

# Mouse model of cholinergic dysfunction to evaluate cognitive enhancers for Alzheimer's disease treatment

## Value Proposition

Defects in acetylcholine transmission have been associated with several major neurodegenerative disorders including Alzheimer's disease, dementia, cerebral palsy, Parkinson's disease, Huntington's disease and myasthenia gravis. Although cholinergic dysfunction has been implicated in these conditions, the precise nature of cholinergic decline and its role in cognitive and behavioral deficits has proven difficult to probe. Ultimately, reliable models demonstrating relevant behavioral phenotypes are required to determine the effects of acetylcholine dynamics on neurodegenerative conditions and test viable treatment options.

## Technology

Inventors at Duke University have developed a novel mammalian model system comprising a conditional disruption of the vesicular acetylcholine transporter (VAChT). The resulting reduction in VAChT trafficking to synaptic secretory vesicles results in reliable, measurable impairments in object and social recognition, neuromuscular performance, and autonomic nervous system function. Accordingly, the mammalian model system can be coupled with established assays and used to screen candidate compounds and treatment options for the many disorders associated with acetylcholine transmission defects.

## Advantages

- Mammalian VAChT knockdown / knockout models display phenotypes relevant to several neurodegenerative disorders
- Established, quantitative assays are easily applied to VAChT mutants, allowing for reliable screening of candidate treatment compounds

## Patents

Patent Number: 9,139,638

Title: Animal Model of Cholinergic Dysfunction to Evaluate Cognitive Enhancers and Drugs That Improve Myasthenia

Country: United States of America

Duke  
LICENSING  
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