Genome Wide Profiling of Altered Gene Expression in the Neocortex of Alzheimer’s Disease

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Alzheimer’s disease (AD) is characterized by a complex neurodegenerative process affecting multiple genes and proteins in the neocortex, many of which have not been well-studied. In this study, we investigated genome-wide gene alterations in the temporal cortex of a well-characterized cohort of AD patients using a recently developed microarray platform, and compared some of the transcript changes with immunoblotting. Of the 5485 genes found to be significantly altered in AD, there were consistent patterns of changes which show that the AD transcriptome in neocortex is characterized by changes indicative of synaptic dysfunction, perturbed neurotransmission and activation of neuroinflammation. We also highlighted several genes of potential pathogenic significance which have not been well studied in AD. The current study aims to add to the growing body of knowledge relating to gene changes in AD and provide further insights into pathogenic mechanisms and potential targets of pharmacotherapy. © 2009 Wiley-Liss, Inc.

Key words: Alzheimer’s Disease; gene expression; microarray; neocortex; neuroinflammation; neurotransmission; synapse

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