

# Researchers identify brain area linked to motivational disruptions in binge eating

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Scientists at Rutgers Brain Health Institute have discovered that a small group of brain cells in the hypothalamus called 'orexin' neurons could be a promising target for medications for controlling binge eating episodes in individuals with obesity. These neurons, named for the chemical messenger they use to communicate with other brain cells, have previously been shown to be important for addiction to several drugs, including cocaine.

"Several key symptoms of eating disorders, such as the sense of losing control, overlap with what we know about the driven nature of drug addiction," said Dr. Gary Aston-Jones, director of the Brain Health Institute at Rutgers, The State University of New Jersey, and one of the senior authors of the study. "Since the orexin system has been implicated in addiction to drugs of abuse, we targeted it to understand the change in food motivation caused by repeated episodes of binge eating."

The researchers studied female rats fed a control diet or a sugary, [high-fat diet](#) that causes weight gain and binge eating patterns. Then they set up a task where rats could work to earn sweet treats. As the work required increased, persistent motivation to earn the treat was seen only in the binge-eaters who had previously gained weight on a high-fat diet. Notably, this enhanced motivation was reversed by treatment with a compound that blocks orexin signals in the [brain](#).

"This study was really a proof-of concept for using orexin blockers to reduce binge-like eating in rodents," said the lead study author Dr.

Morgan James, post-doctoral research fellow at the Rutgers Brain Health Institute. "Currently there are several orexin-targeting medications in clinical trials or already FDA-approved, so we have begun testing whether these compounds would produce similar results in our rodent model of binge eating." The study team reported their findings this week at the annual meeting of the Society for the Study of Ingestive Behavior (SSIB), an international group of scientific experts on eating behavior.

The researchers also found that the orexin blocker reduced the amount of food consumed during the binge eating episodes, where rats were given unrestricted access to a sweetened fat mixture over a 30 minute period.

"Pharmacological treatments are currently limited for patients with eating disorders, so it is really exciting if a novel therapy could expand treatment options for obese individuals with binge eating disorder," said Dr. Nicholas Bello, associate professor of animal sciences in the School of Environmental and Biological Sciences at Rutgers University and a senior author of the study.

The authors will continue their research by investigating how the size and number of orexin neurons in the brain might be altered following changes to dietary habits or weight or their combination. Funding for this research was provided the Rutgers One Nutrition Pilot Grant program and Rutgers Brain Health Institute.

**More information:** Orexin/hypocretin system preferentially drives food motivation in female rats experienced with excessive weight gain and binge-like eating, 26th Annual Meeting of the Society for the Study of Ingestive Behavior.

Provided by Society for the Study of Ingestive Behavior

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