Transgenic Mouse Models Needed to Aid in Alzheimer’s Disease Research In biomedical research, transgenic mouse models are used to provide a test subject as a substitute for human test subjects. These mouse models are designed by altering a gene of interest in the genome to induce or repress genetic expression. This technology has been around since the 1980s, with many significant lines of transgenic mice being developed every year. However, these mouse models need to be extensively investigated to validate that the desired genotype and phenotype is being expressed.

Alzheimer’s Disease (AD) is a neurodegenerative disease that is the most common cause of dementia in people over the age of 65. The disease is currently incurable and terminal and has been linked to genetic (familial) inheritance causing abnormal elevation of Ab peptide in the brain. AD patients typically suffer a long and slow progression toward dementia and eventual death, leading to great emotional and financial burden to the families of these patients. In 2006, 26.6 million people had AD and in 2050 it is estimated that 1 in 85 people across the world will suffer with AD.

Transgenic Mouse Model Offers Insight to the role of Amyloid in Neural Membranes The lead inventor has generated a line of transgenic mice that aid in researching the role of protein trafficking in Alzheimer Disease. This transgenic mouse model expresses a targeted Hbeta58 mutation. This mutation resulted in the production of unstable mRNA that effects retromer component VPS26. VPS26 is a single component of a multimeric retromer complex. This whole retromer complex is expressed in brain tissue, as well as other tissue types. Research indicates that a deficiency in specific elements for this retromer, such as VPS26, causes an abnormal elevation in Ab peptides and the cellular trafficking of A-beta across extraembryonic and extracellular membranes. This Ab elevation leads to AD symptoms in affected mice. This model can hence offer insight to the role of amyloid production and buildup in neural membranes.

Applications: • The study of retromer-mediated Ab peptide trafficking via a representative mouse model • The study of translation during Alzheimer Disease development.

Advantages: • Developed and validated mouse model for the properties of the Hb58 insertion mutation.

Patent Status: Copyright / Material

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