Medical Xpress

Food cue-related brain activity linked to obesity?

April 26 2007

A unique pattern of gene expression observed in rats may be linked to a conditioned desire for food and excessive food intake, an article published today in *BMC Biology* suggests.

It's well known that food-associated cues, such as advertising, can influence food intake. But the underlying neurobiology is far from clear.

Craig A. Schiltz and colleagues from the University of Wisconsin Madison School of Medicine and Public Health, USA, created an experimental set up that allowed them to study patterns of gene expression linked to this motivational state - rats conditioned to expect a chocolate-flavoured treat in a particular environment, were subsequently denied their reward.

The research, conducted in the laboratory of Ann E. Kelly showed that expression of a handful of immediate early genes was increased in cortical, striatal, thalamic and hypothalamic brain regions. Food-related cues triggered dramatic changes in the functional connectivity of circuits involved in adaptive behaviour. For example, increased connectivity was seen between the cortex and two other regions - the amygdala and the striatum. Within the latter, there was a shift in activity from the outer shell to the inner core of the nucleus accumbens and an increased expression of the opioid-encoding proenkephalin gene.

Taken together, these results suggest that food-associated cues have a powerful influence on neuronal activity and gene expression in brain

areas mediating complicated functions such as cognition and emotion, and more basic abilities such as arousal and energy balance. The pattern of activation differs from that elicited by neutral cues, and may well contribute to a conditioned motivational state that can lead to excessive food intake.

Source: Biomed Central

Citation: Food cue-related brain activity linked to obesity? (2007, April 26) retrieved 17 April 2024 from https://medicalxpress.com/news/2007-04-food-cue-related-brain-linked-obesity.html

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.