

Optic probes shed light on binge-eating

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Credit: stock.adobe.com

Activating neurons in an area of the brain not previously associated with feeding can produce binge-eating behavior in mice, a new Yale study finds.

When activated by light probes, GABA [neurons](#) in an area of the [brain](#) called the zona incerta induce mice to return repeatedly to feed, Anthony van den Pol and Xiaobing Zhang of the Department of Neurosurgery

report May 26 in the journal *Science*.

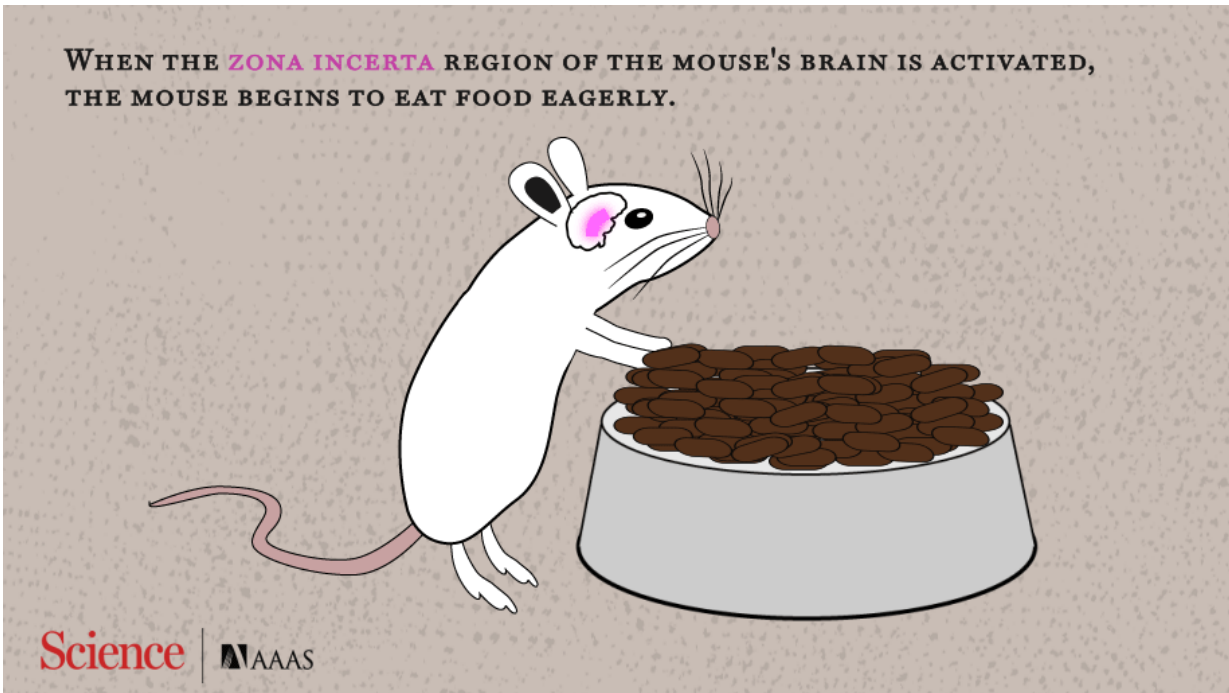
"What was most remarkable was the rapidity with which the mice began to eat," said van den Pol. "Although many brain regions contribute to the regulation of energy balance and food intake, I am not aware of any other part of the brain that can be stimulated to generate feeding within two to three seconds."

Mice gained considerable body weight if their zona incerta was stimulated, but then returned to normal weight in the absence of stimulation.

"The parallel with human binge-eating is interesting," van den Pol said. "The mice prefer the animal equivalent of potato chips, candy, or cake."

The [mice](#) seemed to enjoy the stimulation, staying in the part of the chamber where zona incerta neurons had been activated even when researchers were not actively stimulating the region.

Research has primarily focused on the medial and lateral hypothalamus as centers for feeding behavior and largely ignored the nearby zona incerta. However, some patients who undergo [deep brain stimulation](#) for treatment of movement disorders show increased interest in eating, perhaps due to stimulation of nearby zone incerta, van den Pol noted.



A GIF depicting how a subgroup of neurons in the zona incerta influence binge-eating behavior in mice. Credit: Carla Schaffer / AAAS

More information: Xiaobing Zhang et al. Rapid binge-like eating and body weight gain driven by zona incerta GABA neuron activation, *Science* (2017). [DOI: 10.1126/science.aam7100](https://doi.org/10.1126/science.aam7100)

Provided by Yale University

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