global challenge, since for example, dementia can reach epidemic levels in 2050, with a forecast of more than 150 million people affected, if is not found a way to prevent its appearance and development.

The BBRC received the HR Excellence in Research award (HRS4R) granted by the European Commission; a recognition that shows its adherence to the principles of the European Charter for Researchers and the Code of Conduct for the Recruitment of Research Staff. The center offers a **stimulating and favorable working environment** in accordance with the Charter and Code, which describe the rights and responsibilities of researchers and their employers, and contributes to the **creation of a transparent, attractive and open ecosystem** at international level.

Pasqual Maragall Foundation, Pompeu Fabra University and "la Caixa" Foundation are permanent members of the BBRC Board. The center is affiliated and located in the Ciutadella Campus of the Pompeu Fabra University of Barcelona, in a building inaugurated in 2016. The BBRC headquarters has excellent technical facilities, including a 3TMR scanner dedicated to research, and spaces for conducting Clinical Trials and EEG. State-of-the-art scientific facilities, effective management and continuous high-standard peer-review evaluation are the BBRC core proceedings to ensure achieving world-class research results. BBRC is also part of the Barcelona Biomedical Research Park (PRBB), a large research facility that hosts other seven different research institutions related to biomedical research, including the Center for Genomic Regulation (CRG), the Hospital del Mar Medical Research Institute (IMIM), the Department of Experimental and Health Sciences of the Pompeu Fabra University (CEXS-UPF), the Institute of Evolutionary Biology (IBE CSIC-UPF), the Barcelona Institute of Global Health (ISGlobal) and the Barcelona site of the European Molecular Biology Laboratory (EMBL), among others, in a multidisciplinary, collaborative and stimulating international environment in close contact with a clinical setting, thus conducive to translational research.

More information about BBRC: www.barcelonabeta.org



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About the project

In the **Fluid Biomarkers and Translational Neurology research group**, we conduct translational research to develop biomarkers, discover new therapeutic targets and provide a better understanding of the molecular mechanisms of Alzheimer's disease and other neurodegenerative diseases.

We are a multidisciplinary and diverse team of both clinicians and basic researchers and we take a "bedside to bench and back again" approach. We identify clinical problems and patients' needs at the bedside, we conduct basic science research at the bench to answer clinically relevant questions, and we bring the new generated knowledge back to the patient's bedside and the community.

We work with cohorts that cover the whole Alzheimer's *continuum*, from preclinical stages to dementia. Our group has recently published articles in high-impact journals (Nature Medicine, JAMA Neurology, Neurology) describing the plasma and CSF biomarkers changes in preclinical Alzheimer's. Moreover, we have been awarded with a prestigious **European Research Council (ERC) Starting Grant**.

About the job

At BBRC, we look for a **highly motivated Postdoctoral Researcher** to join our team and work in the analyses of the fluid (CSF and blood) biomarkers of the ALFA study and other cohorts at BBRC, and their associations with clinical, cognitive, neuroimaging and genetic data. Ideally, applicants would have a particular interest in **longitudinal data analyses** and in **sex differences**.

The Postdoc will work under the supervision of Dr Marc Suárez-Calvet, together with a very diverse and multidisciplinary team, including biochemists, neuropsychologists, medical doctors and bioinformatics.

The **Postdoctoral researcher** will analyse data from the following studies:

- The **ALFA (for ALzheimer's and FAmilies)** study includes 2,743 middle-aged (45 - 74 years old) cognitively unimpaired individuals enriched for family history of AD (47.4%) and *APOE-ε4* carriership (32.5%). All of them have clinical, cognitive and genetic characterization. Approximately 1,500 individuals have MRI. All participants have a blood sample and we are currently measuring the main blood biomarkers in our Lab.
- **ALFA+** (a subset of the ALFA cohort) includes ~420 cognitively unimpaired participants, which are followed-up every three years. Baseline visit (V1) took place in 2016-2019, the 1st follow-up visit (v2) started in 2019 and is currently finishing and V3 will start in May 2023. ALFA+ cohort study's participants are thoroughly characterised from a clinical, cognitive, genetic, lifestyle and biomarker point of view. Biomarker characterisation includes both fluid (both CSF and blood-based) and neuroimaging (MRI as well as PET [amyloid, FDG and tau]). A number of digital biomarker tools will also be incorporated concurrent with the study's V3.



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- **BETA-AARC** enrolls 200 participants aged 55 to 80 with subjective and/or mild objective decline in memory (SCD or MCI) or other cognitive abilities. Subjects are followed prospectively in a yearly basis with clinical and cognitive assessments, lifestyle habits, digital biomarker tools, diagnostic imaging and fluid biomarkers including CSF as well as novel blood-based biomarkers for AD.
- Moreover, BBRC closely collaborates with the Department of Neurology of Hospital del Mar in the study of the **BIODEGMAR** cohort. The BIODEGMAR cohort is an observational longitudinal study that enrolls patients with neurodegenerative diseases visiting the Cognitive Decline and Movement Disorders Unit of Hospital del Mar (Barcelona, Spain). All participants from BIODEGMAR donated a blood sample, underwent a detailed neurological and neuropsychological evaluation, a brain MRI, and a lumbar puncture.

Together these studies include the whole Alzheimer's *continuum* and offers a unique opportunity to investigate the biomarkers changes that occur throughout the disease. Importantly, all the data needed to start the project is available.

The Postdoc will also be given the opportunity to investigate research questions that drive their curiosity. They will be expected to become increasingly autonomous over the course of their time in the group and supervise junior team members. The Postdoc will receive the mentorship needed to pursue their own scientific career. Funding to attend international scientific meetings will be provided. The post will be funded for 3 years in the first instance. The start date for the position is Winter 2022-23, but negotiable +/- a few months.

Main Responsibilities

- Apply statistical methods for the analyses of multimodal (biochemical, cognitive, clinical, neuroimaging and genetic) cross-sectional and longitudinal data.
- Assist with the instructing and training of students, fellows, and other group members.
- Preparing and publishing high quality scholarly papers, contributing to the academic environment of the laboratory and institute. Participate in applications for competitive research funding support.
- Participate in regular internal meetings and internal as well as external collaborations.

Required qualifications, competences and technical skills

Must have:

- A PhD or MD degree (or will hold in the following months) in biology, medicine, psychology, neuropsychology, neurosciences, biostatistics, data science or a related field.
- Strong interest in ageing, brain health, Alzheimer's disease, dementia, and neurodegeneration.
- Strong statistics and data analyses skills. Good knowledge of statistical programming in R.
- A solid publication record with first-author research publication(s) in peer-reviewed international journals
- Excellent communication and writing skills in English.
- Able to work both independently and collaboratively.
- A high level of motivation, drive, initiative and enthusiasm.



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Highly desirable:

- Prior research experience in Alzheimer's disease and neurodegeneration.
- Experience using ADNI data.
- Prior experience in analyzing fluid and neuroimaging biomarker data.
- Experience in supervising undergraduate students, leadership roles.

We offer:

- Starting date: Winter 2022-23 (starting date can be negotiated)
- Full-time position, 30 hours weekly
- The position is initially scheduled for 3 years (and may be extended).
- Salary will depend on experience and will be in accordance to BBRC's salary scales
- The Foundation offers an extended vacation period and the possibility of benefit from flexible working hours.
- We offer a unique research opportunity in a highly innovative project in a multidisciplinary institution.
- A brand-new *state-of-the-art* lab located at BBRC.

We offer and promote a diverse and inclusive environment and welcomes applicants regardless of age, disability, gender, nationality, ethnicity, religion, sexual orientation or gender identity.

In the foundation we also care about developing your professional career so you will participate in internal and specific training for your job, promotion opportunities and development of your professional career.

Selection Process

Pre-selection: The pre-selection process will be based on qualifications, expertise and motivation reflected on the candidate cover letter and CV. It will be merit-based.

Interview: Preselected candidates will be interviewed by Dr Suárez-Calvet and other team members as well as staff from the Human Resources Department.

Offer Letter: Once the successful candidate is identified the Human Resources department will send a Job Offer, specifying the start day, salary, working conditions, among other important details.

Application process

To apply, please submit a single PDF file containing the following:

- 1) Cover letter addressed to Dr Marc Suárez-Calvet describing research interests and relevant background
- 2) CV
- 3) The names of up to three individuals who could provide reference letters. All files or inquiries should be submitted electronically to: talent@barcelonabeta.org

Subject: PostDoc Multimodal Biomarkers



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We inform you that your personal data will be part of a file which Pasqual Maragall Foundation and Barcelonabeta Brain Research Center is responsible for, in order to manage the job offer you have requested. Once the process is complete, the data processed will be erased.

You have the right to exercise the rights of access, rectification, cancellation and opposition recognized in Regulation (EU) 2016/679 (General Data Protection Regulation), to be addressed to the Pasqual Maragall Foundation and Barcelonabeta Brain Research Center: Wellington Street 30, 08005 Barcelona.