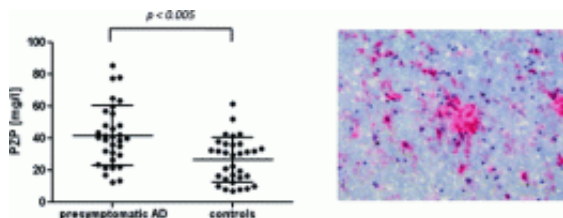


First detection of pregnancy protein in older people destined for Alzheimer's disease

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In an advance toward a much-needed early diagnostic test for Alzheimer's disease (AD), scientists have discovered that older women destined to develop AD have high blood levels of a protein linked to pregnancy years before showing symptoms. Their report appears in ACS' *Journal of Proteome Research*.

Theo Luiders and colleagues explain that more than 26 million people worldwide already have AD, and the numbers are rising with the graying of the population. Doctors can prescribe any of several drugs to slow the disease's advance. But it is important to start treatment as early as possible. Unfortunately, however, no test exists to diagnose patients before obvious [memory loss](#) and other symptoms appear. Luiders' team decided to look for proteins in the blood that might be used in such a test.

They looked for those proteins in blood samples of 86 people aged 60-90 who participated in a larger study of aged-related [brain changes](#) conducted in The Netherlands. Surprisingly, Luiders' group found that significant elevations in pregnancy zone protein (PZP) occurred in women an average of 4 years before diagnosis of AD. Scientists long have known that PZP levels rise during pregnancy, but this was the first link with AD. Luiders further discovered the apparent source of the PZP in the brain of these women, who were not pregnant: PZP was being produced in [senile plaques](#),

degenerated areas of the brain associated with AD.

More information: "Serum Levels of Pregnancy Zone Protein Are Elevated in Presymptomatic Alzheimer's Disease" *J. Proteome Res.*, Article ASAP. DOI: [10.1021/pr200270z](https://doi.org/10.1021/pr200270z)

Abstract

We have sought for disease-related proteins that could predict the onset of Alzheimer's disease (AD) in a study population derived from the Rotterdam Scan Study, a population-based prospective cohort study designed to investigate the etiology and natural history of age-related brain changes in the elderly. The serum proteome of 43 persons who developed AD, after an average of 4.2 years (± 2.6 years SD) after blood sampling, and 43 gender- and age-matched controls who remained dementia-free during follow-up was investigated by liquid chromatography mass spectrometry. We identified 61 differentially expressed peptides between presymptomatic AD and controls, 9 of which were derived from pregnancy zone protein (PZP). Quantitative measurements using a multiple reaction monitoring assay showed a significant increase in concentration of PZP in presymptomatic AD (34.3 ± 20.6 mg/L) compared with controls (23.6 ± 13.6 mg/L) ($p = 0.006$). The difference in PZP was significant in women.

Immunohistochemical validation of the findings on brain tissue sections showed strong PZP expression in senile plaques and in microglial and glial cells in AD with only low expression in some scattered glial cells in controls.

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