

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 Translational Medicine, ICRC-FNUSA
Mode: Full-time
Supervisor: Mgr. Jan Frič, Ph.D
Consultant: Mgr. Marcela Hortová Kohoutková, Ph.D.
Lab's website: [optional]

Title: Role of soluble cytokine receptors in control of inflammation

Brief annotation (max 200 words):

Sepsis and septic shock severely remodel the immune system, leaving the patients vulnerable to recurrent infection and overall decline of health related quality of life. Decline of immune functions, which is central for many sepsis long-term consequences, can persist many months and years after sepsis resolution.

The project aims to reveal sepsis-induced remodelling of bone marrow niche and its effect on the hematopoietic stem and progenitor cells (HSPC) and their innate cells progeny. Specifically, the project will address the impact of inflammatory cytokines stimulation and regulation role of soluble cytokine receptors and how these molecules alter hematopoiesis and differentiation of innate immune cells. This translational project will combine the use of iPSCs derived hematopoiesis, model of bone marrow niche and analysis of the sepsis dynamics in patients using deep flow cytometry immunophenotyping combined with analysis of humoral markers of inflammation and tissue damage. Project aims to dissect the molecular mechanism behind the development of sepsis related immunoparalysis responsible for increased susceptibility to infections as well as the development of long-term consequences of sepsis.

Funding: Horizon Europe - BEATsep

Requirements: We seek highly 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 containing establishing 3D bone marrow model, analysis of functional and molecular markers pathogen recognition.

Masaryk University, Faculty of Medicine

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