

Gene-editing injections: A new way to tweak epigenetic expression of genes to treat alcohol addiction

While gene editing relies on changing the DNA code itself, epigenetic editing involves dialing the expression of individual genes up or down. Genes contain instructions to make vital proteins, and their expression is the process by which a gene gets switched “on” to make them. If you think of your genes as volume knobs on a soundboard, epigenetic editing controls how “loud” or “soft” their settings are.

Experimenting with those volume controls is a new field, but a study published in May [in the journal *Science Advances*](#) offers an intriguing peek at one possible application: countering the way early alcohol use modifies how genes work.

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In both rodents and in people, they found that exposure to alcohol early in life seems to decrease the expression of a gene called *Arc*. This gene is a major regulator of plasticity, or the brain’s ability to adapt based on experience. When *Arc*’s expression is turned down, the change is associated with a predisposition to anxiety and alcohol use disorder in adulthood.

For the new study, a team led by Subhash Pandey... wanted to see if they could reverse this change—in rats—by epigenetically editing *Arc* in their amygdalas.

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The Crispr injection brought *Arc* expression back up to baseline levels, what Pandey refers to as a “factory reset” for the brain. Afterward, these rodents consumed less alcohol and were less anxious.

[**This is an excerpt. Read the original post here**](#)