Arrowing in on Alzheimer's disease

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Recently the number of genes known to be associated with Alzheimer's disease has increased from four to eight, including the MS4A gene cluster on chromosome 11. New research published in BioMed Central's open access journal *Genome Medicine* has expanded on this using a genome-wide association study (GWAS) to find a novel location within the MS4A gene cluster which is associated with Alzheimer's disease.

Alzheimer's disease is the most common cause of dementia in the developed world. It irrevocably destroys cells in the brain that are responsible for intellectual ability and memory. Despite continued investigation, the causes of Alzheimer's disease are not yet fully understood but they are thought to be a mixture of genetic and environmental factors. Several studies have used GWAS to search the entire human genome for genes which are mutated in Alzheimer's sufferers in the hope of finding a way to treat or slow down the disease.

A team of researchers across Spain and USA sponsored by non-profit Fundación Alzheimur (Comunidad Autónoma de la Región de Murcia) and Fundació ACE Institut Català de Neurociències Aplicades performed their own GWAS study using patients with Alzheimer's disease, and non-affected controls, from Spain and then combined their results with four public GWAS data sets. Dr Agustín Ruiz said, "Combining these data sets allowed us to look more accurately at small genetic defects. Using this technique we were able to confirm the presence of mutations (SNP) known to be associated with Alzheimer's disease, including those within the MS4A cluster, and we also found a novel site."

Dr Ruiz continued, "Several of the 16 genes within the MS4A cluster are implicated in the activities of the immune system and are probably involved in allergies and autoimmune disease. MS4A2 in particular has been linked to aspirin-intolerant asthma. Our research provides new evidence for a role of the immune system in the progression of Alzheimer's disease."

More information: The membrane-spanning 4-domains, subfamily A (MS4A) gene cluster contains a common variant associated with Alzheimer's disease. Carmen Antunez, et al. , *Genome Medicine* (in press)

Provided by BioMed Central

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