

## Gene therapy used to improve memory

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U.S. neuroscientists say they have designed a gene that enhances memory and learning ability in animals under stress.

Stanford University researchers say their experimental technique might lead to new forms of gene therapy that can reduce the severe neurological side effects of steroids, which are prescribed to millions of patients with arthritis, asthma and other illnesses.

Neuroendocrinologist Professor Robert Sapolsky, co-author of the study, and colleagues created a chimera -- an experimental strand of DNA made with two genes stitched together, in this case a glucocorticoidreceptor gene from a rat combined with an estrogen-receptor gene from a human.

When this new chimeric gene was injected into the hippocampus of a rat, the gene produced new protein receptors that quickly converted stress-inducing glucocorticoids into beneficial estrogen signals.

"They suggest this gene therapy not only blocks the deleterious effects of glucocorticoids, but actually enhances spatial memory and learning through estrogen-controlled events, even in the presence of stress," said Sapolsky. "Seeing this enhancement effect was pretty exciting. It's the best we could have hoped for.

The research appears in the current issue of the Journal of Neuroscience.

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