**Mossakowski Medical Research Institute, Polish Academy of Sciences, Warsaw**

is seeking a candidate for a position of **Post-doctoral Research Associate**

Recruitment is related to the international project no. 2021/03/Y/NZ5/00112, entitled “Pre-symptomatic synaptic disorders in Alzheimer's disease”, as part of the **JPco-fuND2 Call 2021 program** financed by the EU Joint Program - Neurodegenerative Disease Research (EU JPND), through the National Science Center, implemented at the **Department of Department of Neurodegenerative Disorders** **MMRI PAS.**

* Scientific discipline: medical sciences
* Announcement date: 11.03.2022
* Application deadline: 22.04.2022
* Link to the website: [www.imdik.pan.pl](http://www.imdik.pan.pl/)
* Keywords: post-doc, synapse, presynaptic proteins, human neurons, genetic rearrangements (CRISPR/Cas9), biomarkers, brain organoids derived from induced pluripotent stem cells (iPSCs), Alzheimer's disease.

**The area of the research in which the candidate would participate:**

Alzheimer’s disease (AD) is the most common cause of dementia, accounting for an estimated 60% to 80% of cases. AD is thought to begin 20 years or more before symptoms arise. A major endeavour in the field is to characterize these subthreshold changes in the brain that are unnoticeable to the person affected. A better definition of the timing and magnitude of pathophysiological changes associated with AD is critical for the development of diagnostic and predictive tests and for the design of prevention trials. It is widely accepted that synaptic alteration/loss is the strongest predictor of cognitive decline in AD. However, this has mainly been based on histopathological studies in post-mortem brains which do not capture dynamic events that precede the observed synapse loss and in particular fall short in providing information on the impaired physiological function of synapses. Compelling neuropathological and genetic evidence have based the amyloid cascade hypothesis which postulates that the neurodegeneration in AD is caused by abnormal accumulation of amyloid beta (Aβ) plaques. However, all clinical trials based on this hypothesis have failed to halt or even delay AD progression and today no curative therapy is available. There is thus a strong need for additional hypotheses to explain AD pathology and to design new therapeutic interventions. Project goal In the PreSSAD project, we aim at addressing presymptomatic synaptic deficits in the context of the human AD pathology, by combining the expertise of five groups spanning from the identification of CSF biomarkers in preclinical AD cohorts to human synaptic biology. A major originality of the proposal is in the use of innovative human biological samples: 1) using iPSCs-derived human neurons with altered expression of presynaptic proteins (e.g. called SNARE proteins) in mouse neocortex, 2) human iPSCs-derived cerebral organoids and 3) organotypic cortical cultures obtained from human surgical resections. All models of human neurons and circuits will be genetically targeted to assess the early physiopathological stages of synapse dysfunction and loss, in combination with a proteomic analysis of synaptic biomarkers. This project will help identifying new pre-diagnostic markers linked to altered presynaptic function in presymptomatic forms of AD. Expected Results The PreSSAD collaboration targets early physiopathological mechanisms in the progression of AD from these subthreshold changes in the brain that are unnoticeable to the person affected to neurodegeneration and severe cognitive deficits. Through the combined study of biological samples of presymptomatic AD patients to the use of innovative experimental models of human neurons, the PreSSAD project will provide a much improved definition of the timing and magnitude of pathophysiological changes associated with AD with a focus on presynaptic biological markers and mechanisms. We anticipate that our combined data will be critical for the development of diagnostic and predictive tests and for the design of prevention trials. In addition, the innovative methodological development directly targeting human neurons and circuits has the great potential to deliver new cell models for future therapy design, to treat AD, as well as potentially other neurodegenerative diseases.

**Description of duties:**

* planning and implementation of research tasks in accordance with the schedule of the project,
* in detail: study of presynaptic deficiency in cultures of neurons derived from iPSC and in cerebral organoids derived from patients with Alzheimer’s disease carrying PSEN1 or APP mutations (optionally corrected with CRISPR / CAS9), or sporadic patients,
* designing and conducting experiments with the use of biochemistry, molecular biology, genetic engineering and advanced cell culture, and microscopic imaging methods,
* analysis, interpretation and integration of project data,
* presenting the results at the group meetings, international Consortium meetings, external seminars and scientific conferences,
* preparation of scientific publications,
* introducing new research technologies and cooperation with a foreign partner involved in the current research project.

**Necessary Requirements:**

* PhD degree in biological sciences, neurosciences, pharmacological sciences, medical sciences or relevant, obtained within a period not exceeding 7 years before January 1, 2022\*
* documented scientific achievements including publications in journals from JCR list,
* participation in scientific conferences and internships,
* experience in laboratory techniques in biochemistry, molecular biology (e.g. DNA, RNA, isolation; Western blot; qPCR; genetic engineering – overexpression, gene silencing, CRISPR/Cas9; immunohistochemistry; spectrophotometric/fluorometric techniques),
* experience in planning and conducting *in vitro* cell cultures (eg. primary cell lines, neural cell lines, reprogramming and culturing of induced pluripotent stem cells (iPS) – experience in cerebral organoids would be an asset),
* working knowledge of statistical software,
* ability to work in a team and independently,
* excellent knowledge of English, allowing effective communication and preparation of scientific manuscripts,
* indication of Mossakowski Medical Research Institute Polish Academy of Sciences as a first place of employment.

*\* this period may be extended by the duration of long-term sickness breaks (maximum 90 days) and / or by 18 months for women in connection with maternity / parental leave for 1 child and the number of months of adequate leave for men.*

**Additional Requirements (Assets):**

* experience in work using a model based on (human) iPSCs-cerebral organoid or iPSCs-neuonal progenitors-neurons for neurodegenerative disorders or other,
* experience in electrophysiological recording on neurons,
* experience in substantive care for students and junior scientists.

**We offer:**

* fixed term, full-time employment contract,
* contract for 36 month with possibility of extension,
* gross salary: around 7800 PLN gross / month,
* the opportunity to work in a pleased atmosphere, in a dynamic, developmental research group,
* scientific collaboration with a research partners from France, Sweden, Hungary, and Netherlands and with other Polish and foreign research institutions,
* opportunity to participate and present obtained results at international conferences.

**How to Apply:**

Please send your documents to mwezyk@imdik.pan.pl indicating the reference number ZCHZ-111-1/22 in your correspondence.

**Required documents:**

* motivation letter with description of candidate’s scientific interests, scientific work, scientific independency, participation in research grants,
* CV listing candidate’s education, professional experience, scientific achievements, authored or co-authored publications and conference abstracts, internships and training,
* copy of the PhD (or equivalent) diploma,
* reference letters.

For more information about the project, please contact dr Michalina Wezyk (mwezyk@imdik.pan.pl)

Expected date of the interview: 26-28.04.2022

Expected decision date: 4.05.2022

Expected job starting date: 9.05.2022

**INFORMATION CLAUSE ON PERSONAL DATA PROCESSING**

Pursuant to Article 13 of Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation), Mossakowski Medical Research Institute, Polish Academy of Sciences hereby informs:

* The Controller of your personal data is the Mossakowski Medical Research Institute, Polish Academy of Sciences, A. Pawińskiego 5 St., 02-106 Warsaw, Poland (“MMRI PAS”)
* The Controller has designated the Data Protection Officer who can be contacted via the following e-mail address: daneosobowe@imdik.pan.pl or the post address of Controller.
* Your personal data will be processed for the purpose of carrying out a recruitment process and selecting an employee and concluding a contract for employment at the MMRI PAS.
* MMRI PAS processes Your personal data in relation to a legal obligation (the Article 6.1.c of the GDPR) pursuant to Article 221 § 1 of the Act of 26 June 1974 Labour Code or Your consent understood by sending them to MMRI PAS (the Article 6.1.a of the GDPR) for data not listed on Labour Code, and their application does not affect the possibility of participating in the recruitment / competition. If you do not want us to process additional data, please do not include it in the documents.
* By submitting your candidacy, you consent to the fact that if you win the recruitment / competition, your name and surname together with information about the recommendation for employment will be posted on the MMRI PAS website.
* Your application with personal data will be processed for period necessary for realization of purposes indicated in p. 3 - for a maximum of one month and then your application with personal data will be deleted.
* With regard to processing of Your personal data for purposes mentioned in p. 3, Your personal data might by shared with following recipients or categories of recipients: entities supporting MMRI PAS in its business processes, in particular administrative and economic service and authorized entities.
* Within the limits and on the terms set out in the GDPR, you have the right to request access to your personal data, rectification, deletion or limitation of processing, as well as the right to submit a declaration of withdrawal of consent to the processing of personal data at any time. Withdrawal of consent does not affect the lawfulness of the processing which was carried out on the basis of consent before its withdrawal, as well as the processing of data processed by the administrator on the basis of other provisions.
* You have the right to lodge a complaint to the President of the Office for the Protection of Personal Data (ul. Stawki 2, 00 193 Warszawa).