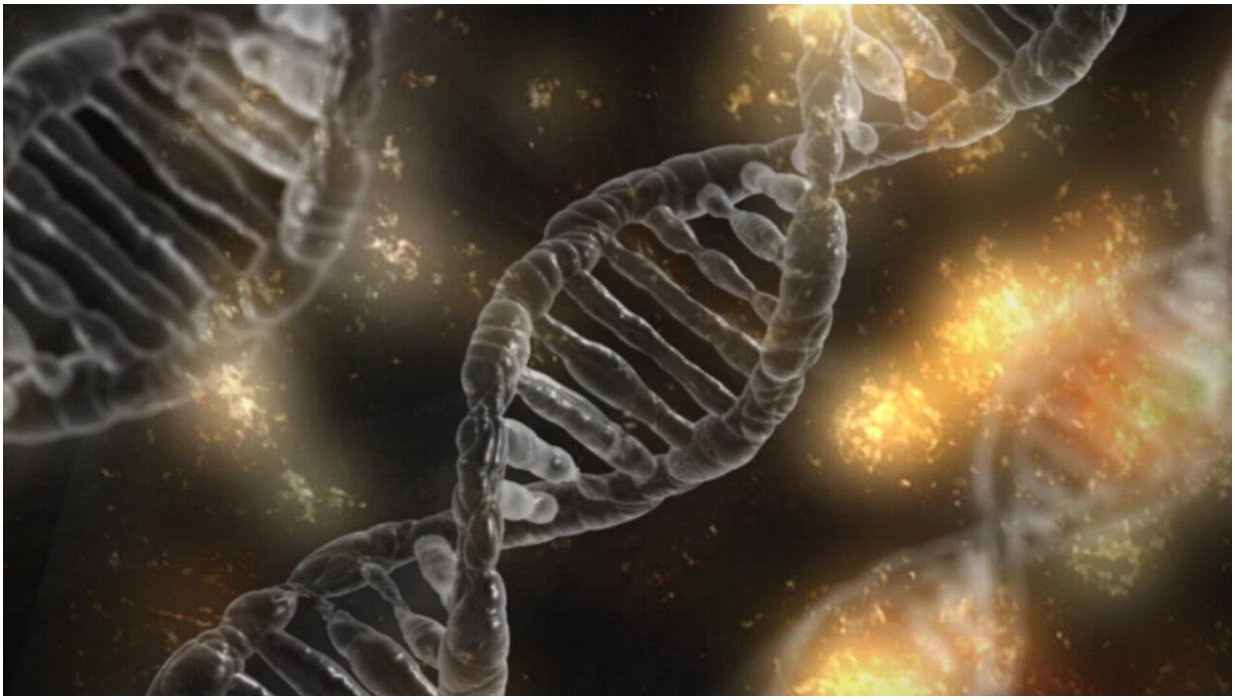
Medical Xpress

# Inflammatory gene provides clue to obesity risk

September 29 2020



Credit: CC0 Public Domain

A gene that helps to control inflammation increases the risk of obesity and could be turned off in mice to stop weight gain, a study from The University of Queensland has found.

UQ Institute for Molecular Bioscience researcher Dr. Denuja Karunakaran said she was determined to unravel the links between

inflammation and obesity that went deeper than excessive eating or lack of exercise.

"We found small changes in the inflammatory gene RIPK1 in the obese people, and these variations caused an increased amount of the gene being present in their fat tissue, increasing their risk of being obese," Dr. Karunakaran said.

"RIPK1 is essential for a healthy immune response, but it also causes hyper-inflammation when it 'goes rogue.' By finding an increased amount of inflammation in obese people, we can confidently say that obesity increases inflammation."

The researchers then looked at the effect of turning the inflammatory gene on and off in mice.

Without the gene, the mice remained at a normal weight despite eating a high-fat diet and their risk of diabetes was reduced.

The mice with a normal level of the inflammatory gene put on weight from eating the same high-fat diet.

More than half the 2000 participants were extremely obese with an average Body Max Index of 41 and half were a healthy weight.

Dr. Karunakaran said that when stores exceeded healthy levels, the fat tissue became overwhelmed, cells died and the immune system was activated.

"In obesity, the immune cells are working in overdrive, causing damaging inflammation when they don't switch off," she said.

"By understanding more about these inflammation pathways, we can

find ways to intervene to treat obesity, especially in specific groups of people. These variations in the RIPK1 gene only occur in 8 to 12% of the population—so maybe these are the people who struggle to lose weight despite doing all the right things."

The University of Ottawa Heart Institute's Associate Professor Katey Rayner and Professor Ruth McPherson collaborated on the study.

This research was published in *Nature Metabolism*.

**More information:** Denuja Karunakaran et al. RIPK1 gene variants associate with obesity in humans and can be therapeutically silenced to reduce obesity in mice, *Nature Metabolism* (2020). DOI: 10.1038/s42255-020-00279-2

Provided by University of Queensland