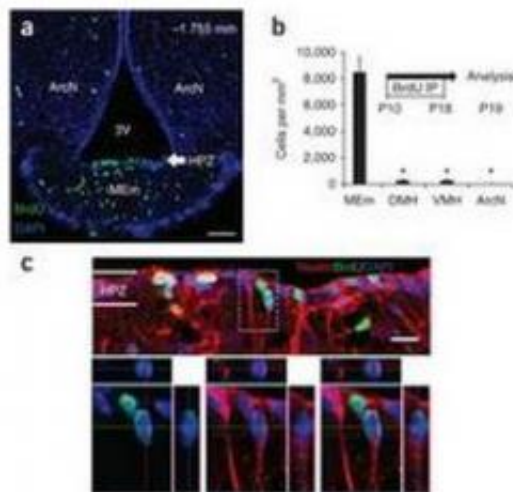


Increased production of neurons in hypothalamus found in mice fed high fat diets

March 26 2012, by Bob Yirka



Hypothalamic proliferative zone. For more details, *Nature Neuroscience* (2012) doi:10.1038/nn.3079

(Medical Xpress) -- A research team made up of people from a wide variety of biological sciences has found that mice fed a diet high in fat tend to see an increase in the number of neurons created in the hypothalamus, a region of the brain associated with regulating energy use in the body. The team, as they describe in their paper published in *Nature Neuroscience*, write that the increase in neurons occurs in a part of the hypothalamus called the median eminence, which lies outside the blood-brain barrier.

Suspecting that something unusual goes on with the [hypothalamus](#) and the median eminence in particular, when mice eat more fat, the research team put a group of mice on a diet very high in it. In the lab, mice are usually fed a diet that is approximately thirty five percent fat, which keeps them from [gaining weight](#). In this study, the [fat content](#) was raised to sixty percent, which of course caused the mice to get fat. But, the team found, it also caused the creation of new brain cells in the median eminence to increase, from one to five percent.

Next the researchers forced the mouse brains to stop creating new brain cells while continuing to feed the mice the high fat diet. And surprisingly, the mice weight gain slowed and the mice demonstrated more energy. Adding to the good news was the fact that the median eminence lies outside of the blood-brain area (a separation of blood and brain fluid that prevents many materials in blood from reaching [brain cells](#)) meaning that the possibility of developing a therapy based on this research to help humans lose weight might be possible.

The researchers are quick to point out however, that there is no evidence yet that increased neuron production occurs in people who eat extra amounts of fat, or even in any other animal. They also say they don't yet understand why new neuron growth occurs when mice are fed a high fat diet, but speculate that it may have something to do with detecting chemicals in the bloodstream and responding by sending signals to the rest of the hypothalamus.

More information: Tanycytes of the hypothalamic median eminence form a diet-responsive neurogenic niche, *Nature Neuroscience* (2012) [doi:10.1038/nn.3079](https://doi.org/10.1038/nn.3079)

Abstract

Adult hypothalamic neurogenesis has recently been reported, but the cell of origin and the function of these newborn neurons are unknown. Using

genetic fate mapping, we found that median eminence tanycytes generate newborn neurons. Blocking this neurogenesis altered the weight and metabolic activity of adult mice. These findings reveal a previously unreported neurogenic niche in the mammalian hypothalamus with important implications for metabolism.

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