

Drug addiction study offers new insight on compulsive behavior

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The same neurological mechanism involved in the transition from habitual to compulsive drug use could underlie less severe, but still harmful, compulsive behaviours.

"We're trying to understand individuality in [addictive behaviour](#). Many people can be exposed to drugs with addictive potential, for instance, but not everyone will become addicted," explains Eric Dumont, an associate professor in the Department of Biomedical and Molecular Sciences. "We believe we've identified a mechanism that makes certain people predisposed to developing addictions, and it's possible that the same mechanism underlies many - perhaps most - compulsive behaviours."

The mechanism occurs in a reward pathway of the brain. In this pathway, the brain maintains a delicate balance between pleasure and aversion, ensuring that moment-to-moment desires and dislikes remain in sync with the biological needs of the body.

Dr. Dumont and his team found unusual activity in this pathway when modeling [drug addiction](#) in rats, which exhibit a [genetic predisposition](#) to addiction comparable to humans. They believe that the pathway's balance is prone to becoming unbalanced in a certain percentage of the population. The signal to stop an activity reverses to a green light.

The team hopes that by identifying this mechanism, and possibly others like it, they will allow researchers to better understand and monitor a range of compulsive behaviours. Accordingly, Dr. Dumont's team

collaborates with Dr. Cella Olmstead, associate professor of Psychology at Queen's, who recently developed an [animal model](#) of compulsive sucrose intake.

Dr. Dumont and this team were recently awarded a \$520,000 operating grant from Canadian Institutes of Health Research (CIHR) to support their work for the next five years in understanding the neurological processes behind addiction behaviour.

Provided by Queen's University

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