EFFECTOR CAR T-CELLS FOR TREATMENT OF ALZHEIMER'S DISEASE

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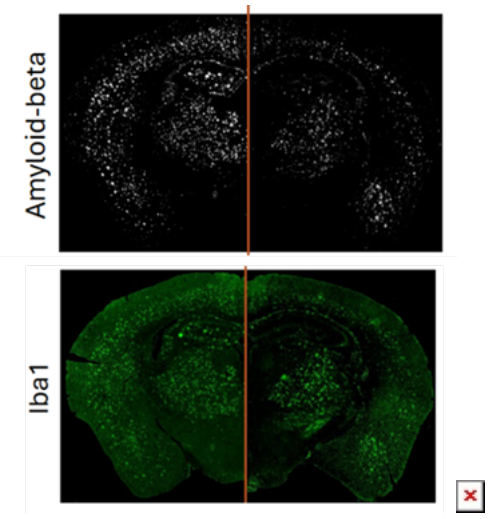
Value proposition: *Using CAR T-cells to treat Alzheimer's disease and other neurodegenerative diseases through Ab-specific activation.*

Technology Description

While CD4+ (helper or effector) T-cells play complex roles in the pathophysiology of Alzheimer's disease (AD), they are one of the main responding cell subpopulations to neurodegenerative conditions. Inspired by a strategy similar to chimeric antigen receptor (CAR)-based cancer treatments, researchers at Washington University in St. Louis have developed a prototype of CAR T-cells for the treatment of Alzheimer's disease.

CAR receptors effectively respond in vivo and can recognize their peptides. Engineered CAR T-cells are highly specific to CD4 with minimal CD8 infiltration (bottom left). When injected into mice, in CAR-T cell treated groups (right side), Ab plaques are significantly reduced (bottom right, top) alongside a reduction in microgliosis (as measured by Iba1, bottom right, bottom).



Above figure: CAR receptors effectively respond in vivo and can recognize their peptides. Engineered CAR T-cells are highly specific to CD4 with minimal CD8 infiltration (bottom left). When injected into mice, in CAR-T cell treated groups (right side), Ab plaques are significantly reduced (bottom right, top) alongside a reduction in microgliosis (as measured by Iba1, bottom right, bottom).

Stage of Research

Prototype tested and actively being developed in mice models. Proof of concept (data below) carried out with commercially available antibodies. Inventors are actively verifying novel TCRs and peptides to be applied to neurological indications.

Applications

- Treatment of neurodegenerative diseases and, specifically, Alzheimer's disease.

Key Advantages

- New modality for AD leveraging Ab-specific activation of CAR-T cells

Patents

Provisional filed

Related Web Links - Jonathan Kipnis Profile; Kipnis Lab