# The vulnerabilities of mental disorders at the onset of the disease: The potential for early environmental intervention to prevent the onset of mental illnesses

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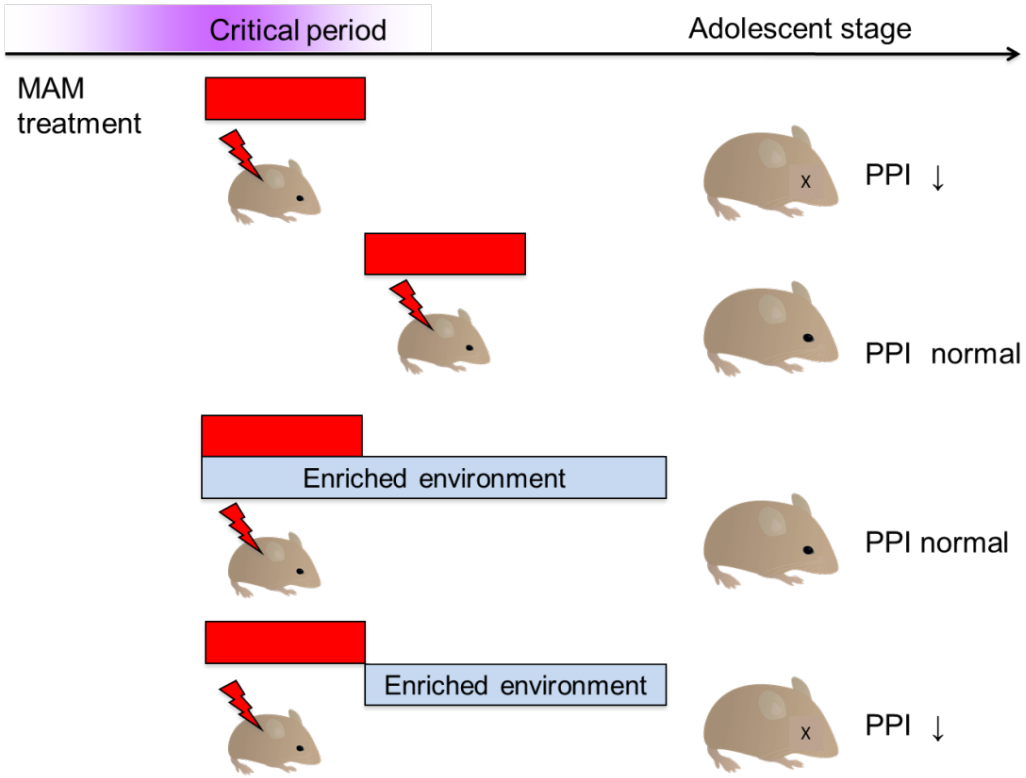
Professor Noriko Osumi at Tohoku University Graduate School of Medicine and Researcher Nannan Guo's (currently attached to the Massachusetts General Hospital) research group established that within a certain timeframe during the developmental period, abnormalities in the adolescence period can lead to schizophrenia-like symptoms, creating a model mouse which measured a decline in the sensory-motor gate mechanism which is a characteristic of schizophrenia through applying methylazoxymethanol acetate (MAM), a drug that reduces neurogenesis. These results supported the developmental disorder hypothesis of schizophrenia; problems with neurological development in childhood will develop to become psychiatric disorders during adolescence. Furthermore, in this model mouse, it was made clear that the schizophrenia-like symptoms were improved by the exposure to enriched environmental reinforcement during the critical period. The results of this research were published in American Neurosciences Society's official journal, Journal of Neuroscience.




Mice treated with anti-neurogenesis drug MAM at the critical period decreases the prepulse inhibition (PPI) score, an endophenotype of mental diseases such as schizophrenia. MAM-treatment after the critical period does not affect PPI. If mice are kept in enriched environment, the effect of MAM-treatment is canceled, while the enriched environment after the critical period cannot rescue the PPI defect. These experiments suggest importance of postnatal neurogenesis for the vulnerability of mental diseases.

**"A Sensitive Period for GABAergic Interneurons in the Dentate Gyrus in Modulating Sensorimotor Gating."**
Nannan Guo, Kaichi Yoshizaki, Ryuichi Kimura, Fumikazu Suto, Yuchio Yanagawa, and Noriko Osumi[1]
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