

Doctoral study program: Neurosciences (specialization Neuroscience)

Form: Doctoral - present

Department: 1st Department of Neurology, St. Anne's Univ. Hospital and Faculty of Medicine, Masaryk University, Brno, Czech Republic

Supervisor: Klára Marečková, Ph.D., **Consultant:** Radek Mareček, Ph.D.

Ph.D. position: Maternal health during pregnancy and child's neurodevelopment: Focus on accelerated aging as the mediating factor

Annotation: This project aims to identify the mechanisms underlying the relationships between maternal health during pregnancy and brain and behavior in the child. We will test the mediatory role of accelerated aging in these relationships and demonstrate what environmental factors might magnify or protect against the negative impact of maternal illness during pregnancy. Using a methodologically unique design of a longitudinal prenatal birth cohort study starting preconception, rich biological samples from the mother and her newborn, neuroimaging, as well as information on mental health and cognition in childhood, this highly interdisciplinary project will bring novel insight into prenatal programming and identify early biomarkers and environmental moderators, which would allow early diagnostics and personalized medicine.

Funding of the research: GAČR Junior Star (entitled *Prenatal programming of child's brain and behavior: Novel insights into the mechanisms [ChiBra]*)

Information on funding PGS positions: 0.5 FTE on the GAČR Junior Star grant. In addition, the PGS position will benefit from the standard PhD stipend of Masaryk University.

Requirements for the successful PhD student:

1. Publish 2 first author and 1 co-author paper in a Q1 or Q2 journal by the end of the PhD studies
2. Study visit abroad (for example at Dr. Colman's team at University of Ottawa, Dr. Chakravarty's team at McGill University, Dr. Paus' team at University of Montreal, Dr. El Marroun's team at Erasmus University Rotterdam, or Dr. Talati's team at Columbia University)
3. Help with teaching within the new master's program in Neuroscience at LF MU – Dr. Mareckova's course *Selected Topics in Neuroscience*
4. English reading and writing skills at B2 level (upper intermediate) or higher
5. Very good communication skills in Czech, positive relationship with children (participants of the study will be 6-year-old children and their parents)
6. Reliability and good work ethic

Information about the supervisor:

Senior researcher at Faculty of Medicine, Masaryk University and CEITEC, Masaryk University

Researcher ID: H-5332-2016; H index in WOS: 11

Publications: 17 First author, 8 Last author, 5 Co-author

(9 with and 21 without PhD supervisor including PNAS, Neuropsychopharmacology, Biological Psychiatry CNI, Translational Psychiatry, Psychological Medicine, or JAMA Network Open)

Grants and funding:

- *Prenatal Programming of Child's Brain and Behavior: Novel Insights into the Mechanisms* (GACR Junior Star; 1028 727 EUR; 01/2024-12/2028; Role: PI)
- *Healthy Brain Aging: A Life-course Perspective* (NU20J-04-00022; 447 000 EUR; 05/01/2020 -12/31/2023; Role: Co-PI)
- *Developmental Origins of Depression-related White Matter Properties* (GAMU-E; 10 120 EUR; 05/01/2018 – 04/30/2019; Role: PI)
- *Biomarkers and Underlying Mechanisms of Vulnerability to Depression* (FP7-PEOPLE-IEF; 146 000 EUR; 04/01/2015-11/30/2017; Role: PI)

Successful students:

- 2 Bc students (Lucie Ráčková – Bc thesis defended in Feb 2019, currently PhD student at Faculty of Science, Masaryk University; Filip Trbušek – Bc thesis defended in Jan 2023, currently Master student at Faculty of Psychology and Neuroscience, Maastricht University)
- 1 PhD student (Lenka Kotačková, born Zacková – finishing her PhD this semester, published 4 papers - Neuroimage Clinical, Frontiers in Nutrition, Frontiers in Endocrinology and JAMA Network Open; currently working full time as medical doctor at the Department of Neurology at Vyškov Hospital).