

**Program:** Biomedicínské vědy

**Specializace:** Morfologie buněk a tkání

**Školitel:** MUDr. Marek Joukal, Ph.D.

**Topic:** Reaction of the blood-cerebrospinal fluid barrier to nerve injury

**Annotation:** This topic has high clinical importance for understanding of pharmacokinetic changes after nerve injury. Our published results revealed increased permeability of the choroid plexus forming the blood-cerebrospinal fluid (B-CSF) barrier for macrophages after peripheral nerve injury.

Therefore, we assume that Wallerian degeneration products could affect CNS structures via altered B-CSF barrier as well as the drugs could easily penetrate to the CNS after nerve injury. Moreover, choroid plexus cells might react to peripheral nerve injury by production of proinflammatory cytokines and chemokines. We plan to use traumatic nerve injury (chronic constriction injury and nerve transection) and chemotherapy-induced nerve injury to assess cellular and molecular changes in the choroid plexus. The aim of the dissertation thesis is to explain the changes of the B-CSF barrier using in vivo and in vitro models and molecular biology methods. This topic is a part of submitted grant proposal with payed position for Ph.D. student.

**Requirements:**

- Graduate student of the Faculty of Science (Molecular Biology, Biochemistry or related programs)
- hands-on experiences with WB, PCR, ELISA and cell cultures, IHC
- active knowledge of English (min. B2)

**Information about supervisor:**

**Joukal, Marek, MUDr., Ph.D**

- Publication activity: 22 in WoS, Number of citations: Scopus=74, WOS=63, H-index=5
- Successful researcher of the Masaryk University projects (e.g. MUNI/A/0908/2017)
- Collaboration with institutes and academic stages: University of Minnesota, Department of Neuroscience, supervisor prof. Christopher Honda, Proshok-Fulbright scholarship, 8/2017-3/2018 - USA, Twin Cities; Collaboration with the University of Girona (dr. Pere Boadas) – possible stage for the student.