Targeting Sensory Dysfunctions in Autism Spectrum Disorders (SensingASD)

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Dysregulation of sensory perception is part of the core symptoms of Autism Spectrum Disorders (ASDs). For the longest time, it was thought that sensory issues in ASDs are due to disruption of the central nervous system (brain). Emerging evidence indicates that sensory and social deficits arise in part due to the abnormal development and function of the sensory nervous system, opening up new ways to study and treat sensory changes in ASDs.

Our multidisciplinary consortium will study whether high confidence genetic factors for ASD cause sensory dysfunction by disrupting the production of proteins required for sensory nerve cell communication. To address this question, we will use a combination of genetically engineered flies, mice, and stem cell-derived human sensory neurons. We will perform behavioral experiments to identify sensory defects and investigate whether the production of proteins in neural cells is abnormal. Finally, we will test whether specific drugs and genetic therapies that correct abnormal protein production will reverse cellular and behavioral dysfunctions. Our studies will generate new evidence that genetic mutations directly impair protein production in sensory neural cells, which leads to sensory and social deficits. Our study will open new avenues for treating sensory abnormalities related to ASDs.