

## Think what you eat: Studies point to cellular factors linking diet and behavior

October 20 2009

New research released today is affirming a long-held maxim: you are what you eat — and, more to the point, what you eat has a profound influence on the brain. The findings offer insight into the neurobiological factors behind the obesity epidemic in the United States and other developed countries. The findings exposed changes in brain chemistry due to diet and weight gain, and were reported at Neuroscience 2009, the Society for Neuroscience's annual meeting.

Obesity has been linked to rises in diabetes, stroke, and heart attacks, among other disorders. In the past decade alone, medical spending for <u>obesity</u> is estimated to have increased 87 percent in the United States — reaching \$147 billion in 2008 — according to a study funded by the Centers for Disease Control and Prevention. The new research adds another dimension to understanding how obesity rates have more than doubled in the past 30 years.

The new findings show that:

- Disruptions in the sleep/wake cycle lead to weight gain, impulsivity, slower thinking, and other physiological and <u>behavioral changes</u>. These findings may be particularly important for people who do shift work (Ilia Karatsoreos, PhD, abstract 471.1).
- Pregnant mice fed a high-fat diet produced pups that were



longer, weighed more, and had reduced <u>insulin sensitivity</u> factors that indicate a predisposition toward obesity and diabetes. In addition, despite no further exposure to a high-fat diet, these pups passed on those same traits to their offspring (Tracy Bale, PhD, abstract 666.21).

- Feeding high-fat food to pregnant mice can affect the brain development of their offspring, causing the pups to be more vulnerable to obesity and to engaging in addictive-like behaviors in adulthood (Teresa Reyes, PhD, abstract 87.1).
- Brain pleasure centers became progressively less responsive in rats fed a diet of high-fat, high-calorie food changes previously seen in rats as they became addicted to cocaine or heroin. Furthermore, the animals became less likely to eat a well-balanced, nutritious diet even when the less-palatable healthy food was all that was available. The finding may have implications for humans, as the diets were similar to those in developed countries (Paul J. Kenny, PhD, abstract 550.1).

Other research findings being discussed at the meeting show:

• There is considerable evidence that body weight and fat mass are highly heritable traits and have strong genetic determinants. This offers the potential to identify specific brain-derived factors contributing to obesity, eating behavior, and responses to food (Sadaf Farooqi, PhD).

"The brain is the foundation of all behavior, including eating," said press conference moderator Ralph DiLeone, PhD, of Yale University School of Medicine, an expert on the neural mechanisms of food intake and



behavior. "With the growing rates of obesity in industrialized nations, <u>brain</u> research is important to understanding the underlying neurobiological responses to high-fat diet."

Source: Society for Neuroscience (<u>news</u> : <u>web</u>)

Citation: Think what you eat: Studies point to cellular factors linking diet and behavior (2009, October 20) retrieved 6 May 2024 from <u>https://medicalxpress.com/news/2009-10-cellular-factors-linking-diet-behavior.html</u>

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.