A Method for Making a Human Alzheimer's Disease Neuronal Model Using Purified ApoE-HDL

Published date: Dec. 14, 2017

Technology description

Researchers at UC San Diego have developed a human Alzheimer’s disease neuronal model comprising human neurons derived from human induced pluripotent stem cells (iPSCs) and treated with Apolipoprotein E-high-density lipoprotein (ApoE-HDL) resulting in human neurons that exhibit Alzheimer’s disease behavior.

Alzheimer's disease (AD) is a common neurodegenerative disease and the most common cause of dementia. Alzheimer’s disease is defined post-mortem by the increased presence of amyloid plaques and neurofibrillary tangles (NFTs) in the brain. Amyloid plaques are extracellular deposits consisting primarily of amyloid-ß (Aß) peptides, and NFTs are intraneuronal aggregations of hyperphosphorylated tau, a microtubule-associated protein involved in microtubule stabilization.

The discovery of new drugs for treating Alzheimer’s disease is currently limited by difficulties in obtaining live neurons from patients and the inability to accurately model Alzheimer’s disease. Animal models of Alzheimer’s disease have been developed, however, these animal models do not completely mimic true human disease, and none of these animal models are neuronal models of the disease. There is a need to develop a human neuronal model that more accurately mimics true human Alzheimer’s disease, and then use such a model for Alzheimer’s disease drug discovery and research.

Application area

Human neural models/cultures can be used in a method or as a research tool for identifying compounds which are therapeutic candidates for the treatment, diagnosis, prognosis, and/or prevention of Alzheimer’s disease.

Advantages

This human disease model mimics neurons that exhibit Alzheimer’s disease behavior.

Institution

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