

# Forget about plaque when diagnosing Alzheimer's Disease

April 3 2013

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(Medical Xpress)—An Australian study has shown that plaque, long considered to be the hallmark of Alzheimer's disease, is one of the last events to occur in the Alzheimer's brain. This finding will impact the current debate about how best to diagnose and treat Alzheimer's disease.

PhD student Amanda Wright and Dr Bryce Vissel from Sydney's Garvan Institute of Medical Research studied a mouse model of Alzheimer's disease in order to identify early versus late [disease mechanisms](#) and markers.

The data, published online today in the journal *PLOS ONE*, suggest that plaques occur long after [memory loss](#), so may not be a useful early pathological marker for Alzheimer's disease.

The Investigators found that significant nerve cell loss and a range of brain pathologies, including inflammation, began at the same time as subtle [memory problems](#) appeared, early in the disease process. Plaques occurred much later, well after significant memory loss.

"Ever since Alois Alzheimer first described this disease in 1906, plaque has been regarded as the definitive Alzheimer's diagnosis," said project leader Dr Vissel.

"Just last year, the first ever method of plaque detection through positron emission tomography (PET) was introduced into the clinic to assist in the diagnosis of Alzheimer's disease – precisely because plaque is regarded

as the conclusive marker for Alzheimer's disease. Our study suggests that this method may not be accurate in earlier disease stages."

Dr Vissel said that many billions of dollars have been spent around the world in trying to develop markers and drugs to block the development of plaque. Several drug trials based on this idea have failed recently.

"Our study supports the increasingly common view that treatment should start much earlier in the disease process. It also suggests that [brain inflammation](#) and cell loss may be an earlier indicator of [disease pathology](#) than plaque and an alternative target for treatment."

"In addition, what's coming out in various studies is that mild cognitive impairment may be another early predictor of Alzheimer's. This seems to fit perfectly with our findings, which show mild memory loss and behavioural changes at an early stage before plaque appears."

"I can see that the development of some clever learning and language tests to test for early signs of cognitive impairment will be an important indicator of dementia, when combined with a range of yet to be developed tests."

**More information:** [www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0059586](http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0059586)

Provided by Garvan Institute

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