

## Emotions connected to memories can be altered, at least in mice

By artificially activating circuits in the brain, scientists have turned negative memories into positive ones.

They gave mice bad memories of a place, then made them good – or vice versa – without returning to that place.

Neurons storing the “place” memory were re-activated in a different emotional context, modifying the association.

Although unlikely to be applied in humans with traumatic memories, the work sheds new light on the details of how emotional memories form and change.

“Emotion is intimately associated with memories of past events and episodes, and yet the ‘valence’ – the emotional value of the memories – is malleable,” said the study’s senior author Prof Susumu Tonegawa, from the Riken-MIT Center for Neural Circuit Genetics in Massachusetts, US.

Male mice were given a negative experience, consisting of small electric shocks, in a particular room, and the neurons working to store that memory were labelled using “optogenetics”.

The next day, with the mouse in a different room, stimulating the labelled neurons in this way effectively “reactivated” the original, fearful memory. When the mice were offered a choice between having the blue light on or off, they chose to leave it off.

But next, the researchers stimulated the labelled neurons while they gave the mouse a *positive* emotional cue (a female for company), in an attempt to “flip” the emotional association of the stored memory.

Sure enough, offered the same choice again, the mice now wanted the blue light switched on: the original memory trace had been altered, and now they liked it.

**Read the full, original story: [Mouse memories ‘flipped’ from fearful to cheerful](#)**