Alzheimer's disease: Fact Sheet

Alzheimer's disease (AD) is the most common form of dementia. AD is a progressive brain disease characterized by cognitive deterioration together with declining activity in daily living and behavioral changes.

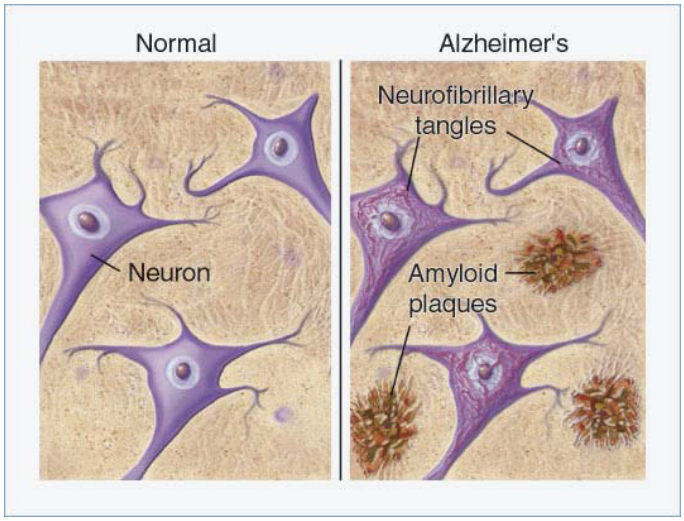
Alzheimer's disease currently affects over 30 million people worldwide and has an average course of about 8-10 years. More than 4.5 million Americans are suffering from Alzheimer's disease and the number is expected to grow to over 16 million by 2050 as America's aging population increases.[1]

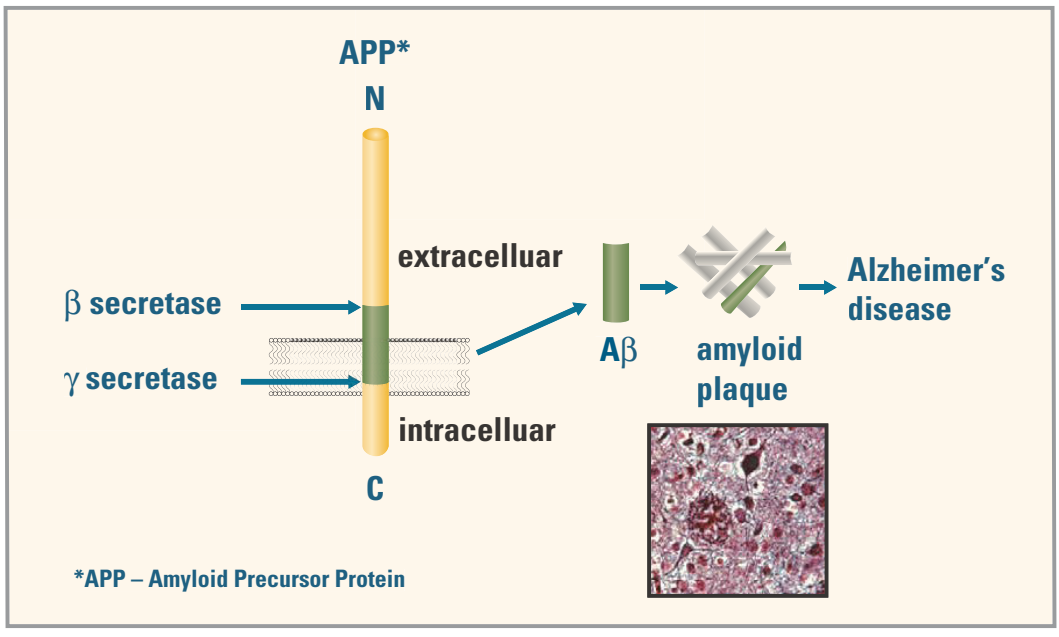
Alzheimer's disease is characterized by deposition of plaques in the brain with aging dementia. These plaques contain fragments of proteins that have been processed inappropriately by neurons. The underlying cause of AD is unknown and currently there is no cure. The AD therapeutic market is currently limited to symptomatic treatments. Existing therapeutics focus on improving cognitive and behavioral symptoms, but do not prevent the disease from progressing (see table below). Sales in this category for 2008 total $4 billion, and are estimated to grow to $7B by 2013.[2]

Stage of Disease	Drug Class	Mode of Action
Mild to Moderate	Acetylcholinesterase inhibitors (AChEi)	AChEi's prevent the breakdown of AChE, believed to be important for memory and thinking. AChEi's may help prevent symptoms from becoming worse for a limited time, however as AD progresses, the brain produces less and less AChE thus the drugs lose their effect. Side effects include increased risk of stomach ulcers, nausea, diarrhea and vomiting.
Moderate to Severe	N-methyl D-aspartate (NMDA) inhibitors	NMDA is believed to regulate glutamate, when produced in excess amounts, may lead to brain cell death. An NMDA antagonist may delay progression of some symptoms. Side effects include dizziness, headache, constipation, and confusion.

Vitae BACE inhibitors

A key pharmaceutical focus for AD treatment is the enzyme called β-Secretase (Beta APP Cleaving Enzyme (BACE)). The enzyme was discovered in 1999. BACE is an aspartyl protease that is believed to be directly involved in the early development of Alzheimer's disease. BACE cleaves the amyloid precursor protein (APP) found in neurons generating an amyloid beta (Aβ) peptide. The buildup of Aβ leads to formation of plaques that are toxic to brain cells. As these brain cells slowly die, there is significant detrimental impact on a person's memory, cognition and other mental faculties. Vitae Pharmaceuticals is focused on discovering novel drugs that can block BACE to prevent accumulation of amyloid plaques and slow the progression of Alzheimer's Disease. Vitae Pharmaceuticals has extensive experience with aspartyl proteases from the rennin inhibitor discovery program and is utilizing this experience to gain rapid traction in the BACE program.





References

1 Rodman and Renshaw Biotechnology Equity Research, June 2006

2 Cowen and Company Therapeutic Categories Outlook, March 2009