

EXECUTIVE SUMMARY [NON-TECHNICAL ABSTRACT FOR PUBLIC INFORMATION OR PROGRAM PROMOTION]:

State **in layman's terms** the application's broad, long-term objectives and specific aims, making reference to the potential public benefits of the project relevant to California.

Alzheimer's disease (AD) is the most common cause of dementia, afflicting millions of people's lives in the US and the world. AD is caused by an excess amount of a short peptide called amyloid beta-peptides (Abeta) inside of the brain. Abeta is produced by brain cells from a larger protein called amyloid precursor protein (APP). Two enzymes, gamma- and beta-secretases produced by the brain cells are responsible for cleaving the larger APP to make the Abeta. Attempts have been made to identify therapeutic compounds that can inhibit these enzymes so that they could reduce the production of Abeta, hence easing or preventing AD. The inhibitors for the gamma-secretase have produced significant side-effects inside the body. Animal models have been used to study AD, but due to AD's long disease course, it is difficult to obtain valuable information. In this study, we will use human neural stem cells (hNSC) and make these cells produce an excess amount of APP and Abeta using modern molecular biology techniques. Once the AD cell line is established, we will use this live cell model to screen seven plant extracts that have shown beta-secretase inhibitory effect. We expect to see a reduction of Abeta from AD cell line as compared to the normal control cells after they are treated with the plant extract. This project will provide valuable data confirming what haven been found from the plant extracts in the test tubes and will help facilitate drug development in treating or preventing AD.