

Gene variants related to controlling body weight isolated

2 July 2021, by Bob Yirka



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A large team of researchers affiliated with multiple institutions across the U.S. and several other countries, working with Regeneron Genetics Center, has isolated several gene variants that play a role in body weight control. In their paper published in the journal *Science*, the group describes how they isolated the variants and discuss the possibility of developing related therapies for obesity. Giles Yeo and Stephen O'Rahilly, with the University of Cambridge Metabolic Research Laboratories, have published a Perspective piece in the same journal issue outlining the work by the team.

Prior research has shown that obesity is more complicated than it might seem at first glance—while it is true that weight gain has been tied to overeating, eating the wrong kinds of food and lack of exercise, it is also true that some

people are more at risk than others. In this new effort, the researchers looked for [genetic differences](#) between people that might account for differences in weight gain.

The human gene pool has approximately 3 billion base pairs and prior research has shown that most of them are identical between individual people—just several million variants are responsible for the differences between people. And of those, many are non-coding, which means they do not have instructions for telling cells what proteins to produce. The researchers focused only on those that are coding (those that make up the exome), because they are the only ones that could have an impact on weight control. To find differences in the exome, they conducted a [genetic analysis](#) on tissue samples from 645,626 people from the U.S., the U.K., and Mexico, and found 16 variants that they believe are tied to weight maintenance.

The team then identified one of the variants in test mice and compared them to mice without the variant. By feeding them all an identical, [high-fat diet](#), they found that those mice with the variant tended to gain more weight.

The findings by the researchers are still preliminary but they hint at the possibility of developing therapies that overcome control of protein production due to genetic variants tied to [weight gain](#).

More information: Parsa Akbari et al, Sequencing of 640,000 exomes identifies GPR75 variants associated with protection from obesity, *Science* (2021). [DOI: 10.1126/science.abf8683](https://doi.org/10.1126/science.abf8683)

Giles S. H. Yeo et al, Finding genes that control body weight, *Science* (2021). [DOI: 10.1126/science.abh3556](https://doi.org/10.1126/science.abh3556)

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APA citation: Gene variants related to controlling body weight isolated (2021, July 2) retrieved 26 October 2021 from <https://medicalxpress.com/news/2021-07-gene-variants-body-weight-isolated.html>

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