



**Anthony Andrew Oliva, Ph.D.**

**Longeveron, LLC**

Miami, Florida

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**Mesenchymal Stem Cell Therapy for Neuroinflammation in Alzheimer's Disease**

*This Phase I clinical trial will test if a novel stem cell therapy is safe and can reduce brain inflammation in people with early Alzheimer's disease*

**Background**

In addition to the accumulation of amyloid plaques and tau tangles, inflammation in the brain is becoming increasingly recognized as a key factor in the development of Alzheimer's disease. Novel treatments that target neuroinflammation may help to slow or prevent the disease from progressing.

Mesenchymal stem cells (MSCs) are a special type of stem cell that can be collected from adult bone marrow and have been shown to have anti-inflammatory properties. Stem cells have the ability to develop into many different cell types including nerve cells. MSCs also tend to move to sites of injury or inflammation, where they promote tissue repair. Furthermore, MSCs from one person can be used to treat a different person without the immune system rejecting them.

Scientists have been studying the use of MSCs to treat a wide variety of diseases. Anthony Andrew Oliva, Ph.D., and colleagues have led the way for the use of this therapy in myocardial infarction (heart attack) and heart failure, and are now proposing to study MSCs as a treatment for Alzheimer's disease. The researchers have already shown that MSCs injected into the bloodstream of Alzheimer's-like mice can reduce brain inflammation and improve brain function. Their studies suggest that one treatment can last for several months.

**Research Plan**

Dr. Oliva and colleagues have proposed a phase I clinical trial of MSC therapy in 30 people who have early Alzheimer's disease. The trial will be conducted in two steps. In the first step, the researchers will test how participants respond to low doses of MSCs injected into the bloodstream, to ensure that the procedure is safe. In the second step, participants will be randomly chosen to receive full doses of MSCs or placebo and monitored for 12 months for any side effects and to determine if the treatment reduces markers of brain inflammation. The participants will also have brain imaging and cognitive testing to see if MSC therapy helps slow or prevent brain changes associated with Alzheimer's disease.

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**Impact**

This clinical trial represents an important step to determine if MSCs are a potential therapy to reduce brain inflammation in people with early Alzheimer's disease. If successful, the results of this work could lead to future large-scale clinical trials of MSCs for the treatment or prevention of Alzheimer's disease.

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