

Scientists discover a new protein crucial to normal forgetting

2 June 2016



Drosophila melanogaster

When Elvis released his first number-one country hit "I Forgot to Remember to Forget" in 1955, the song was more correct scientifically than he could have imagined. Humans need to forget as part of the brain's system for the management of memories acquired across a lifetime.

"Understanding the process of [forgetting](#) could have an enormous impact on how we treat a whole range of diseases," said Ron Davis, chair of the Department of Neuroscience on the Florida campus of The Scripps Research Institute (TSRI). "Certain memories are intrusive and, with sufficient knowledge of how the brain forgets, we should be able to remove selective memories. Alternatively, we could find a way to inhibit forgetting in those suffering from memory disorders such as Alzheimer's disease."

The new study, published June 2, 2016 online ahead of print by the journal *Neuron*, uncovers a new aspect of how this process works. The results show that a protein called "Scribble" orchestrates

the intracellular signaling processes for forgetting, joining several molecules to forge a pathway.

To conduct this research, Davis and his colleagues turned to *Drosophila*, or the common fruit fly, a critical model for studying memory found to be highly applicable to humans.

By "knocking down" the expression of the gene that produces Scribble, the researchers produced flies that were able to remember twice as much as normal flies, simply because they failed to forget at the normal rate. The researchers also identified Scribble's crucial role in interacting with other key molecular players for forgetting within the fly brain.

"What Scribble does is combine the Rac1 and dopamine pathways together into a single dynamic pathway that controls active forgetting," Davis said. "It orchestrates a series of molecules that are involved in this particular forgetting pathway, and there may well be others we have yet to discover."

"The Scribble protein is expressed in the same neurons that encode olfactory memories," said TSRI Senior Staff Scientist Isaac Cervantes-Sandoval, the study's first author. "We were able to show that it regulates memory by involvement in this particular forgetting pathway, an important biological process that has been surprisingly ignored."

Provided by The Scripps Research Institute

APA citation: Scientists discover a new protein crucial to normal forgetting (2016, June 2) retrieved 12 June 2021 from <https://medicalxpress.com/news/2016-06-scientists-protein-crucial.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.