

# Studies explore potential origins of addiction and treatments

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Studies released today suggest promising new treatments for nicotine and heroin addiction, and further our understanding of pathological gambling and heroin abuse in those suffering chronic pain. This new knowledge, released at Neuroscience 2013, the annual meeting of the Society for Neuroscience and the world's largest source of emerging news about brain science and health, may one day lead to non-pharmaceutical interventions and therapies to treat addiction.

According to the World Health Organization, 15.3 million people worldwide suffer from drug use disorders. A variety of [brain areas](#) and processes play a role in addictive behaviors, complicating treatment and costing millions of dollars and lives each year. Today's studies contribute to an understanding of how compulsive disorders like addiction develop and provide new insight into methods to treat addictive behaviors .

The new findings show that:

- Magnetic stimulation of the brain helps some people decrease their smoking, and even quit altogether for up to six months after treatment (Abraham Zangen, abstract 635.03, see attached summary).
- Stimulating an area of the brain associated with drug reward, the subthalamic nucleus, reduces rats' motivation to take heroin (Carrie Wade, PhD, abstract 818.03, see attached summary).
- Chronic pain leads rats already exposed to drugs to take more and higher doses of heroin, suggesting that people with addiction

are more susceptible to overdose when in [chronic pain](#) (Lucia Hipolito, PhD, abstract 158.05, see attached summary).

Other recent findings discussed show that:

- Drug abuse stresses the brain, and the resulting dysregulation of systems involved in the stress response could contribute to negative feelings that trigger increased drug taking and addiction (George Koob, PhD, presentation 689, see attached speaker summary).
- Research suggests an area of the brain known as the insula may be overactive in people with gambling problems. People with damage to this area were less prone to the motivations of gamblers, providing a clue to identify areas of the brain that are linked to gambling addiction (Luke Clark, PhD, presentation 686.05, see attached speaker summary).
- Pathological gamblers may love a cash payout, but care less about other types of rewards, such as sex or food. Researchers found pathological gamblers showed decreased activity in reward-sensitive brain areas when money wasn't involved (Guillaume Sescousse, PhD, presentation 686.06, see attached speaker summary).

"Non-drug interventions would be an enormous step forward in [drug abuse](#) treatment, which currently relies on replacing one drug with another and has an extremely high rate of relapse," said press conference moderator Barry Everitt of the University of Cambridge, an expert in drug abuse research. "Today's exciting results give us new ways of understanding why compulsive conditions such as drug abuse and [pathological gambling](#) might arise, and give us targets to explore for non-drug treatment, which would help us treat a population suffering from addiction."

Provided by Society for Neuroscience

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