Effect of Chronic Treatment with Metformin on Adult Male Mouse Autism Relevant Behavior

Zhang, Connie (School: Health Careers High School)

Autism, a developmental disorder, has been linked with gestational diabetes. Management of gestational diabetes may decrease the chance that an offspring develops autism. Metformin is a promising agent for this purpose. It is important to know if metformin has any negative effects on a mouse's social behavior. Prenatal exposure and postnatal exposure to metformin causes opposite behavioral changes of male adolescent mice. The goal of this study was to investigate if chronic treatment of metformin can affect male adult mouse’s social behavior. Water containing metformin (dose) was given to BTBR mice and its control group, C57BL/6J mice, by the lab staff for three weeks. The mice were evaluated by the lab staff for social interaction preference, social novelty preference, as well as impulsive behaviors three weeks after the treatment. The student researcher analyzed the behavior via videos. Compared with C57BL/6J mice (n=12), BTBR mice (n=4) showed reduced social interaction preference and social novelty preference but a normal performance in impulsive and anxiety behavioral tests. Metformin reversed BTBR mouse’s social interaction preference and social novelty preference (n=4), however, it did not affect C57BL/6J mouse’s social behaviors that were tested (n=11).