

Fat-cell 'switch' may determine whether body stores energy or burns it

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Scientists say finding has potential to lead to new obesity treatments.

(HealthDay)—Researchers say they've found a "toggle switch" that controls whether fat cells in the body burn up or store their energy.

The switch is the vitamin D receptor (VDR), a protein that binds with vitamin D. Along with many already identified functions, it also determines whether fat cells become the brown, energy-burning type or the white, energy-storing type, according to the researchers from the Stanford University School of Medicine.

"When we first made this discovery, we were curious about whether the amount of vitamin D that people were taking might be decreasing how much [brown fat](#) they had," study senior author Dr. Brian Feldman, an assistant professor of pediatric endocrinology, said in a university news release.

"But so far our data show that this activity of the receptor is independent of vitamin D, so people's [ingestion](#) or reserves of vitamin D are unlikely to be affecting this process," he said.

The researchers said their discovery could lead to new ways to control obesity and related conditions, such as diabetes, heart disease and certain cancers.

The study was published online Aug. 1 in the journal *Molecular Endocrinology*.

It's unclear if VDR actually causes white-fat cells to turn into brown-[fat cells](#), or if the protein determines white or brown before a cell actually develops into a fat cell. The latter explanation is probably the right one, the study authors said. But whichever is correct, it doesn't affect the potential for developing new obesity treatments.

The researchers have already started working on developing a therapy targeting VDR. The goal is to prevent VDR from blocking development of brown fat without affecting the protein's other functions, Feldman said.

Even if the [obesity treatment](#) they're trying to develop proves effective, it would be years before it could be made available to patients.

More information: The U.S. National Heart, Lung, and Blood Institute outlines current [treatments for overweight and obesity](#).

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