Diagnostics

Development of a New Method for Detection of Effects Induced by Maternal Immune Activation

Principal Investigator

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Project Outline

Maternal immune activation (MIA) triggered by maternal infection or maternal strong mental stress is implicated in a risk factor for autism spectrum disorder, depression and schizophrenia as shown in the figure. It is also known that MIA is associated with susceptibility for drug addiction. As a cause of these, it is considered that strong immune activation in the mother during pregnancy spreads to the brain of the offspring and affects the development of neural circuits and synaptogenesis from childhood to adulthood. Various treatments by early intervention have been proposed for developmental disorders and psychiatric disorders. However, no method has been found to accurately diagnose how much a child is affected by MIA. We have developed a new method that can distinguish the mouse pups affected by MIA with a high diagnostic rate by measuring trace components of mouse serum in animal experiments and making full use of the technique of multivariate analysis. In addition, we have obtained promising results in analysis using plasma samples of human autism spectrum disorders.

Cited from Meyer U, Trends in Neurosci 42:793-, 2019
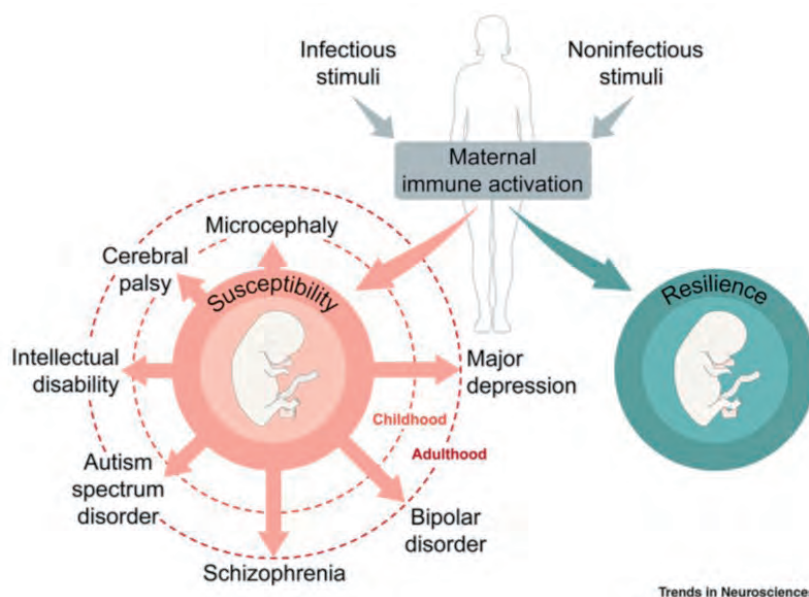
Target Diseases: Autism spectrum disorder, drug addiction

Patent information: Application Date: April 10, 2020, Japanese Patent Application 2020-070882 "Methods for diagnosing developmental disorders, addictions, and mental disorders"

Applicant: Osaka University

Technical features:
- Application to early diagnosis of autism spectrum disorder
- Objective indicators of autism spectrum disorder diagnosis
- Potential for classification and diagnosis of autism spectrum disorder subtypes