Alzheimer’s ‘lost’ memories may be recoverable, not deleted new study suggests

17/03/2016

Nobel Prize-winner Susumu Tonegawa conducted studies on mice that have been genetically modified to acquire symptoms similar to those of humans suffering from Alzheimer’s disease. His team stimulated specific areas of their brains with blue light and they were able to make the rodents recall thoughts that were otherwise unavailable to them.

"As humans and mice tend to have a common principle in terms of memory, our findings suggest that Alzheimer's disease patients, at least in their early stages, may also keep memories in their brains, which means there may be a possibility of a cure," Dr Tonegawa, director of the Japan based RIKEN-MIT Center for Neural Circuit Genetics, told AFP.

Lab mice were put in a box with a low level and safe electrical current passing through the floor that sent a shock through the animals’ feet.

A normal mouse later froze in fear, when it was returned to the same box 24 hours later. The ones with Alzheimer’s symptoms barged straight on, not having recalled the stinging sensation.

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The researchers then stimulated the brains of the Alzheimer mice with a blue light, specifically those parts associated with memory called *“engram cells”*. The mice seemingly recalled their experience with the electric current.

The same result was noted even when the mice were placed in a different box, suggesting memory had been retained and was being reactivated.

There was even a physical difference between the affected and non-affected mice. The ones “*with Alzheimer’s*”

had less spines, which are special conduits through which synaptic connections form.

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But here’s the exciting part: the number of spines increased via repeated blue light stimulation, which subsequently resulted in the mice freezing at the sight of the “*electrocuting*” box.

"This means that symptoms of Alzheimer's disease in mice were cured, at least in their early stages," Tonegawa concluded.

The light stimulation mentioned above is a technique called “*optogenetics*” -optical stimulation of brain cells. It involves the insertion of a special gene into neurones rendering them sensitive to blue light, so specific parts of the brain can be stimulated.

This research offers hope to Alzheimer’s sufferers. The disease currently accounts for 60-80 percent of dementia cases, and that figure is set to grow, as the population of developed countries is now tending to live longer. Neurodegenerative disease causes problems with memory, thinking and behavior.

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