

# Researchers discover hormonal pathway that increases calorie burning during weight loss

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Researchers led by McMaster University professor Gregory Steinberg and postdoctoral research fellow Dongdong Wang have uncovered a key mechanism for promoting weight loss and maintaining the burning of

calories during dieting.

The research team studied a hormone called GDF15 that they had previously shown to reduce appetite in response to the type 2 [diabetes drug metformin](#). Their latest findings, published in *Nature* on June 28, showed that GDF15 also has the potential to help with weight loss.

The research opens new possibilities to help people maintain weight loss after dieting, as well as the potential to develop combination therapies with GDF15 and currently available drugs that suppress appetite to promote further weight loss. Obesity, a global concern affecting one billion people, is linked to many [metabolic disorders](#) including type 2 diabetes. It has long been a target of research on effective weight loss methods.

"We have discovered that in mice, GDF15 blocks the slowing of metabolism that occurs during dieting by ramping up calcium futile cycling in muscle," said Steinberg, a professor of the Department of Medicine at McMaster University and co-director of the Center for Metabolism, Obesity, and Diabetes Research.

"Our study highlights the potential of the hormone GDF15 to not only reduce the desire to eat fatty foods but also simultaneously boost energy burning in muscle."

While [calorie restriction](#) initially leads to weight loss, the body's metabolism eventually slows this process down, reducing its effectiveness. The research showed, however, that mice treated with GDF15 continued losing weight while consuming the same number of calories as the control group. This increase in energy burn occurred in their muscles but not fat tissue.

More research is needed to confirm these findings in humans, said

Steinberg. He said that understanding how GDF15 levels impact muscle energy burning in humans could help explain why people have diverse levels of success in losing weight with dieting.

Further research on GDF15 might also provide new ways to help individuals who struggle to lose weight through traditional diets and may extend the benefits of recently approved appetite suppressing drugs that target the GLP1 receptor.

This analysis of the impact of GDF15 on [weight loss](#) is the result of a collaboration with Novo Nordisk and researchers from Ottawa, Waterloo, Sherbrooke, Beijing and Guelph.

**More information:** Gregory Steinberg, GDF15 promotes weight loss by enhancing energy expenditure in muscle, *Nature* (2023). [DOI: 10.1038/s41586-023-06249-4](https://doi.org/10.1038/s41586-023-06249-4).  
[www.nature.com/articles/s41586-023-06249-4](https://www.nature.com/articles/s41586-023-06249-4)

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