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# Alzheimer's Disease

National Institute of Neurological Disorders and Stroke (NINDS)

## Source

National Institute of Neurological Disorders and Stroke (NINDS). *Alzheimer's Disease Information Page*.

Alzheimer's disease (AD) is an age-related, non-reversible brain disorder that develops over a period of years. Initially, people experience memory loss and confusion, which may be mistaken for the kinds of memory changes that are sometimes associated with normal aging. However, the symptoms of AD gradually lead to behavior and personality changes, a decline in cognitive abilities such as decision-making and language skills, and problems recognizing family and friends. AD ultimately leads to a severe loss of mental function. These losses are related to the worsening breakdown of the connections between certain neurons in the brain and their eventual death. AD is one of a group of disorders called *dementias* that are characterized by cognitive and behavioral problems. It is the most common cause of dementia among people age 65 and older.

There are three major hallmarks in the brain that are associated with the disease processes of AD.

- **Amyloid plaques**, which are made up of fragments of a protein called beta-amyloid peptide mixed with a collection of additional proteins, remnants of neurons, and bits and pieces of other nerve cells.
- **Neurofibrillary tangles (NFTs)**, found inside neurons, are abnormal collections of a protein called tau. Normal tau is required for healthy neurons. However, in AD, tau clumps together. As a result, neurons fail to function normally and eventually die.
- **Loss of connections between neurons responsible for memory and learning.** Neurons can't survive when they lose their connections to other neurons. As neurons die throughout the brain, the affected regions begin to atrophy, or shrink. By the final stage of AD, damage is widespread and brain tissue has shrunk significantly.