

Hayling Island scientist sheds light on factors driving Alzheimer's

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Cassidy Fiford, a native of Hayling Island and a PhD student at University College London, has celebrated after making a discovery showing that damage to blood vessels in the brain can drive shrinking of the hippocampus, an area of the brain critical for memory. Her findings are helping researchers shed more light on what drives damage in the brain in Alzheimer's and how it can be stopped.

Alzheimer's disease is the most common form of dementia, a condition that affects 850,000 people in the UK and more than 19,000 people in Hampshire. It is caused by a build-up of two hallmark proteins in the brain, amyloid and tau. However, many people with Alzheimer's also have blood vessel damage in the brain and this too could contribute to the disease. Researchers are working hard to establish how each of these features plays a role in the development of dementia. As blood vessel damage is prominent in vascular dementia and Alzheimer's disease, determining why damage to [blood vessels](#) arises and how it affects the brain could help scientists develop new preventions or treatments.

Cassidy is part of a team of researchers working to track changes in Alzheimer's disease over time. Using brain images from 697 people including healthy volunteers, people with early thinking and memory problems and those diagnosed with Alzheimer's disease, she has been investigating new and improved brain scan techniques to recognise changes caused by blood vessel damage. These changes are called 'white matter hyperintensities' and are seen as white dots on brain scans. They identify an area of the brain that has been affected by blood vessel

damage.

Through her research, Cassidy – a former pupil of Portsmouth High School – has discovered that in healthy older people, blood vessel damage in the brain is linked to shrinkage of a specific area of the brain involved in memory called the hippocampus. Cassidy also found that the brain shrinkage related to blood vessel damage was not driven by age or the two hallmark Alzheimer's proteins amyloid and tau. The research highlights the importance of blood vessel damage on brain health.

The scientists hope the research will help them to gain a better understanding of the contribution that healthy blood flow has in the brain in Alzheimer's, particularly how and to what degree damage to blood vessels drives the disease. In doing so, this new discovery may aid in the development of new prevention and treatment approaches for Alzheimer's.

Cassy Fiford, now a PhD student at Dementia Research Centre, University College London said:

"I am very excited about this latest finding and hope this new study will help to build a bigger picture of the progression of Alzheimer's, and importantly enable other researchers to gain insight into the initial stages of the disease. These results are key because they illustrate just how important our heart health is for our brain. There are many thousands of people in the UK today with poor heart health who may also have damaged blood vessels in the brain and for some of these people, it could contribute to memory and thinking problems over time. Research like ours could not only help to inform approaches to help people stay healthy as they reach older age, but shape future treatment approaches for those already in the early stages of a disease like Alzheimer's."

Dr Rosa Sancho, Head of Research at Alzheimer's Research UK, said:

"Cassidy Fiford, working alongside a team of scientists at UCL, is helping to test a cutting-edge technique to detect blood vessel damage in the brain. Alongside other techniques, this has been vital in showing what happens as a result of damaged blood vessels in the [brain](#), providing a detailed window into diseases like Alzheimer's.

"Alzheimer's disease can begin to develop up to 20 years before any symptoms show and it is important for researchers to understand how [blood vessel damage](#) is involved in these initial stages. Cassidy's participation in this pioneering study is helping us to defeat dementia and identify aspects of Alzheimer's that could be targeted by future treatments. Alzheimer's Research UK is proud to be supporting the next generation of budding dementia scientists through our PhD programme and it's only through the generous donations of our supporters that we can make this possible."

Provided by Alzheimer's Research UK

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