

Study identifies brain protein that could put the brakes on Alzheimer's

October 1 2019



Alessandra Martini and Frank LaFerla the UCI School of Biological Sciences led the study. Credit: UCI

University of California, Irvine biologists blazing new approaches to studying Alzheimer's disease have made a major finding on combating

inflammation linked to the disease. The School of Biological Sciences researchers' discovery about the role of a protein called TOM-1 heralds a shift toward examining the molecular underpinnings of Alzheimer's processes.

Their study appears in the *Proceedings of the National Academy of Sciences*.

"Scientists have known for a long time that inflammation is a driver of Alzheimer's [disease](#), but inflammation is complex and involves many factors," said School of Biological Sciences Dean Frank LaFerla, Ph.D., whose laboratory conducted the research. "That's why we decided to look at TOM-1.

The protein helps to regulate a key component of the inflammatory response. "We were interested in TOM-1 because its levels are low in the Alzheimer's brain and in the brains of Alzheimer's rodent models," said Alessandra Martini, Ph.D., the paper's first author and a postdoctoral researcher who worked with LaFerla. "However, its specific role in the disease has largely been unexplored."

The scientists discovered that reducing the amount of TOM-1 in Alzheimer's rodent models increased pathology, which included increased [inflammation](#), and exacerbated cognitive problems associated with the disease. Restoring TOM-1 levels reversed those effects.

"You can think of TOM-1 as being like the brakes of a car, and the brakes aren't working for people with Alzheimer's," LaFerla said. "This research shows that fixing the brakes at the [molecular level](#) could provide an entirely new therapeutic avenue. With millions of people affected by Alzheimers and the numbers growing, we must research a diverse portfolio of approaches so we can one day vanquish this terrible disease."

More information: Alessandra Cadete Martini et al. Amyloid-beta impairs TOM1-mediated IL-1R1 signaling, *Proceedings of the National Academy of Sciences* (2019). [DOI: 10.1073/pnas.1914088116](https://doi.org/10.1073/pnas.1914088116)

Provided by University of California, Irvine

Citation: Study identifies brain protein that could put the brakes on Alzheimer's (2019, October 1) retrieved 25 April 2024 from <https://medicalxpress.com/news/2019-10-brain-protein-alzheimer.html>

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