

How genes may cause people to overeat and be obese?

Dear Friend,

I want to tell you about a fascinating new topic that I've recently encountered while browsing the website "Science Daily". The topic of the article named "Genes May Make Some People More Motivated to Eat, Perhaps Overeat" is the connection between the genes in a person's body (regions of the genome which contains all the hereditary data about the person) and the quantity of food the person eats.

The article mentions one neurotransmitter (which is a chemical found in the brain which passes information from cells- the smallest units found in any living being, and neurons- nerve cells which are components of the brain and spinal cord, that process and transmit information), called Dopamine, which is responsible for people's good mood and feeling. It is stated that researchers have found a connection between a genetic variation that resulted in a lower amount of Dopamine in the body and the amount of food people eat. If a person with a higher amount of the neurotransmitter eats, he feels better- the food is good and rewarding for him. But should someone with a lower amount of Dopamine eat- he'll have a harder time feeling rewarded, and that is why he'll have to consume greater amounts of food to feel rewarded. The researchers found the level of Dopamine in a person's body to be highly important and directly connected with the amount of food he or she eats ("Genes May Make", ScienceDaily).

This finding is so interesting and exciting because it suggests that obesity and overeating can be taken care of by drugs which will elevate the level of Dopamine in a person's body! It means that all the health problems that are caused to overweight and obese people could be solved, or at the very least alleviated, because people will eat less. And for the first time, it is known that not only can genes show predisposition

to be overweight, but also that a level of a neurotransmitter in the brain actually dictates to people how much they need to eat, and this clearly means that overweight people are not responsible for their weight problems- their chemical and genetic make-up is!

I've carried on and read two more articles relating to this subject.

The first was one which discussed the connection between weight loss prognoses and genetic make-ups. It described several approaches to this subject and what information each one yielded. For example, one of the approaches discovered that weight loss does indeed depend on genes. Another approach tested the roles and effects of different genes on weight. For instance, researchers were interested in genes related to energy expenditure, since it is presumed that people with a higher metabolism (the chemical reactions which occur in the living cells of an organism) are likely to eat more and become overweight because their body activates a mechanism that requires the return of the energy lost by new food being consumed. Other genes have a role regarding the metabolism in an organism's body, while some are connected to appetite control or relay information about the body's energy availability, things that also contribute to weight gain. In total, there are many genes that are involved (Moreno-Aliaga, Santos, Marti & Martinez, 2005).

The article also raises other questions and concerns about the previously discussed connection. One of which is the question on whether or not genetic susceptibility will affect the efficacy of a person's weight loss. The article closes by saying that future advances in biotechnology will help detect more genes related to the matter and new ways in which people can lose weight (Moreno-Aliaga, Santos, Marti & Martinez, 2005).

The second article I've read is one whose aim was to test two hypotheses- whether obesity is related to differences in food reinforcement, and whether individual differences in food reinforcements are related to energy intake. The drew upon the fact that eating is a very reinforcing activity, and its reinforcement is very similar to the one achieved by drug consumption- what hints to the fact that food consumption can become addictive and compulsive to some people, exactly like drugs or alcohol. Researchers quickly focused on the Dopamine neurotransmitter, since the reinforcement value of food is related to the system that controls the Dopamine. They new that food consumption increases brain Dopamine levels (Hernandez & Hoebel, 1988, 1990, as cited in Epstein et al., 2007), and that changes in Dopamine levels affect energy intake.

Both hypotheses were proven correct, as results supported them. Individuals with higher food reinforcements do consume more food, and obese individuals are higher in food reinforcement than non-obese ones. These results support the importance of studying food reinforcement as being a contributor to weight gain and obesity.

Carefully considering and examining the differences between individuals will eventually lead to discovering why these differences exist and what causes them, something which will undoubtedly help to better understanding obesity and weight gain (Epstein et al., 2007).

My personal view about this subject is that it is extremely important, especially since obesity has been declared as a serious epidemic among countries in the Western world. It is well known that obesity causes many diseases that could lead to death or a drastic decline in health, and this is affecting millions of people around the world. That's why it is so important to examine, investigate, study everything concerning with it, particularly in light of these new discoveries about the significance of the

Dopamine neurotransmitter on weight gain. Further advances in science can undeniably bring us all closer to finding a medication that will help obese people lose weight, and it could very well be a drug that changes the Dopamine levels in the brain. In that case, the solution to this horrible epidemic that is plaguing our society is at close reach, and all we have to do to get it is keep researching the subject.

References

American Psychological Association (2007, October 15). Genes May Make Some People More Motivated To Eat, Perhaps Overeat. ScienceDaily. Retrieved November 4, 2007, from <http://www.sciencedaily.com/releases/2007/10/071015081745.htm>

Epstein L.H, Temple J.L, Neaderhiser B.J, Salis R.J, Erbe R.W & Leddy J.J (2007). Food Reinforcement, the Dopamine D2 Receptor Genotype, and Energy Intake in Obese and Non-obese Humans. *Behavioral Neuroscience, Vol. 121 (Issue 5)*, p. 877-886.

Moreno-Aliaga M.J, Santos J.L, Marti A. & Martinez J.A (2005). Does Weight Loss Prognosis Depend on Genetic Make-up? *The International Association for the Study of Obesity, Obesity Reviews 6*, p. 155-168.