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Office of Technology Management

DRUGS TO SUPPLEMENT MICROGLIAL METABOLISM DURING TREATMENT OF ALZHEIMER'S DISEASE

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Background: Alzheimer's disease (AD) is the 6th leading cause of death in the United States, and yet causation of the disease is poorly understood and targets for therapeutic intervention are still being identified. Recently, mutations in the immune receptor TREM2 have been found to be strongly correlated with AD. TREM2 maintains microglial metabolism during AD, allowing microglia to clear amyloid β (Aβ) plaque. This process is impaired in Alzheimer's patients with genetic variants that lead to increased microglial autophagy, such as Trem2 mutations. Current evidence suggests that microglial responses to AD regulate disease progression, making microglia a viable target for AD treatment.

Technology Description: Novel opportunities have been discovered for existing drugs to re-energize microglia harboring TREM2 mutations in AD patients. These compounds reduce and rescue neuronal damage in Trem2-deficient animal models by supplementing microglia and sustaining cell metabolism during AD progression. Application of the compounds prevents microglial autophagy and increases microglia clustering around Aβ plaques. The technology has potential to treat and reduce disease severity in individuals with mutations hindering microglial responsiveness to Aβ plaques, such as ApoE and Trem2.