Video: Appetite control and emotion arise from similar brain areas

Deep in the mouse brain, scientists recently found that a very small network of cells, a few thousand at most, turns appetite on and off.

They used the most sophisticated of modern techniques, but as has often happened in science — witness penicillin, Velcro and Viagra — the researchers discovered something they weren't looking for.

"This was an accidental discovery," said David Anderson, of the California Institute of Technology, the senior scientist on the team that reported the finding, in Nature Neuroscience.

The discovery may eventually lead to a better understanding and treatment of eating disorders. The surprise and drama of the finding are immediately clear, however, in lab videos. A mouse busily munches lab chow until a light signal is sent to its brain, and the mouse wanders off, no longer interested in food.

Because the researchers had expected the signal to cause fearful or anxious behavior, "this was really a surprising result," said Dr. Anderson, a professor of biology at Caltech and a Howard Hughes Medical Institute investigator.

His lab had previously studied this small group of neurons, in a part of the brain called the amygdala. That earlier research was on fear, an emotion strongly associated with the amygdala in both mice and humans.

The conclusion, Dr. Anderson said, was that this small group of neurons might be an appetite-control hub. These are neurons that inhibit behavior. So when the researchers activated them, appetite was turned off. The researchers were also able to turn appetite on, by stopping the neurons from sending signals. For that they used a different kind of genetic manipulation and a different wavelength of light.

Richard D. Palmiter, a University of Washington neuroscientist who has also studied how the brain controls feeding behavior, said, "I think it's likely that these neurons in the amygdala help an animal avoid toxic or unpleasant foods." But there are many other ways the brain regulates appetite and feeding, he added.

Watch the full video:

Additional Resources:

- Finding a treatment for binge eating with rats and frosting, Kim Ward and Kelly Klump, Michigan State University
- Food Preferences Based On Genetics: How Personlized Nutrition May Fight Depression And Obesity , Matthew Mientka, Medical Daily

Finding a treatment for binge eating with rats and frosting – See more at: http://msutoday.msu.edu/news/2014/finding-a-treatment-for-binge-eating-with-rats-and-frosting/#sthash.7zU2P7h2.akGZCCA1.dpuf
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