

New fat cells created quickly, but they don't disappear

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Credit: AI-generated image ([disclaimer](#))

Once fat cells form, they might shrink during weight loss, but they do not disappear, a fact that has derailed many a diet. Yale researchers in the March 2 issue of the journal *Nature Cell Biology* describe how—and just how quickly—those fat cells are created in the first place.

Young mice fed an obesity-inducing diet fail to produce fat cells if they lack a key pathway involved in the sensing of nutrients, the study showed. In addition the new study also revealed that fat cell production starts within a day of starting a high-fat diet.

"In studying what happens before these animals become obese, we found that this fat-producing response occurs unbelievably quickly," said Matthew Rodeheffer, assistant professor of comparative medicine and of molecular, cellular, and developmental biology, and senior author of the paper.

Weight gained is caused by the creation and expansion of white fat cells, or [adipose tissue](#). Dieting can shrink fat cells but not eliminate them, which is why people can gain weight back so quickly. The Yale team found that the activation of a nutrient signaling pathway called PI3-kinase/AKT-2 was necessary to produce fat precursor cells, which in turn produce adipose tissue. Normal mice began producing these [precursor cells](#) within 24 hours of starting a high-fat diet.

Rodeheffer stressed that this pathway has other key functions, such as glucose regulation, and probably cannot be safely targeted in people.

"However, it may be possible to inhibit the generation of more [fat cells](#) in obesity and increase our understanding how dietary changes drive increased [fat mass](#)," he said.

More information: Rapid depot-specific activation of adipocyte precursor cells at the onset of obesity, [DOI: 10.1038/ncb3122](https://doi.org/10.1038/ncb3122)

Provided by Yale University

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