

# MRI scans show structural brain changes in people at risk for Alzheimer's disease

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New results from a study by neuroscientists at Rush University Medical Center suggest that people at risk of developing Alzheimer's disease exhibit a specific structural change in the brain that can be visualized by brain imaging. The findings may help identify those who would most benefit from early intervention.

The study will be presented at Neuroscience 2010, the annual meeting for the Society of Neuroscience in San Diego, Calif., on Wednesday, November 17.

"One of the main challenges in the field of Alzheimer's disease is identifying individuals at risk of developing Alzheimer's disease so that therapeutic interventions developed in the future can be given at the earliest stage before symptoms begin to appear," said Sarah George, a graduate student who co-authored the study with Leyla deToledo-Morrell, PhD, director of the graduate program in neuroscience at Rush University Medical Center and professor of neurological sciences at the Graduate College of Rush University.

"Our study has found that structural imaging techniques can be used to identify those at risk for developing Alzheimer's disease," said deToledo-Morrell.

For the study, experts from Rush followed individuals with mild cognitive impairment, which is thought to be a precursor of Alzheimer's disease and other forms of dementia. Those with mild cognitive

impairment can exhibit [memory decline](#) known as amnestic mild cognitive impairment.

Researchers followed 52 individuals with amnestic [mild cognitive impairment](#) over a period of six years. Twenty-three participants progressed to Alzheimer's disease.

Study participants underwent [magnetic resonance imaging](#) (MRI) screenings. The researchers used MRI to look for structural changes in the substantia innominata (SI), a region deep within the brain that sends chemical signals to the [cerebral cortex](#), the brain's outer layer that is largely responsible for reasoning, memory and other higher functions. Although no structural changes were found in the SI between the two groups, the MRI showed a thinning of the cortical areas that receive strong input from the SI in those who went on to develop Alzheimer's disease.

"Since we were able to distinguish those who progressed to Alzheimer's disease compared to those who remained stable, we believe that MRI techniques that examine patterns of structural alterations provide a sensitive biomarker for detecting risk of [Alzheimer's disease](#)," said George.

Provided by Rush University Medical Center

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