Protein for Alzheimer’s disease research and therapeutic development

Alzheimer’s disease (AD) is a devastating progressive neurodegenerative disease that has been estimated to account for up to 80% of dementia cases in elderly patients. There is currently no cure, partially because its specific biochemical causes are not well understood, and also because many apparently promising protein targets have not yielded successful therapeutics. Using bioinformatics, this technology has identified a protein called ZCCHC17 that is decreased in AD tissue and plays an apparent role in gene expression in cortical neurons that is disrupted in Alzheimer’s patients. It provides a new avenue of research into AD, and the protein is itself a potential therapeutic agent or may be a potential target for novel AD therapeutics.

Understudied ZCCHC17 protein regulates gene expression in identified synaptic targets

Loss of synaptic function is one of the first biological markers of AD. It affects the brain’s ability to form new memories even prior to the neuronal death that is the hallmark of the disease. Restoration of synaptic function may delay or reverse the onset of AD. The bioinformatics tools used to identify this technology sought to identify proteins that regulate synaptic gene expression, and to investigate their role in the central nervous system (CNS). Although ZCCHC17 was previously shown to be localized in the neuronal nucleus and its role in late-onset Alzheimer’s disease has been suggested, this technology is the first to identify its function in the CNS.

In vitro studies in rodent neuronal cultures identified ZCCHC17 as a direct or indirect regulator of gene expression in many of the predicted synaptic targets that are disrupted in AD.

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Applications:
- Research tool for studying the progression of Alzheimer’s disease
- Therapeutic agent for Alzheimer’s disease
- Therapeutic target for Alzheimer’s disease therapeutics

Advantages:
- Role in the central nervous system has not been previously studied
- May allow for the restoration of synaptic function prior to neuronal death
Patent Information:
Patent Pending
Tech Ventures Reference: IR CU16011

Related Publications:


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