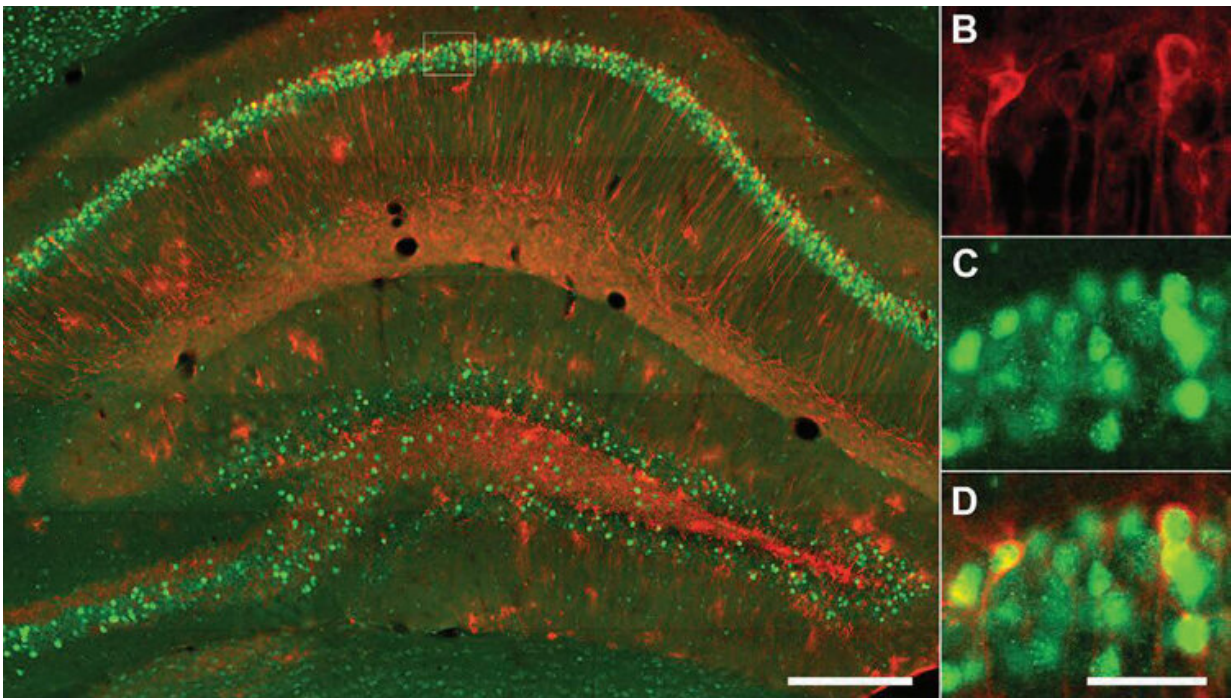


Negative memory storage affects depression symptoms

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Fluorescent-tagged cells in the hippocampus (A), including engram cells (D).
Credit: Zhang et al., *JNeurosci* 2019

Physical manifestations of negative memories in the hippocampus could underlie cognitive symptoms of depression, according to research in mice published in *JNeurosci*. Inhibiting these manifestations could be a future treatment route.

Groups of neurons that are activated after an experience are thought to be the physical representation of memory. These so-called engrams in the [hippocampus](#) could be involved in depression, which is characterized by impaired recall of positive memories and increased recall of negative memories.

In a mouse model of depression, Tak Pan Wong and colleagues at Douglas Hospital Research Centre tagged the engrams that formed after [mice](#) experienced social stress and examined their social avoidance behavior. Even though all mice experienced the same stressor, only some displayed depression behaviors, indicating a predisposition to developing depression.

The depression-prone mice displayed higher concentrations of engram cells compared to the less susceptible mice, and the density of the cells correlated with the level of social avoidance behavior. Activating the engram cells increased social avoidance behavior while suppressing the [cells](#) decreased it, suggesting a role in the cognitive symptoms of depression.

More information: Negative Memory Engrams in the Hippocampus Enhance the Susceptibility to Chronic Social Defeat Stress, *JNeurosci* (2019). [DOI: 10.1523/JNEUROSCI.1958-18.2019](https://doi.org/10.1523/JNEUROSCI.1958-18.2019)

Provided by Society for Neuroscience

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