



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:

Neuronal-type-specific targeting of nAChRs using a pair of nitroreductase and masked nicotinic ligands

Nicotinic acetylcholine receptors (nAChRs) are implicated in autism spectrum disorder (ASD) and other neuropsychiatric disorders, but it is challenging to use them as a 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 develop a new approach for the neuronal-type-specific targeting of nAChRs using a pair of an engineered bacterial enzyme nitroreductase and a nicotinic ligand masked with a nitroaryl group. We collaborate with a lab of organic synthesis on the preparation of the masked ligands. The PhD student will test the nicotinic activity of the masked compounds *in vitro* and their distribution by fluorescence *in vitro* and *in vivo*. The selective unmasking of the compounds and their ability to alter nicotinic expression will be ultimately tested *in vivo*.

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 organic synthesis, neuronal cultures, viral vectors and/or handling mice is advantageous. The successful candidate may spend a significant time of 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

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