

APOE and Alzheimer's Disease: Evidence Mounts that Targeting APOE4 may Combat Alzheimer's Pathogenesis

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Alzheimer's disease (AD) is an immutable neurodegenerative disease featured by the two hallmark brain pathologies that are the extracellular amyloid β ($A\beta$) and intraneuronal tau protein. People carrying the APOE4 allele are at high risk of AD concerning the ones carrying the ϵ 3 allele, while the ϵ 2 allele abates risk. ApoE isoforms exert a central role in controlling the transport of brain lipid, neuronal signaling, mitochondrial function, glucose metabolism, and neuroinflammation. Regardless of widespread indispensable studies, the appropriate function of APOE in AD etiology stays ambiguous. Existing proof recommends that the disparate outcomes of ApoE isoforms on $A\beta$ accretion and clearance have a distinct function in AD pathogenesis. ApoE ϵ lipoproteins combine diverse cell-surface receptors to transport lipids and moreover to lipophilic $A\beta$ peptide, that is believed to begin deadly events that generate neurodegeneration in the AD. ApoE has great influence in tau pathogenesis, tau-mediated neurodegeneration, and neuroinflammation, as well as α -synucleinopathy, lipid metabolism, and synaptic plasticity despite the presence of $A\beta$ pathology. ApoE4 shows the deleterious effect for AD while the lack of ApoE4 is defensive. Therapeutic strategies primarily depend on APOE suggest to lessen the noxious effects of ApoE4 and reestablish the protective aptitudes of ApoE. This appraisal represents the critical interactions of APOE and AD pathology, existing facts on ApoE levels in the central nervous system (CNS), and the credible active stratagems for AD therapy by aiming ApoE. This review also highlighted utmost ApoE targeting therapeutic tactics that are crucial for controlling Alzheimer's pathogenesis. © 2018,

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Alzheimer's disease

Amyloid ?

APOE4

Neurofibrillary tangles

Senile plaques

Tauopathy

ABC transporter A1

alpha synuclein

amyloid beta protein

amyloid precursor protein

apolipoprotein E

apolipoprotein E4

fluvastatin

low density lipoprotein receptor related protein

monoclonal antibody

n (2,2,2 trifluoroethyl) n [4 (2,2,2 trifluoro 1 hydroxy 1 trifluoromethylethyl)phenyl]benzenesulfonamide

presenilin 1

presenilin 2

retinoid X receptor

tau protein

amyloid

apolipoprotein E

apolipoprotein E4

Alzheimer disease

amyloid plaque

amyloidosis

cognitive defect

frontotemporal dementia

genetic risk

hippocampus

homozygote

human

lipid metabolism

nerve cell plasticity

nerve degeneration

nervous system inflammation

nonhuman

pathogenesis

protein aggregation

Review

senile plaque

synucleinopathy

Alzheimer disease

animal

genetic predisposition

genetics

metabolism

pathology

risk factor

Alzheimer Disease

Amyloid

Animals

Apolipoprotein E4

Apolipoproteins E

Genetic Predisposition to Disease

Humans

Risk Factors