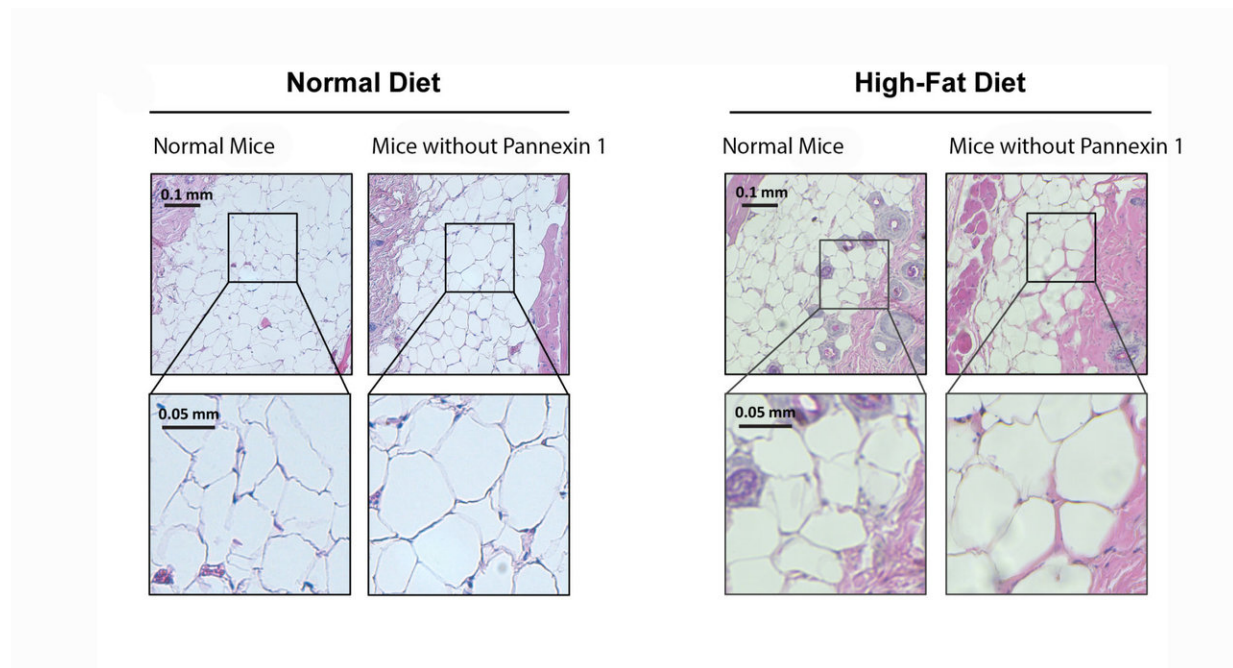


Researchers uncover gene that regulates fat accumulation and obesity

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With both a normal diet, and a high-fat diet, a lack of Panx1 increases cell size. Top rows show lower magnification (scale bar = 0.1 mm) and bottom rows are the insets showing higher magnification of the same image (scale bar = 0.05 mm). B. Credit: University of Western Ontario

As obesity continues to be the leading cause of deaths world-wide, researchers are working to understand what role genetics play in a person's predisposition for obesity. New research is shedding light on the

fact that while exercise and diet are important, sometimes there are underlying genetic factors at play.

A new study from Western University showed that regardless of diet, a protein called Pannexin 1 (Panx1) significantly regulates the accumulation of fat in mice. Panx1 is a glycoprotein involved in cell signalling which plays an important role in early development.

The study, published in *Scientific Reports*, suggests that a deletion of the Panx1 gene in the early stages of development of mouse fat [cells](#) increases the amount of fat accumulated, leading to a higher risk for obesity later in life. The study also demonstrated that the absence of the glycoprotein led to increases in insulin and blood glucose levels, increasing the propensity for Type 2 Diabetes.

"What this tells us is that if you have this deletion in mice or loss-of-function mutation in humans that makes Panx1 work improperly, then you might be prone to accumulate more fat," said Silvia Penuela, Ph.D., assistant professor at Western's Schulich School of Medicine & Dentistry and lead author on the study. "This is the first study to show a link between Panx1 and fat accumulation."

The study used mouse models which were missing the gene for Panx1. Mice fed both normal and high-fat diets had significantly greater total fat mass compared to mice with the gene for Panx1. The research team which includes Lauren Flynn, Ph.D., and Rob Gros, Ph.D., also from Schulich Medicine & Dentistry, explained that [fat accumulation](#) can result from hyperplasia, which refers to an increase in the number of fat cells, as well as hypertrophy, which refers to excessive growth of the individual fat cells.

"When the [mice](#) don't have Panx1, there is more hypertrophy—so their fat cells are much larger and accumulate more fat," Penuela said. "The

next step in our research is to look at the levels of expression of Panx1 in human [fat cells](#), and examine the presence of potential mutations in the Panx1 gene in samples taken from patients that suffer from obesity in comparison to donors with a healthy body weight. In the very early days of this research, we are already starting to show a connection."

More information: Vanessa R. Lee et al, Pannexin 1 regulates adipose stromal cell differentiation and fat accumulation, *Scientific Reports* (2018). [DOI: 10.1038/s41598-018-34234-9](https://doi.org/10.1038/s41598-018-34234-9)

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