

# **Investigating the Effect of Maternal Immune Activation on Sensory Filtering, Social Behaviour and Attention**

## **Background**

Altered brain development is associated with many neuropsychiatric disorders like Autism Spectrum Disorder (ASD) and schizophrenia. Environmental insults can interfere with neurodevelopment, and a prominent example is maternal infection during pregnancy. Epidemiological studies show that children born to mothers who were infected during pregnancy display a higher risk of developing ASD and schizophrenia, and this effect is mainly due to the maternal immune response. Polyinosinic-polycytidilic acid (Poly I:C) is a double stranded RNA molecule that mimics viral markers and elicits an immune response. When injected in pregnant rodents, this model produces offspring that exhibit core symptoms of ASD and schizophrenia such as deficits in cognition, sensory processing and memory.

## **Rationale and Hypothesis**

My study aims to investigate the effects of poly I:C maternal immune activation on ASD-related behaviours in rats, with a focus on sensory filtering, attention and social behaviour. Sensory filtering and attention filter out irrelevant sensory information coming into the brain and are both compromised in ASD. Furthermore, altered social behaviour is a major diagnostic criterion for ASD. My project will investigate how these understudied behaviours in rats are altered in offspring of mothers injected with poly I:C during mid-gestation, and how these behaviours change with age. I expect poly I:C offspring to have impaired sensory filtering, attention and social behaviour.

## **Interdisciplinary Reflection**

This study will build upon the knowledge surrounding sensory filtering and attentional impairments in ASD, with potential to help understand brain development, uncover biological correlates for psychological processes, and open new options for psychiatric treatment.