Activation of a single neuron type can trigger eating

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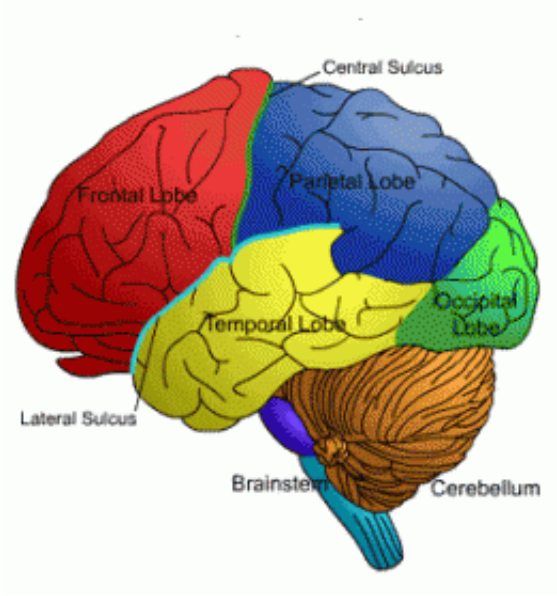

Brain diagram. Credit: dwp.gov.uk

Activation of a single type of neuron in the prefrontal cortex can spur a mouse to eat more—a finding that may pinpoint an elusive mechanism the human brain uses to regulate food intake.

The decision to eat is fundamental to an animal's survival and is regulated in part by evolutionary ancient metabolic processes shared by many animal species. Scientists have suspected that the prefrontal cortex, which in humans is involved in higher-order decision-making,

may also be involved in regulating eating behavior, but they have been unsure how.

In the Jan. 19 issue of the journal *Nature Neuroscience*, Yale researchers report increasing food intake of mice by activating the D1 dopamine-receptor neurons in the prefrontal cortex of mice. Inhibiting the neurons led mice to feed less.

The findings also suggest this dopamine signaling pathway intersects with other areas of the brain such as the amygdala, which has historically been linked with emotional responses and fear. The findings suggest that eating behavior may be mediated at this junction between decision-making areas of the brain and more primitive regions.

"Researchers tend to be either in a camp that believes the control of eating is all regulated from the top down, or from the bottom up," said Ralph DiLeone, associate professor of psychiatry and neurobiology and senior author of the paper. "Both are important and this paper brings a little more neurobiological clarity to the question."

More information: Medial prefrontal D1 dopamine neurons control food intake, *Nature Neuroscience*, DOI: 10.1038/nn.3625

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