Two new genes linked to Alzheimer’s risk

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*A team of researchers led by Cardiff University has identified two genes that influence a person’s risk of developing Alzheimer’s disease.*

The new finding, which builds on the team’s previous work of identifying 24 susceptibility genes, enables a better understanding of the mechanisms underlying the disease and offers further hope in developing new treatments.

Dr Rebecca Sims from Cardiff University’s School of Medicine said: “In addition to identifying two genes that affect the risk of developing Alzheimer’s disease, our new research reveals a number of other genes and proteins that form a network likely to be important in its development…”

*“These particular genes, which suggest that immune cells in the brain play a causal role in the disease, are also very good targets for potential drug treatment.”*

[Dr Rebecca Sims, Research Fellow, Division of Psychological Medicine and Clinical Neurosciences](https://www.cardiff.ac.uk/people/view/126729-sims-rebecca)

Puzzle pieces

Dr Rosa Sancho, Head of Research at Alzheimer’s Research UK, added: “The discovery of new genes is like finding puzzle pieces that biologists can start to fit together to build a complete picture of a disease.

“Alzheimer’s Research UK is proud to be supporting scientists at the cutting edge of this work as they continue to make valuable discoveries that are shaping our understanding of the disease...”

*“There are currently no treatments to slow the progression of Alzheimer’s and increased investment in research is vital so that we can capitalise on new findings and drive progress for people with the condition and their families.”*

Dr Rosa Sancho, Alzheimer’s Research UK

The two novel genes, which were not previously considered candidates for Alzheimer’s risk, were identified during a study which compared the DNA of tens of thousands of individuals with Alzheimer’s with aged-matched people who are free from the disease.

There are currently around 850,000 people in the UK with Alzheimer’s. During the course of the disease, proteins build up in the brain to form structures called plaques and tangles. The connections between nerve cells are lost, and eventually the nerve cells die and brain tissue volume is reduced. People with Alzheimer's also have a shortage of some important chemicals in their brain. These chemical messengers help to transmit signals around the brain. When there is a shortage of them, the signals are not transmitted as effectively.

An exciting advance

Dr Doug Brown, Director of Research and Development at Alzheimer’s Society said: “Over 60% of people with dementia have Alzheimer’s disease, yet despite its prevalence we still don’t fully understand the complex causes of the disease.

“The discovery of two new risk genes for Alzheimer’s is an exciting advance that could help to deepen our understanding of what happens in the brains of people with the disease. These genes reinforce a critical role for special cells in the brain - called microglia - that are responsible for clearing up debris including damaged cells and proteins. Insights like this are vital to help unravel the complexities of Alzheimer’s disease and show researchers where to focus their efforts in the search for new, effective treatments.

“As a funder of this research, we’re delighted to see important progress being made...”

*“The UK Dementia Research Institute centre at Cardiff will now build on this discovery to investigate in detail the role of microglia in dementia and ultimately accelerate our progress towards finding a cure.”*

Dr Doug Brown, Alzheimer’s Society

Cardiff University is building on its leading dementia research after being selected as one of six centres for the UK Dementia Research Institute, a £250m national initiative to combat the disease. With the potential to be awarded further funding over the next five years, the UK DRI at Cardiff University is set to become the biggest investment Wales has ever received for scientific study into dementia.

The research ‘Rare coding variants in PLCG2, ABI3 and TREM2 implicate microglial-mediated innate immunity in Alzheimer’s disease’ is published in [*Nature Genetics*](http://www.nature.com/ng/index.html).

Cardiff University’s involvement in the research was funded by the Alzheimer’s Society, The Medical Research Council (MRC), Welsh Government and Alzheimer’s Research UK.