

**Affiliation:** Masaryk University, Faculty of Medicine  
**Study program:** PhD program Biomedical Sciences  
**Specialization:** Biochemistry and Molecular Biology  
**Workplace:** ICRC FNUSA  
**Mode:** Full-time

**Supervisor:** **Mgr. Jan Frič, Ph.D.**  
**Supervisor consultant:** **Mgr. Petra Lázníčková, Ph.D.**

**Title: Chronic inflammation as a driver of immune system senescence**

**Brief annotation:** Human immune system is affected by ageing at multiple levels, these changes are interconnected with the development of chronic low-grade inflammation characterized by an increased level of systemic inflammatory markers. This phenomenon, termed inflammaging, has been suggested as a potential driver of neurodegeneration, cognitive decline or worsening of cardiovascular disorders. Possible correlation among chronic-low grade inflammation, immune system changes and senescence including observation in cohorts of patients suffering from cardiovascular or neurological disorders have already been suggested. The Ph.D. project aims to perform a detailed immune phenotype evaluation and screening of ageing-associated markers at a cellular and humoral level in cohorts of chronically ill patients. These results obtained will serve to identify potential diagnostic and stratification markers or profiles associated with chronic disorders. In combination with clinical screening methods, this approach will allow us to design a tool for patient risk stratification in a high-throughput manner and enable a thorough screening and pro-active early clinical management of those patients at high risk of neurodegeneration. Along with the clinical data analysis, the candidate will develop experimental research addressing the interaction of inflammatory signalling and senescence using cutting edge model of mucosal tissue organoids and other methods of cellular and molecular immunology.

**Funding: NPO\_EXCELLES**

**Requirements:** We seek for motivated candidate keen to develop translational research of immuno-senescence using patient cohort samples in combination with experimental approach in laboratory. 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 of senescence.

**Masaryk University, Faculty of Medicine**

Kamenice 753/5, 625 00 Brno, Czech Republic  
T: +420 549 49 2910, E: [info@med.muni.cz](mailto:info@med.muni.cz), [www.med.muni.cz](http://www.med.muni.cz)  
Bank account: KB Brno, Ref. No.: 85636621/0100, ID: 00216224, Tax ID: CZ00216224  
Please quote the Reference Number in your reply.