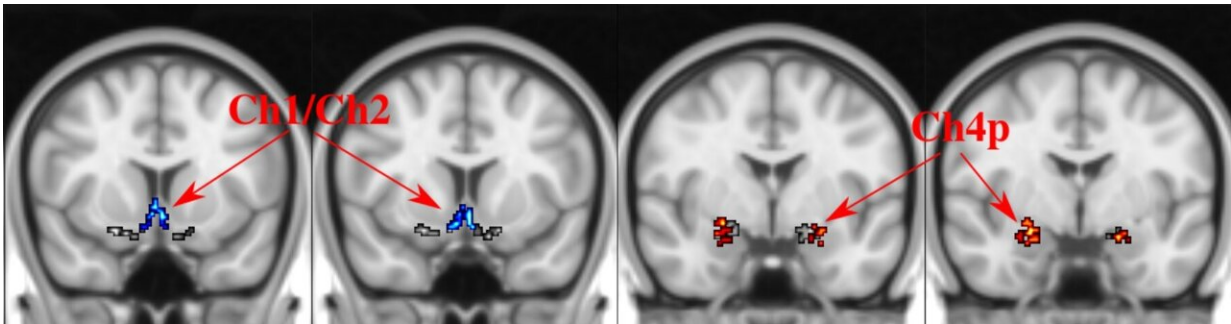


Alzheimer's discovery holds potential to improve drugs

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MRI image noting subregions of the basal forebrain studied in the paper. Credit: CSIRO

A significant discovery by Australian scientists has the potential to improve the effectiveness of drugs currently used to manage cognitive decline in patients with Alzheimer's disease.

Alzheimer's disease is the most common form of dementia, which is the second leading cause of death in the country. It's estimated 250 Australians are diagnosed with dementia every day.

Led by Australia's national science agency, CSIRO, the study compared data from 475 people with varying levels of cognitive impairment.

The scientists looked at the level of amyloid plaques in the brain, the

atrophying or shrinking of the basal forebrain, and [cognitive decline](#) (memory and attention).

Dr. Ying Xia, researcher at CSIRO's Australian e-Health Research Center and lead author of the study [published](#) in *Neurology*, said [early diagnosis](#) is critical to the management of Alzheimer's disease symptoms.

"Our results show how the atrophying of the basal forebrain, a key brain region for learning and memory and part of the cholinergic system, could indicate the presence of the disease well before symptoms occur," Dr. Xia said.

"Our research suggests an important link between [brain structure](#), in this case shrinkage, and the way the brain functions during Alzheimer's disease progression."

These important findings may assist in the ongoing development of drugs to reduce the decline in the [brain function](#) seen in patients with Alzheimer's disease.

This could include work with drugs currently undergoing regulatory approval, which clear amyloid plaques from the brain, to amplify their cognitive effects.

Dr. Xia said new drugs to clear amyloid plaques hold promise, but it's not yet known whether targeting these plaques address the underlying causes of memory and attention decline.

"Currently, drugs available to manage cognitive decline in Alzheimer's are only effective in up to 30% of cases," said Dr. Xia.

"We think we can improve on that figure, by increasing our

understanding of the role played by the system targeted by the current [drug](#) treatment regimes."

The next stage of this research will involve identifying how early the impairment of the cholinergic system occurs and when to administer cholinergic drug treatments to stabilize cognitive decline.

The study used data from the Australian Imaging, Biomarkers and Lifestyle (AIBL) project collected over more than a decade. The research was a collaboration between CSIRO, the University of Queensland, Florey Institute and the University of Melbourne.

More information: Ying Xia et al, Association of Basal Forebrain Atrophy With Cognitive Decline in Early Alzheimer Disease, *Neurology* (2024). [DOI: 10.1212/WNL.0000000000209626](https://doi.org/10.1212/WNL.0000000000209626)

Provided by CSIRO

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