RolE of Serotonin in the Pathogenesis Of Neurodevelopmental Disorders, (RESPOND)

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Psychiatric diseases, such as attention-deficit hyperactivity disorder (AHDH), autism spectrum disorders (ASD), and schizophrenia, are a growing health problem world-wide. Novel findings have shown that abnormalities in the development of the brain may be involved in the pathogenesis of these diseases and that the neurotransmitter serotonin may play a role in these processes. Therefore, RESPOND aims at clarifying the role of serotonin in the pathogenesis of ADHD, ASD, and schizophrenia. For this purpose we have generated rats with increased or decreased levels of serotonin in the brain by targeted manipulation of their genome. The brain of these animals will be assessed for structural alterations caused by developmental abnormalities. This will be combined with a comprehensive behavioral analysis to clarify whether they show symptoms related to ASD, ADHD, or schizophrenia. In parallel, stem cells will be isolated from patients and from the genetically altered rats to study developmental processes in cell culture. The integration of these data will provide a comprehensive description of the role of serotonin in ASD, ADHD, and schizophrenia. We expect to establish animal and cellular models for these disorders as basis for the discovery of novel therapies.