

Drug successfully reverses Alzheimer's...

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US scientists say they have successfully reversed the effects of Alzheimer's with experimental drugs.

The drugs target and boost the function of a newly pinpointed gene involved in the brain's memory formation. In mice, the treatment helped restore long-term memory and improve learning for new tasks, Nature reports.

The same drugs - HDAC inhibitors - are currently being tested to treat Huntington's disease and are on the market to treat some cancers.

They reshape the DNA scaffolding that supports and controls the expression of genes in the brain. The Alzheimer's gene the drugs act upon, histone deacetylase 2 (HDAC2), regulates the expression of a plethora of genes implicated in plasticity - the brain's ability to change in response to experience - and memory formation.

This findings build on the team's 2007 breakthrough in which mice with symptoms of Alzheimer's disease regained long-term memories and the ability to learn.

Lead researcher Professor Li-Huei Tsai explained: "It brings about long-lasting changes in how other genes are expressed, which is probably necessary to increase numbers of synapses and restructure neural circuits, thereby enhancing memory.

"To our knowledge, HDAC inhibitors have not been used to treat Alzheimer's disease or dementia. "But now that we know that inhibiting HDAC2 has the potential to boost synaptic plasticity, synapse formation and memory formation.

"In the next step, we will develop new HDAC2-selective inhibitors and test their function for human diseases associated with memory impairment to treat neurodegenerative diseases."

Future hope

HDAC inhibitor treatment for humans with Alzheimer's disease is still a decade or more away, she said.

The chief executive of the Alzheimer's Research Trust, Rebecca Wood, said: "This is promising research which improves our understanding of memory loss in Alzheimer's.

"We need to do more research to investigate whether developing treatments that control this gene could benefit people with Alzheimer's.

"We desperately need to fund more research to head off a forecast doubling the UK population living with dementia."

Julie Williams, an expert in the genetics of Alzheimer's for the trust, said scientists were on the brink of finding a number of candidate genes that increase the risk of developing Alzheimer's.

"If we can find the triggers and causes then we can hopefully prevent them. That is the great ambition."