

The secret of autobiographical memory is in assembly of cells

June 26 2019, by Bill Hathaway



Credit: CC0 Public Domain

Of all forms of memory, episodic memory is the most intimate. We recall the sequences of events that happen to us—a marriage, a visit to a foreign country, a personal achievement—in great autobiographical detail. But scientists have disagreed about the most important elements the brain uses to encode these episodes and consolidate them during

sleep.

A group of Yale scientists, however, reports that it is the size and shape of neuronal assemblies—not the strength of signals processed by [neurons](#) or the order in which neurons fire—that are the most crucial elements in our ability to record past events.

"It is like a sketch that contains a lot of dots but has no ultimate form, but once you enlarge specific dots with a crayon then the pattern becomes clearer," said George Dragoi, assistant professor of psychiatry and neuroscience and senior author of the research published June 25 in the journal *Neuron*.

While living through an experience and during sleep, the neuronal activity of the brains of rats maps the experience onto connections between cell assemblies arranged in sequences. However, the sequence of those connections is less important in determining whether an [episodic memory](#) forms than are the changes in neuronal assemblies themselves, the researchers report.

More information: Usman Farooq et al. Strengthened Temporal Coordination within Pre-existing Sequential Cell Assemblies Supports Trajectory Replay, *Neuron* (2019). [DOI: 10.1016/j.neuron.2019.05.040](https://doi.org/10.1016/j.neuron.2019.05.040)

Provided by Yale University

Citation: The secret of autobiographical memory is in assembly of cells (2019, June 26) retrieved 10 May 2024 from <https://medicalxpress.com/news/2019-06-secret-autobiographical-memory-cells.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.