

Calorie-burning brown fat is a potential obesity treatment, researchers say

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A new study suggests that many adults have large amounts of brown fat, the "good" fat that burns calories to keep us warm, and that it may be possible to make even more of this tissue.

The study's lead author, Aaron Cypess, MD, PhD, will present the results Sunday at The Endocrine Society's 93rd Annual Meeting in Boston.

"We are now even more optimistic that brown fat could be used for treating [obesity](#) and diabetes," said Cypess, an assistant professor at Harvard Medical School and the Joslin [Diabetes](#) Center in Boston.

Cypess heads the research team that two years ago published a study showing that brown fat is present in adults, not just in infants and [small mammals](#), as scientists had thought. Although most adult fat is calorie-storing white fat, most adults have some brown fat in an area extending from the front of the neck to the chest, he reported at The Endocrine Society's meeting in 2009.

Now they have learned that brown [fat cells](#) lie in deeper fat, not superficial fat, and that the number of regions of brown fat varies by person, Cypess reported. They discovered this by measuring the expression of a [protein](#) found exclusively in brown fat, called uncoupling protein-1. However, even in those regions where many brown fat cells are present, they are mixed with white fat cells.

"It's a marbling at the [cellular level](#)," Cypess said. "We wondered: Wouldn't it be nice if you could grow more brown fat? The answer is yes."

In their new study, the researchers succeeded in growing mature human brown fat cells from preadipocytes, or pre-fat cells, that they obtained from a fresh sample of brown fat taken from the neck of a patient having routine surgery. The process took about two weeks in a laboratory dish but likely occurs more quickly in the body, Cypess

said.

"Some of these preadipocytes may have the choice to become either white or brown fat," he said.

In another experiment, Cypess and his colleagues measured how many calories brown fat burns. To do so, they measured the fat cells' oxygen consumption rate in both cultures and surgical tissue samples from volunteers.

"We demonstrated that brown fat burns up a substantial number of calories," Cypess said. "We have an organ in our body whose job it is to generate heat and burn calories."

Although Cypess said stimulating the growth of additional brown fat may be a promising treatment of obesity, it cannot replace traditional approaches such as diet and exercise. He said, "As powerful as [brown fat](#) could be at burning calories, we can easily out-eat the benefit."

Provided by The Endocrine Society

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