Measuring Visual Attention Deficits in Mammals (#7983)

Systems to measure attention deficits in mouse models of human neurological diseases

Bilal Haider from Georgia Tech has developed new systems and methods to measure spatial attention in mice, simultaneously with neural recordings and optical perturbations of neural activity. This innovation will enable precise measurement of attention deficits in a wide variety of mouse models with neurological diseases, and facilitate pharmacological, electrochemical, and optogenetic manipulation of the underlying neural circuits. The goal is to use these systems and methods as a pre-clinical testbed for novel treatments for attention deficits.

Benefits/Advantages

- Simultaneously studies circuit activity and cognitive dysfunction in genetically defined models of human neurological disease
- Enables high-resolution study of neural circuit basis of attentional deficits found in many devastating neurological conditions
- Enables precise and repeatable measurement of the effects of pharmacological interventions on attentional effects on behavior

Potential Commercial Applications

- Research tools that could be implemented by pharmaceutical companies or carried out in pharmaceutical labs

Background/Context for This Invention

The control of sensory processing by attention is critical for normal behavior. Impairments in attention underlie many debilitating neurological conditions such as schizophrenia, dementia, and autism spectrum disorders. Currently, there are few effective treatments for these disorders, partly due to scarce knowledge about the basic neural mechanisms underlying attention. Advances in genetic engineering have enabled creation of mouse models of these brain diseases, but there is no way to measure visual attention and associated deficits in mice.

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Publications

Paying Attention to Attention, Georgia Tech News, February 5, 2020

For more information about this technology, please visit:
https://licensing.research.gatech.edu/technology/measuring-visual-attention-deficits-mammals