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## **New Insights into the Biology of Obesity**

*Elucidation of two molecules involved in obesity might lead to new ways of fighting the battle of the bulge.*

Obesity is related to how much we eat and to how we store energy. Two reports reveal new information about both phenomena.

When we eat, the pleasure we feel correlates with the release of dopamine in the dorsal striatum of the brain. Functional magnetic resonance imaging (MRI) of the brain was recorded in 76 subjects who drank chocolate milkshakes and tasteless solutions. When only the chocolate-shake results were considered, obese subjects exhibited lower dopamine release in the dorsal striatum than did nonobese subjects. A particular polymorphism in the gene for the dopamine D<sub>2</sub> receptor correlated with reduced dopamine release. The investigators concluded that obese individuals could have a genetically based deficiency in the pleasure they get from eating, which might prompt them to eat more to achieve satiety — the pleasure expected from eating.

Humans store energy, as fat, predominantly in white adipocytes. A second research team identified, as the source of white adipocytes, smooth muscle-like cells that cover endothelial cells in blood vessels within adipose tissue.

**Comment:** Twenty years ago, many physicians and biologists believed that obesity stemmed exclusively from behavior: excessive caloric intake, inadequate exercise, or both. Today, we clearly see that, in addition to being dependent on behavior, appetite and metabolic rate are influenced strongly by a complex set of molecules, each of which is a potential target for antiobesity treatments. The finding that particular polymorphisms of the dopamine D<sub>2</sub> receptor influence satiety is the latest example. The new research, in which researchers identified the source of white adipocytes, also could lead to ways of reducing adipocyte cell mass by therapies that target and kill the precursor cells.

— [Anthony L. Komaroff, MD](#)

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### **Citation(s):**

Stice E et al. Relation between obesity and blunted striatal response to food is moderated by TaqIA A1 allele. *Science* 2008 Oct 17; 322:449.