

Why the craving for cocaine won't go away

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People who have used cocaine run a great risk of becoming addicted, even after long drug-free periods. Now researchers at Linköping University and their colleagues can point to a specific molecule in the brain as a possible target for treatment to prevent relapses.

Drugs are addictive because they "hijack" the brain's reward system, which is actually intended to make it pleasurable to eat and have sex, behaviors that are necessary for survival and reproduction.

This "hijacking" is extremely long-lived and often leads to relapses into abuse, especially when the individual is exposed to [stimuli](#) in the surroundings that are associated with the drug. In an article in the prestigious [Journal of Neuroscience](#) the research team can now show that a receptor for the signal substance glutamate (mGluR5), in a part of the brain called the striatum, plays a major role in relapses.

The study, led by David Engblom, associate professor of neurobiology at Linköping University in Sweden, looks at what happens in individuals who lack the glutamate receptor. The experiments were performed on mice that were taught to ingest [cocaine](#).

"Our findings show that the mice who lacked the receptor were less prone to relapse. This is due the fact that their reaction to reward had not been etched into their memories in the same ways as in normal mice. The receptor seems to be a prerequisite for objects or environments that were previously associated with taking drugs, or something else rewarding, to create a craving," says David Engblom.

He hopes that these findings and other studies of mechanisms underlying [drug addiction](#) can lead to forms of treatment based on what goes wrong in the brain of an addict.

More information: *The Journal of Neuroscience*, September 8, 2010, 30(36):11973-11982; [doi:10.1523/JNEUROSCI.2550-10.2010](https://doi.org/10.1523/JNEUROSCI.2550-10.2010)

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