

New neuroimaging analysis technique identifies impact of Alzheimer's disease gene in healthy brains

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Brain imaging can offer a window into risk for diseases such as Alzheimer's disease (AD). A study conducted at the University of Kansas School of Medicine demonstrated that genetic risk is expressed in the brains of even those who are healthy, but carry some risk for AD. The results of this study are published in the November 2009 issue of the *Journal of Alzheimer's Disease*.

Investigators used automated neuroimaging analysis techniques to characterize the impact of an AD-risk gene, apolipoprotein E (ApoE4), on gray and white matter in the brains of cognitively healthy elderly from the KU [Brain](#) Aging Project.

They found that healthy elderly individuals carrying a risk-allele of the [ApoE4](#) gene had reduced cognitive performance, decreased brain volume in the hippocampus and amygdala (regions important for memory processing), and decreased white matter integrity in limbic regions. These type of brain changes are also found in people with AD. Therefore, [brain](#) changes, usually found in AD patients, are also evident in nondemented individuals who have a [genetic risk](#) of later developing AD.

Lead investigator, Robyn Honea, DPhil, Research Assistant Professor, University of Kansas School of Medicine, Department of Neurology, Alzheimer's and Memory Group, comments, "It is important to note that

findings of imaging phenotypes of risk variants, such as with this gene, have been shown in a number of studies. The unique element of our study is that we used several new neuroimaging analysis techniques. In addition, the individuals in our study have been well-characterized in a clinical setting."

More information: Honea, Robyn A., Eric Vidoni, Amith Harsha and Jeffrey M. Burns. Impact of APOE on the Healthy [Aging Brain](#): A Voxel-Based MRI and DTI Study. J Alzheimers Dis 18:3 (November 2009).

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