

# Potential biomarkers for the diagnosis of Alzheimer's disease

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Researchers identify abnormal expression of genes, resulting from DNA relaxation, that can be detected in the brain and blood of Alzheimer's patients.

In a study published this week in *Nature Neuroscience*, Bess Frost, PhD, and co-authors, identify abnormal expression of genes, resulting from DNA relaxation, that can be detected in the brain and blood of Alzheimer's patients.

The protein tau is involved in a number of neurodegenerative disorders, including Alzheimer's disease. Previous studies have implicated DNA damage as a cause of neuron, or cell, death in Alzheimer's patients. Given that DNA damage can change the structure of DNA within cells, the researchers examined changes in DNA structure in tau-induced neurodegeneration. They used transgenic flies and mice expressing human tau to show that DNA is more relaxed in tauopathy. They then identified that the relaxation of tightly wound DNA and resulting [abnormal gene](#) expression are central events that cause neurons to die in Alzheimer's disease.

The authors write, "Our work suggests that drugs that modify DNA structure may be beneficial for treating Alzheimer's Disease." The authors recommend, "A greater understanding of the pathway of DNA relaxation in tauopathies will allow us to identify the optimal target and explore the therapeutic potential of epigenetic-based drugs."

Provided by Brigham and Women's Hospital

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