

Postdoctoral position in sleep and Alzheimer's disease research at the Barcelonaβeta Brain Research Center

About the employer

The Barcelonaβeta Brain Research Center (BBRC) is a research center, constituted by the Pasqual Maragall Foundation. The goal of BBRC is to develop the understanding of age-related cognitive disability in order to provide practical solutions to the global challenges posed by the world's aging population. This goal will be achieved by championing primary and secondary prevention programs for Alzheimer's disease and other related neurodegenerative disorders, the study and promotion of healthy aging, and the research of mechanisms affected by healthy or pathological aging. The vision of BBRC is to provide the society with distinct and innovative solutions for age-related cognitive disability in order to attain a multidisciplinary comprehension of the aging process and the pathophysiology of neurodegeneration. At present BBRC deploys its research mission through the Alzheimer's Prevention Program.

Pasqual Maragall Foundation, Pompeu Fabra University and "la Caixa" are permanent members of the BBRC Board. International competitive recruitment, 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 affiliated and located in the Campus Ciutadella of the Barcelona Pompeu Fabra University, the building contains excellent technical facilities, including a research-dedicated 3T MR scanner and Clinical Trials facilities.

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.

For more information see: www.barcelonabeta.org and www.fpmaragall.org

About the project

ALFA (for ALzheimer and FAMilies) is a prospective study that follow-ups a cohort of cognitively unimpaired participants, most of them first-degree descendants of Alzheimer's disease (AD) patients.

A subset of participants of the ALFA parent cohort (N≈420) are currently enrolled in the **ALFA+ study**: a nested long-term longitudinal study aiming to understand the early pathophysiological changes of AD during its preclinical stage. These participants have already undergone a baseline visit (1st follow-up visit is ongoing) including the acquisition of cognitive, neuroimaging and fluid AD biomarkers, and are being followed-up every three years.

The **ALFAsleep study** aims to characterize 200 cognitively healthy adults from the ALFA+ study with actigraphy and CSF orexin measurements, and a subsample of 90 participants with polysomnography (PSG). Our main goals are to identify potential sleep-based AD biomarkers, as well as characterizing mechanisms linking sleep disruption and AD that may be amendable to potential therapeutic interventions. Resulting evidence from this project could be used to design an intervention study targeting sleep quality, with the ultimate goal of preventing or slowing cognitive decline.

About the job

At BBRC we look for a **highly motivated Postdoctoral Researcher** to join our team and work in the **ALFAsleep** project. The Postdoc will work in a multidisciplinary team with clinicians, as well as experts in neuropsychology, neuroimaging, genetics and fluid biomarkers, under the supervision of the principal investigator of the ALFA Sleep project, Dr. Oriol Grau-Rivera.

The Postdoctoral Researcher's **main duty** will be to analyze quantitative EEG data from the ALFAsleep study. They will perform power spectral analyses and other quantitative analyses of EEG data from ALFA Sleep participants who undergo a PSG at the **Hospital Cínic de Barcelona Sleep Unit**. The Postdoctoral Researcher will take the lead in this part of the ALFAsleep project and will be in charge of the experimental design of potential analyses involving the association between EEG quantitative data and cognitive, neuroimaging and fluid biomarkers data, as well as the write-up and dissemination (publications, talks and posters) of the study findings. Other responsibilities include processing and analyzing actigraphy-derived circadian data, also acquired within the project, to identify potential changes in sleep-wake cycle in preclinical AD.

Moreover, the Postdoctoral Researcher will be encouraged to join currently on-going projects of our team, focused on associations between subjective and objective (actigraphy- and PSG-derived) sleep measurements and different outcomes of interest involving cognitive, genetic, neuroimaging and fluid biomarkers data from the ALFA Study, other BBRC studies and/or external open-access data-bases.

The appointed researcher will also be given the opportunity to pursue research questions that drive their curiosity. They will be expected to become increasingly autonomous over the course of their time at BBRC and supervise junior team members. The Postdoctoral Researcher will receive the mentorship needed to pursue her/his own scientific career. Funding to attend international scientific meetings will be provided.

Responsibilities

The responsibilities for this position include:

- Lead analyses involving PSG-derived EEG quantitative data from the ALFAsleep study, including experimental design, data processing and statistical analyses.
- Extract and analyze circadian data from the ALFAsleep study actigraphic records.
- Participate in other sleep-related analyses using data from the ALFAsleep study, other BBRC studies, and/or external open-access data-bases.
- Assist with the instructing and training of students and fellows as required.
- Preparing and publishing high quality scholarly papers, contributing to the academic

environment of the institute.

- Participate in applications for competitive research funding support.
- Participate in regular internal meetings as well as external collaborations.

Required qualifications, competences and technical skills

Must have:

- A PhD degree (or will hold in January 2022) with background in neuroscience, psychology, engineering, computer/data science, physics or a related field (clinicians with the technical skills further specified are also encouraged to apply).
- Previous experience and technical expertise in quantitative EEG data analysis, preferentially sleep EEG.
- Strong statistics, data analyses and programming (R, Python, Matlab) skills.
- A solid publication record with first-author research publication(s) in peer-reviewed international journals.
- Excellent communication and writing skills in English.
- Ability to work both independently and collaboratively.
- A high level of motivation, drive, initiative and enthusiasm.

Desirable but not required/ Nice to have:

- Experience in sleep, Alzheimer's disease or other neurodegenerative diseases research.
- Experience in neuroimaging analysis.
- Experience in supervising undergraduate students, leadership roles.

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 Grau-Rivera and other team members an internal scientific committee.
- **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.

Benefits

We offer a unique research opportunity in a highly innovative project in a multidisciplinary institution in collaboration with industry partners.

- Starting date: January 2022 (+/- a few months may be negotiated)
- The position is initially scheduled for 2 years
- Salary will depend on experience and will be in accordance to BBRC's salary scales

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.

More about the employer

For BBRC to improve our understanding of age-related cognitive disability and for providing practical solutions to the global challenges posed by the world's aging population, we are championing primary and secondary prevention programs for Alzheimer's disease and other related neurodegenerative disorders, the study and promotion of healthy aging, and the research of mechanisms affected by healthy or pathological aging. The vision of BBRC is to provide the society with distinct and innovative solutions for age-related cognitive disability in order to attain a multidisciplinary comprehension of the aging process and the pathophysiology of neurodegeneration. At present, BBRC deploys its research mission through the Alzheimer's Prevention Program.

In 2019, our institution was awarded with an **Alzheimer's Association Research Fellowship grant** and a **Health Research Project from Instituto de Salud Carlos III grant** to conduct the **ALFAsleep study**: an observational study aimed to characterize the association between sleep quality (using both qualitative and quantitative measures) and AD biomarkers in cognitively unimpaired adults (<https://www.barcelonabeta.org/en/alfa-sleep>). The rationale for this project stems from growing evidence pointing to sleep as both an attractive target for the development of dementia prevention interventions and non-invasive AD biomarkers.

Application process:

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

- 1) Cover letter addressed to Dr Oriol Grau-Rivera 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: rh@barcelonabeta.org

Subject: Postdoctoral Researcher ALFAsleep study

Deadline: December 15th 2021

We inform you that your personal data will be part of a file which Pasqual Maragall Foundation and Barcelonaβeta 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 Barcelonaβeta Brain Research Center: Wellington Street 30, 08005 Barcelona.