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Scientists reduce behaviors associated with problem gambling in rats

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With the help of a rat casino, University of British Columbia brain researchers have successfully reduced behaviours in rats that are commonly associated with compulsive gambling in humans.

The study, which featured the first successful modeling of slot machine-style gambling with rats in North America, is the first to show that problem gambling behaviours can be treated with drugs that block dopamine D4 receptors. The findings have been published in *Biological Psychiatry* journal.

"More work is needed, but these findings offer new hope for the treatment of gambling addiction, which is a growing public health concern," says Paul Cocker, lead author of the study and a PhD student in UBC's Dept. of Psychology. "This study sheds important new light on the brain processes involved with gambling and gambling addictions."

For the study, rats gambled for sugar pellets using a slot machine-style device that featured three flashing lights and two levers they could push with their paws. The rats exhibited several behaviours associated with problem gambling such as the tendency to treat "near misses" similar to wins.

Building on previous research, the team focused on the dopamine D4 receptor, which has been linked to a variety of behavioural disorders, but never proven useful in treatment. The study found that rats treated with a dopamine D4 receptor-blocking medication exhibited reduced levels of

behaviours associated with problem gambling.

While findings suggest that blocking the D4 dopamine receptor may help to reduce pathological gambling behaviours in humans, the researchers note that further research is needed before the drugs can be considered a viable pharmaceutical treatment for pathological gambling in humans.

Provided by University of British Columbia