

# Giving an old mouse cerebrospinal fluid from a young mouse improves its memory

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An international team of researchers has found that injecting older mice with cerebrospinal fluid from younger mice can lead to an improvement in memory. In their paper published in the journal *Nature*, the group describes a technique to remove small amounts of cerebrospinal fluid

from young mice and inject it into the brain of an older mouse without causing damage. Miriam Zawadzki and Maria Lehtine with Boston Children's Hospital have published a News & Views piece in the same journal issue outlining the work done by the team in this new effort.

In recent years, some researchers have been touting the benefits of transfusing blood from [young people](#) into [older people](#) as a means of slowing the aging process. In this new effort, the researchers have taken such research a step further by removing [cerebrospinal fluid](#) from a young mouse and injecting it into the brain of an older mouse to see if it might improve memory function.

The researchers spent many months looking for a way to remove a small amount of cerebrospinal fluid from a young mouse in ways that would not result in tainted specimens. Once they found a technique, they had to find a way to inject the specimen into an older mouse without causing damage or infections. Once the two procedures were perfected, the team trained a group of older mice to associate a flashing light with an electric shock to the foot. Then they collected multiple samples of cerebrospinal fluid from several [young mice](#) and injected it into the brains of several of the trained older mice—they did the same with a [control group](#). After two weeks, they tested both groups and found that those that had received the cerebrospinal fluid better remembered what was going to happen when the light flashed.

The researchers also dissected the brains of some of their treated mice to find out why administering cerebrospinal fluid improved their memory. They found higher-than-normal levels of serum response factor in the older mice, which is involved in the production of oligodendrocyte progenitor cells. They also found that the injections boosted fibroblast growth factor 17.

**More information:** Tal Iram et al, Young CSF restores

oligodendrogenesis and memory in aged mice via Fgf17, *Nature* (2022).  
[DOI: 10.1038/s41586-022-04722-0](https://doi.org/10.1038/s41586-022-04722-0)

Miriam Zawadzki et al, Young cerebrospinal fluid improves memory in old mice, *Nature* (2022). [DOI: 10.1038/d41586-022-00860-7](https://doi.org/10.1038/d41586-022-00860-7)

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