

Rats move toward the food but do not eat

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Matthew Will is an assistant professor of psychological sciences in the MU College of Arts and Science and investigator in the Christopher S. Bond Life Sciences Center. Credit: Photo courtesy of MU News Bureau

Scientists led a rat to the fatty food, but they couldn't make it eat. Using an animal model of binge eating, University of Missouri researchers discovered that deactivating the basolateral amygdala, a brain region involved in regulating emotion, specifically blocked consumption of a fatty diet. Surprisingly, it had no effect on the rat wanting to look for the food repeatedly.

"It appears that two different [brain](#) circuits control the motivation to seek and consume," said Matthew Will, assistant professor of psychological sciences in the MU College of Arts and Science and investigator in the Christopher S. Bond Life Sciences Center.

"Understanding how this circuit in the brain works may provide insight into the exact networks and chemicals in our brain that determine the

factors influencing our feeding habits."

The release of opioids, pleasure chemicals that can lead to euphoria, into the brain produces binge eating in non-hungry rats. Will and his team of researchers determined that deactivating the basolateral [amygdala](#) blocked this type of binge eating.

"A key to curbing the obesity epidemic in America is controlling the desire to binge eat," Will said. "Humans have more programming to start and continue eating than to stop eating, especially when they have a bowl of ice cream in front of them. Most of us would finish it even if we weren't hungry."

Deactivating the basolateral amygdala had no effect on feeding in [rats](#) that were simply deprived of [food](#) for 24 hours. This suggests that the basolateral amygdala is specifically involved in the overconsumption of food based on its palatability or pleasure driven by opioids, rather than the level of [hunger](#).

"The finding that the basolateral amygdala only appears involved in the opioid produced consumption was the most surprising part of the study," Will said. "Normally, if a rat stops eating, they will go lay down and take it easy. In this case, they showed all signs of still wanting to eat, but didn't."

In the past when food availability was scarce, humans may have needed this "binge eating" regulation to eat enough food when it was available. Now, when humans have access to foods high in sugar and fat 24 hours a day, this regulation can cause humans to overeat.

More information: The study, "Behavioral Characterization of Amygdala Involvement in Mediating Intra-Accumbens Opioid-Driven Feeding Behavior," was published in August in *Behavioral Neuroscience*.

Source: University of Missouri-Columbia ([news](#) : [web](#))

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