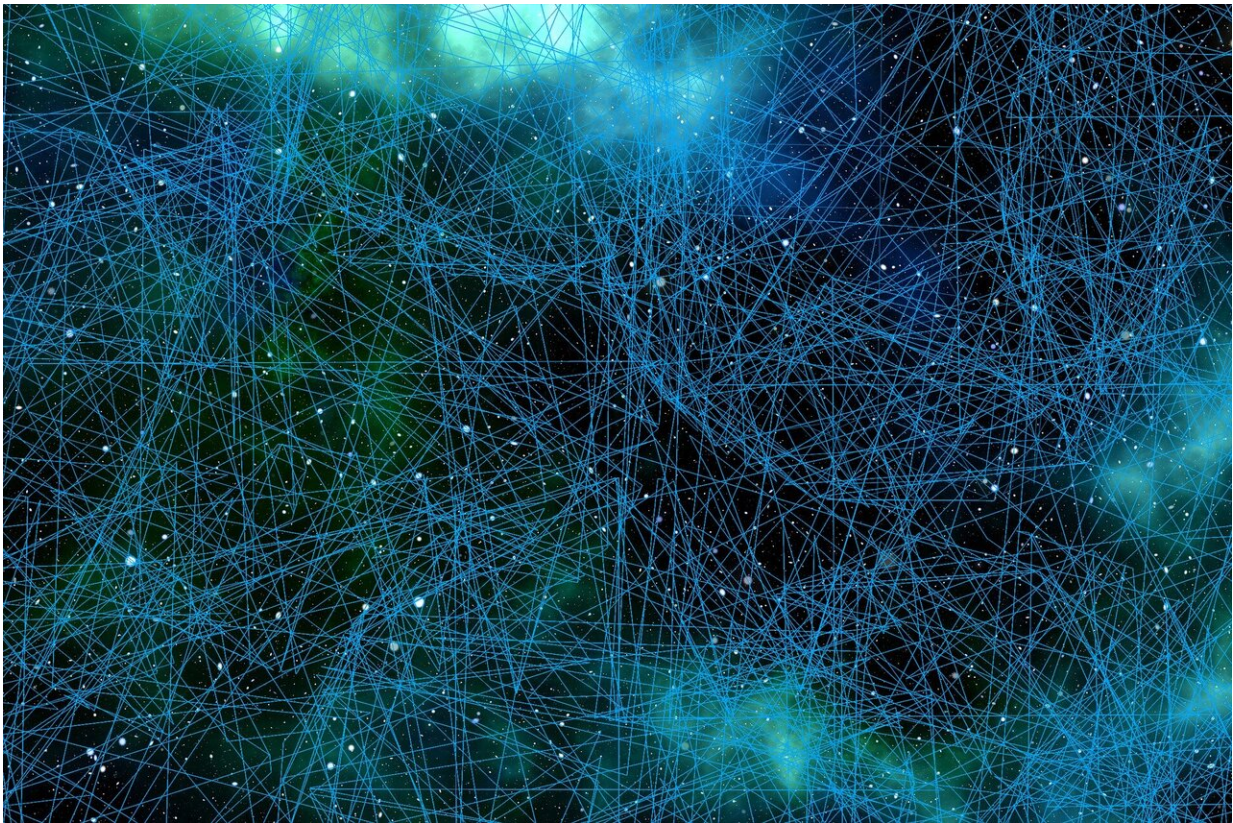


# Brain cells that curb overeating found diminished activity in mice on a high-fat diet

June 28 2019, by Bob Yirka

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A team of researchers from the U.S., Sweden and the U.K. has found that certain brain cells involved in curbing overeating in mice became less active after the mice were fed a high-fat diet. In their paper

published in the journal *Science*, the group describes their experiments with over-feeding test mice and what they learned. Stephanie Borgland, with the University of Calgary, has published a [Perspective piece](#) in the same journal issue outlining the work done by the team.

Most people who become obese know that the more they overeat [fatty foods](#), the harder it seems to stop. In this new effort, the researchers may have uncovered part of the reason. In their experiments, the team cut holes in the skulls of test mice and plugged them with tiny windows in order to peer at brain neurons using a special microscope. They then fed the mice a fatty diet and watched as the mice slowly became obese.

The researchers focused most specifically on [brain activity](#) in the lateral hypothalamus—it is a part of the brain that prior research has shown is involved in regulating hunger. More specifically, it has been shown that glutamatergic nerve cells in the lateral hypothalamus are involved in suppressing hunger. Their job is to tell mice when they have had enough to eat. In experiments in which these cells were disabled, mice became overeaters. But until now, it was not known how such cells behaved in their live, "turned-on" state when mice became overeaters.

The researchers report that just two weeks into the fatty diet regimen, the glutamatergic nerve cells in the mice became less active during both spontaneous behavior and when they were given a sip of sugar water. They report further that the reductions in activity continued as the [mice](#) were fed the fatty diet for 12 weeks. Borgland explains that a fatty diet removes the natural brake on overeating, resulting in the onset of obesity.

It is not known if the same types of cells in humans behave in the same way, but the researchers note that prior research has shown that the hypothalamus in humans is involved in regulating hunger.

**More information:** Mark A. Rossi et al. Obesity remodels activity and transcriptional state of a lateral hypothalamic brake on feeding, *Science* (2019). [DOI: 10.1126/science.aax1184](https://doi.org/10.1126/science.aax1184)

Stephanie L. Borgland. Releasing the brake on eating, *Science* (2019). [DOI: 10.1126/science.aay0204](https://doi.org/10.1126/science.aay0204)

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