

# NTU discovers new dementia treatment by sending electrical impulses to the brain

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## World News

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Sending electrical pulses to the front of the brain could enhance the growth of new brain cells.

This improves short and long-term memory, and reduces the effects of dementia related conditions such as as Alzheimer's disease and Parkinson's disease.

"Minute" amounts of electricity are all that is needed to stimulate the front of the brain, which is involved in memory retention, to produce neurons.

This therapeutic procedure was discovered by Nanyang Technological University (NTU) scientists on March 13.

Their finding was published in eLife, a peer-reviewed open-access scientific journal published by the Howard Hughes Medical Institute, the Max Planck Society and the Wellcome Trust.

A recent study on nearly 5,000 seniors in Singapore found that one in 10 people aged 60 and above has dementia.

For decades, scientists have been finding ways to generate brain cells to boost memory and learning, treat brain trauma and injury, and age-related diseases such as dementia.

The NTU team's research was conducted using middle-aged rats, in which electrodes which send out minute micro-electrical impulses were implanted in the brains.

The rats underwent a few memory tests before and after stimulation. They displayed positive results in memory retention, even after 24 hours.

Assistant Professor Ajai Vyas from NTU's School of Biological Sciences said the electrodes were harmless to the rats, and that they went on to live normally and fulfil their adult lifespan of around 22 months.

As part of a natural cycle, brain cells constantly die and get replaced by new ones. The area of the brain responsible for generating new brain cells is known as the hippocampus, which is also involved in memory forming, organising and retention.

This is the first time that the hippocampus was successfully stimulated to produce neurons by sending electrical pulses through the prefrontal cortex.

The scientists said that deep brain stimulation has multiple benefits.

The increase in brain cells reduces anxiety and depression, promotes improved learning, and boosts overall memory formation and retention.

Dr Lim Wei Lee, an associate professor at Sunway University, Malaysia, who worked on the research project while he was a Lee Kuan Yew Research Fellow at NTU, said that studies have shown that there are no negative effects to prefrontal cortex stimulation.

Known as deep brain stimulation, the procedure itself is in use in some parts of the world to treat various neurological conditions such as tremors or dystonia, which is characterised by involuntary muscle contractions and spasms.

"This breakthrough could pave the way towards improved treatments for patients," Dr Lim said.

The research was funded by the Lee Kuan Yew Research Fellowship which supports and promotes young and outstanding researchers in their respective areas of specialisation. (\*\*\*)