

Affiliation: Masaryk University, Faculty of Medicine
Study program: PhD program Biomedical Sciences
Specialization: Biochemistry and Molecular Biology
Workplace: Cellular and Molecular Immunoregulation group, Center of Translation
Medicine, ICRC
Mode: Full-time
Supervisor: **Mgr. Marcela Hortová Kohoutková, Ph.D.**

Title: Dynamic changes of innate immunity during sepsis and predictions of severe adverse effects

Brief annotation (max 200 words): Sepsis and septic shock frequently severely remodel the immune system its functionality leading to increased susceptibility to infections. Dynamic changes in immune phenotype induced by septic insult generate important candidates of new biomarkers predicting severeness of the syndrome and eventually predicting the survivorship. Moreover, excessive inflammation leads to development of immunoparalysis, which can persist many months after sepsis resolution. The project aims to identify patients in the risk of severe immunoparalysis and other understudied adverse effects. Proposed analysis of the sepsis dynamics using deep flow cytometry immunophenotyping combined with analysis of humoral markers of inflammation and tissue damage or various metabolites. This will be complemented by experimental research using different tissue models, including organoids where the PhD candidate will search for molecular basis of long-term adverse effect of inflammatory insult. This will include work with mucosal organoids, blood cells from healthy donors and analysis of various signalling pathways.

Funding: NPO_EXCELLES

Requirements: We seek for motivated candidate keen to develop translational research of immunology of acute and chronic inflammation. The candidate will learn large spectra of methodology including processing of blood samples from the patients and controls, flow cytometry phenotypization, detection of proteins in plasma samples, RNA expression, advanced cell culture protocols, analysis of functional and molecular markers pathogen recognition.

Masaryk University, Faculty of Medicine

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