**PhD student in the Department of Stem Cell Bioengineering**

**Workplace:** Warsaw

**Announcement date:** 22.01.2025

**Application deadline:** 1.03.2025

**Application submission form:** email

**Date of taking the position:** 01.04.2025 or later\*

*\* we allow cooperation with a master's student as part of the internship and her/his application for a PhD after obtaining a master's degree in 2025*

**Number of positions:** 2

**Link to the Department's website:** <https://imdik.pan.pl/en/departments/1100-department-of-stem-cell-bioengineering> **and Dr hab. Magdalena Czeredys group:** [Magdalena\_Czeredys\_Huntingtons\_disease\_group.doc](https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.imdik.pan.pl%2Fimages%2FZak%25C5%2582ady%2FZak%25C5%2582ad_Bioin%25C5%25BCynierii_Kom%25C3%25B3rek_Macierzystych%2FMagdalena_Czeredys_Huntingtons_disease_group_ang.doc&wdOrigin=BROWSELINK)

**Project description:**

The project, titled “Human iPSC-derived cortico-striatal assembloids as a new model to study neurodevelopmental pathologies induced by mutant Huntingtin” will be carried out under the supervision of dr hab. Magdalena Czeredys at the Department of Stem Cell Bioengineering at the Mossakowski Medical Research Institute Polish Academy of Sciences. Huntington's disease (HD) is an incurable, inherited neurodegenerative disease. The disease is characterized by an abnormal number of CAG repeats encoding glutamine in the *HTT* gene, leading to the aggregation of mutant huntingtin (mHTT) protein toxic to MSNs neurons in the striatum, the brain structure responsible for motor function, which firstly neurodegenerate in HD. There are two forms of HD with different disease onset: the adult form, where the CAG repeat is above 40 repetitions and symptoms appear between the ages of 30 and 50, and the juvenile form characterized by a CAG above 60 and symptoms appear below the age of 21 and even in early childhood. Huntingtin is essential for brain development, and its absence results in the death of mice at the embryonic stage, suggesting that HD may have its origin during brain development. The pathogenesis of the disease is poorly understood, and no effective causal treatments are currently available. The project hypothesizes that early brain neurodevelopmental abnormalities caused by different lengths of CAG repeats in the *HTT* gene occurring in the juvenile and adult forms of Huntington's disease initiate HD, which lead to MSNs death. In order to understand whether HD pathology begins during brain development, organoids and assembloids modeling HD will be cultured *in vitro*. The effect of mutations in the *HTT* gene will be investigated on their neurodevelopmental pathology, dysregulation of calcium signaling and neuronal dysfunction. The project will be carried out using 3D models differentiated *in vitro* from hiPSCs from HD patients and controls with research approaches including techniques such as organoid and assembloids life imaging, calcium imaging, gene editing, scRNAseq, as well as biochemistry and molecular biology techniques.

**Research Tasks:**

- culture of hiPSC lines and differentiated from them neuroprogenitors, neurons and brain organoids

- establishment and maintenance of organoid cultures modeling Huntington's disease

- obtaining assembloids modeling Huntington's disease

- characterization of organoids and assembloids obtained from hiPSCs from patients with Huntington's disease compared to controls

- obtaining and characterization of organoids enriched in microglia

- study of neurodevelopmental and neurodegenerative disturbances in organoids and assembloids from Huntington's disease patients using molecular biology, immunofluorescence, and live-cell imaging

- additional responsibilities will include: setting up new methods, planning and conducting experiments, collaborating with team members, maintaining laboratory records, analyzing data, being up-to-date with the literature in the field, presenting project results at seminars and conferences, attending scientific courses and internships, and participating in writing scientific papers and reports.

**Requirements:**

- master's degree in biology, biochemistry or a related field

- experience in laboratory work and knowledge of basic techniques in biochemistry, molecular biology, cell biology and/or microscopic imaging

- experience in culturing cells

- previous experience in culturing hiPSCs, differentiating hiPSCs into neurons or organoids, or experience in genetic modification of cells using CRISPR Cas9 or other genome editing methods, as well as experience in live imaging *in vitro* or *in vivo* models will be considered a significant advantage

- experience with scRNAseq and bioinformatics is highly welcomed

- motivation, passion and enthusiastic attitude towards experimental work

- ability to work independently and in a team

- organizational and analytical skills

- fluency in spoken and written English, ability to use English in scientific work

- interest in neurodegenerative and neurodevelopmental diseases

- willingness to learn and take on new challenges

- scientific publication will be an advantage but is not essential

- active participation in scientific conferences

**We offer:**

- a friendly, inspiring and supportive working environment in a recently established, young and dynamic research group interested in Huntington’s disease in the Department of Stem Cell Bioengineering

- novel research challenges, unique opportunities to develop research skills

- scientific cooperation with foreign research centers

- opportunity to participate and present the results obtained within the project at international conferences

- freedom and independence in carrying out assigned tasks

- mentoring and support in career development

- opportunity to apply for grants for doctoral students

- co-authorship in scientific publications

- benefit package, e.g. Multisport Plus card, opportunity to take advantage of group insurance on preferential terms

The person qualified to carry out the project is admitted to the Doctoral School of Translational Medicine and obtains the rights of a doctoral student, as well as a doctoral scholarship from the NCN Opus grant no. 2023/49/B/NZ3/04131 for the entire duration of the project (48 months).

The CV, cover letter and at least one recommendation letter from a current or former supervisor/mentor should be sent to the email address: mczeredys@imdik.pan.pl by March 1, 2025. The subject line of the email should include: “PhD position.” Please note that only selected candidates will be invited for interviews. Applications submitted after the deadline will not be considered.

Based on the interview with the candidate, the project supervisor approves the application and consents to the candidate conducting research under their guidance. This approval enables the candidate to apply for admission to the Doctoral School of Translational Medicine (<https://www.cmkp.edu.pl/ksztalcenie/wspolna-szkola-doktorska>). Candidates must meet the requirements provided in the Recruitment Requirements described at <https://www.cmkp.edu.pl/ksztalcenie/wspolna-szkola-doktorska/rekrutacja> and successfully pass both stages of recruitment.

**INFORMATION CLAUSE ON PERSONAL DATA PROCESSING**

Pursuant to Article 13 of the 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 (Stawki 2 St., 00-193 Warszawa).