

**EXECUTIVE SUMMARY [NON-CONFIDENTIAL, 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. Do not include proprietary or confidential information. This may be distributed before the funding decision has been finalized. . Alzheimer' disease (AD) is the most common type of dementia found in adults. Seven percent of adults 65 or older suffer from the disease. AD is associated with a number of biochemical changes that occur during the progression of the disease. The most pronounced change is the significant decrease in the level of the neurotransmitter acetylcholine; this correlates directly with loss of memory and cognitive functions. Current clinical protocols target factors that increase the levels of acetylcholine with hopes of minimizing the severity of the disease. One such target is a class of brain enzymes known as cholinesterases. In the normal brain, these proteins are responsible for the breakdown of acetylcholine. Mild cases of the disease are treated with drugs that inhibit these enzymes to prevent the breakdown of acetylcholine . Unfortunately, the clinical response is short term and the drugs often have adverse side effects. The results from this study should provide chemical insights into development of a family of highly specific, longer acting therapeutic agents for the treatment of AD. The impact of an efficient and cost effective treatment for AD on the nation's health care system cannot be underestimated. As a leader in the field of biotechnology, California should be the front-runner in the development and application of these drugs.