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2020 Part the Cloud: Translational Research Funding for Alzheimer's Disease (PTC)-\$749,999

## **Repurposing Nucleoside Reverse Transcriptase Inhibitors for Treatment of Alzheimer's Disease**

*This Phase 1 clinical trial will evaluate an HIV/AIDS drug for its potential as a therapy in Alzheimer's disease.*

### **PI**

- Ph.D., Harvard University, 1984
- Director of the Brown University Center on the Biology of Aging
- Authored over 125 scientific articles, reviews and chapters

### **STUDY**

- CADRO category: Translational Research & Clinical Interventions

### **Background**

Aging and many age-related diseases may be associated with inflammation. Individuals with Alzheimer's typically experience brain inflammation caused by uncharacteristically active immune system. The inflammation of the brain could cause damage to the nerve cells and their functionality. Researchers have been studying ways to reduce brain inflammation during Alzheimer's disease to help preserve nerve cell function and communication, and to ultimately delay or stop symptoms from developing.

Past studies by Dr. John Sedivy and colleagues have found that the inflammatory response associated with aging cells is similar to the inflammatory response identified in Human Immunodeficiency Virus (HIV). The researchers have shown that a group of drugs, called nucleoside reverse transcriptase inhibitors, normally used to treat HIV/AIDS, may also target inflammation. Dr. Sedivy and colleagues have shown that these drugs may prevent aging cells from making certain proteins that trigger inflammation. Preliminary work in animal models of aging and of Alzheimer's have further supported these ideas.

### **Research Plan**

Building on these preliminary studies, Dr. Sedivy's team will evaluate the safety and tolerability of an FDA-approved HIV/AIDS inhibitor drug in 30 people with early Alzheimer's disease (including mild cognitive impairment). Participants in the study will receive either a daily dose of the drug or a placebo (not the actual drug) for six months. The researchers will perform monthly brain scans and cognitive tests, and collect several blood and cerebrospinal fluid samples (a biological fluid found in the brain and spinal cord). The researchers will measure biological markers (biomarkers) associated with inflammation as well as Alzheimer's (including levels of beta-amyloid and the tau proteins) in the samples. Dr. Sedivy and colleagues will use measurements collected over the course of the study to determine if the drug can help slow inflammation or Alzheimer's progression.

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**Impact**

This study will test whether a HIV/AIDS medication might be repurposed to reduce brain inflammation in individuals with Alzheimer's and other brain diseases.

***Made possible through the generous funding from the Part the Cloud, benefiting the Alzheimer's Association.***