



HR EXCELLENCE IN RESEARCH

The new **Laboratory of Cholinergic Signaling** at the **Institute of Physiology, Czech Academy of Sciences** (CAS), is seeking suitable candidates for the position of:

Ph.D. STUDENT

Several part-time positions are available before the start of the academic year. Thus, motivated applicants can get hands-on experience in the lab before committing to their Ph.D. studies starting in 2025/26. However, applicants who are not able to initiate their work in the lab *before* the start of the academic year 2025/26 are also *encouraged to apply*.

Summary of the project:

Nicotinic acetylcholine receptors in prefrontal neuronal populations and their role in the control of ASD-like behavioral symptoms

Nicotinic acetylcholine receptors (nAChRs) are implicated in autism spectrum disorder (ASD) and other neuropsychiatric disorders, but it is challenging to use them as an effective therapeutic target. One of the reasons is their widespread distribution in the brain and thus the difficulty in controlling them selectively in circuits and neurons where needed. The present project aims to determine whether the selective modulation of nAChRs in specific neuronal types is more effective in the control of ASD-like behavioral symptoms in mice compared to non-selective nicotinic modulation. To this aim, we will analyze the expression of the most prevalent nAChR subtypes in individual neuronal populations in the mouse prefrontal cortex, and we will manipulate the expression of the receptors in specific neurons by shRNA and CRISPR. Finally, the effect of these manipulations on ASD-like symptoms will be examined by behavioral testing in automated touchscreen-equipped operant boxes, and the effect on neuronal activity/plasticity will be assessed predominantly by imaging techniques.

Candidate's profile:

We are looking for a self-motivated candidate with a master's degree in molecular biology, biochemistry, physiology, medicine or related fields. Experience with cloning, viral vectors, calcium imaging and/or handling mice is advantageous. The successful candidate may spend a certain period of time in his/her PhD studies in a collaborating laboratory(ies). Therefore, the willingness to travel and fluency in English is essential.

Start date: Immediately or by agreement

Contact person: Kateřina Rozsypalová

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Web page: <https://fgu.cas.cz/en/research-and-laboratories/research-departments/laboratory-of-cholinergic-signaling/>