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Australia uncovers driving forces of Alzheimer's disease

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A new Australian study has identified what may be a critical factor in the development of Alzheimer's disease



Alzheimer’s disease, the most common form of dementia, currently has no cure or effective therapy, in part due to gaps in our understanding of how the progressive neurodegenerative disorder arises in the brain.

Now, a Flinders University study has shown how a protein called tau, a critical factor in the development of Alzheimer’s disease, turns from normal to a disease state, and demonstrates how this discovery could deliver a therapeutic target.

Published in the journal Science Advances, the team’s findings provide hope for preventing the tau transformation process from happening, thereby keeping tau in a healthy state and avoiding toxic effects on brain cells.

“Alongside a small peptide called amyloid-beta, the tau protein is a central factor in Alzheimer’s disease. Tau is necessary for the toxic effects on brain cells that then result in impaired memory function,” says senior study author Dr Arne Ittner, Senior Research Fellow in Neuroscience in the Flinders Health and Medical Research Institute.

In the course of Alzheimer’s disease development, tau accumulates in deposits inside brain cells. During this process, tau gets heavily modified, with various deposits made up of tau carrying multiple small changes at many different positions within the tau molecule.

While such changes to tau have been known to neuropathologists for decades, it remained unclear how tau arrives at this multi-modified stage. The new study has solved part of this mystery and provides a new mechanism to explain how tau gets progressively modified.