

**Title:** "Insulin receptor signaling in mouse models of Autism Spectrum Disorder".

**Abstract:** Fragile X syndrome (FXS) is the most common monogenic cause of autism spectrum disorders (ASD) and hereditary intellectual disability. *Fmr1* knockout mice (*Fmr1*<sup>-/-</sup>) recapitulate many of the FXS phenotypes, such as increased repetitive behaviors, impairment in social behavior, macroorchidism, increased general protein synthesis (mRNA translation), exaggerated LTD and abnormal dendritic spine morphology. Dysregulated insulin signaling has been shown in diabetes and cancer, and has been implicated in cognitive dysfunctions in neurodegenerative disorders such as Alzheimer's disease. Recently, dysregulated insulin signaling has been shown to underlie cognitive deficits in drosophila FXS model. This study describes our plan to investigate the impact of insulin signaling downregulation on autistic-like behaviors, dendritic spine morphology, general protein synthesis, translational signaling pathways, and central and peripheral insulin metabolism in *Fmr1*<sup>-/-</sup> mice. This knowledge should advance our understanding of the pathophysiology of FXS and implement strategies to correct core symptoms of neurodevelopmental disorders like FXS. Importantly, this work could potentially reveal new drug targets to treat FXS.

**Short bio:** Dr. Jelena Popic studied Molecular Biology and Physiology at the University of Belgrade. She worked at IBISS from 2006-2014 in the laboratory of Dr. Selma Kanazir, where she finished her PhD in the field of pediatric neurotoxicity-rodent model. From 2014-2019, she was a Postdoctoral fellow at the laboratory of Dr. Nahum Sonenberg at the Department of Biochemistry, McGill University where she investigated dysregulated signaling pathways involved in the regulation of protein synthesis in different mouse models of autism spectrum disorders. She is currently an Academic Associate at the laboratory of Dr. Mayada Elsabbagh at the Department of Neurology and Neurosurgery, Faculty of Medicine, Montreal Neurological Institut-Hospital at McGill University.