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## Rat Study Gets at Root of Nicotine Addiction

WEDNESDAY, Oct. 3 (HealthDay News) -- Research in rats has pinpointed a brain mechanism linked to nicotine dependence and to the anxiety and cravings associated with nicotine withdrawal.

Researchers at the Scripps Research Institute in La Jolla, Calif., said the findings may point to better drugs that can help smokers kick the habit.

In rats, chronic nicotine use recruits a major brain stress system -- the extrahypothalamic corticotropin releasing factor (CRF) system. This contributes to continued nicotine use by exacerbating anxiety and craving whenever nicotine is withdrawn, the researchers found.

The CRF system is located in the amygdala, a brain region that plays a major role in the processing of memory and emotional reactions. The CRF system is activated by CRF-1, an essential protein for coping with stressful events.

"These results suggest long-lasting neuroadaptations of the CRF system, possibly through gene regulation, that may help explain why many cigarette smokers relapse even after a long abstinence from smoking," Olivier George, a research associate at Scripps, said in a prepared statement.

The Scripps team also discovered that giving the rats a compound that blocked these receptors eased the rodents' withdrawal symptoms.

"We reduced the need to take nicotine by blocking CRF-1 receptors in the brain," George said. "We were surprised by the compound's dramatic effectiveness. We don't know yet if the same mechanism is involved in humans with tobacco dependence, but it is very promising."

The study was published this week in an advance online issue of the journal *Proceedings of the National Academy of Sciences*.

### More information

The American Academy of Family Physicians offers tips on how to [quit smoking](#).

-- Robert Preidt

SOURCE: Scripps Research Institute, news release, Oct. 1, 2007

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