

Turning repulsive feelings into desires

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Hunger, thirst, stress and drugs can create a change in the brain that transforms a repulsive feeling into a strong positive "wanting," a new University of Michigan study indicates.

The research used salt appetite to show how powerful natural mechanisms of brain desires can instantly transform a cue that always predicted a repulsive Dead Sea Salt solution into an eagerly wanted beacon or motivational magnet.

Mike Robinson, a research fellow in the U-M Department of Psychology and the study's lead author, said the findings help explain how related brain activations in people could cause them to avidly want something that has been always disliked.

This instant transformation of motivation, he said, lies in the ability of events to activate particular [brain circuitry](#)—a structure called the [nucleus accumbens](#), which sits near the base of the front of the brain and is also activated by [addictive drugs](#).

Cues for rewards often trigger intense motivation. The smell of food can make a person suddenly feel hungry when this wasn't the case earlier. Drug cues may prompt relapse in addicts trying to quit. In some cases, desires may be triggered even for a relatively [unpleasant event](#).

Researchers studied how rats responded to metal objects that represented either pleasant sugar or disgustingly intense Dead Sea saltiness. The rats quickly learned to jump on and nibble the sweetness

cue, but turned away from and avoided the saltiness cue.

But one day the rats suddenly woke up in a new state of sodium appetite induced by drugs given the night before. On their first re-encounter with the saltiness cue in the new appetite state, their [brain systems](#) became activated and the [rats](#) instantly jumped on and nibbled the saltiness cue as though it were the sugar cue.

"The cue becomes avidly 'wanted' despite knowledge the salt always tasted disgusting," Robinson said.

The sudden [brain changes](#) help explain how an event, such as taking an addictive drug, could become "wanted" despite a person's knowledge of the negative and unpleasant consequences of the drug.

"Our findings highlight what it means to say that drugs hijack our natural reward system," said Robinson, who authored the new study with Kent Berridge, James Olds Collegiate Professor of Psychology and Neuroscience.

The findings appear in the current issue of *Current Biology*.

More information: [www.sciencedirect.com/science/ ...
ii/S0960982213000195](http://www.sciencedirect.com/science/.../S0960982213000195)

Provided by University of Michigan

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