

NON-TECHNICAL ABSTRACT: *(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.)*

Alzheimer's disease (AD) is presently the most widespread form of dementia, affecting one in ten people over the age of 65. Current therapeutics used to treat AD target a class of enzymes known as cholinesterases. The enzymes are responsible for maintaining normal nerve transmission and cognitive function, i.e., memory. In AD patients, the level of enzyme is elevated, resulting in loss of cognitive function. Current treatment of AD is based on the assumption that inhibiting brain cholinesterases will result in the return of cognitive function. Unfortunately, the current family of drugs used in the treatment of AD, e.g., Aricept, are only mildly successful and they have significant side effects. We are proposing to develop a new class of potent cholinesterase inhibitors which function by a completely different mechanism and would target the formation of a molecule that is toxic to brain cells. The advantage would be a lack of side effects and medicating patients with lower concentration of drug and less often (monthly).