New study strengthens link between genes and obesity

Multiple regions in your genome help determine how much you weigh and how fat is distributed in your body.

Scientists have located 147 specific regions in the human genome which affect either how much you weight as an adult or how fat is distributed in your body.

The scientists compared the genetic data from 300,000 people with their body mass index (BMI). The results were recently published in two articles in Nature.

“This is the largest study ever to look at which genetic regions play a role in relation to obesity -- and how they do it,” says co-author Tune Pers, a postdoc at Boston Children’s Hospital, Harvard Medical School, and the Broad Institute of Harvard and Massachusetts Institute of Technology in the United States.

Gene regions are linked with fat distribution and weight

The scientists have collected and examined the largest volume of human genetic data ever to be analysed. First, they found 147 gene regions that were associated with obesity.

They then discovered that some of these gene regions are associated with appetite regulation and with how much people weigh as adults.

49 of the areas identified in the genetic material have an impact on the metabolic processes that determine how fatty tissue develops and where fat attaches itself to the body.

The scientists are particularly interested in finding out why fat accumulates in and around the belly in some people, because belly obesity increases the risk of contracting numerous diseases.

Of the 147 gene regions, 97 influence brain mechanisms which, among other things, decide how much of an appetite people have.

This means they probably influence how much people eat and how much they will weigh. They are likely also involved in other as of yet unknown processes which are vital when it comes to the regulation of body weight.

Leading obesity scientist enthusiastic

One of Denmark’s leading obesity scientists Thorkild I.A. Sørensen is excited about the discovery of new obesity gene variants.

"It’s an impressive bit of work,” says Sørensen, who is a professor of metabolic and clinical epidemiology at
the University of Copenhagen and the head of the Department of Disease Prevention at Frederiksberg Hospital.

“The scientists have been exceptional at working together across national boundaries. This has demanded a huge coordination effort. It’s a tremendous help to those of us who studies obesity,” he says.

**Obesity develops differently from one person to another**

Although the new study brings scientists one step closer in their understanding of obesity, many unknowns still remain, says Sørensen.

"There’s a lot in the new study that indicates that the regions of the genome related to obesity manifest themselves in the brain and that the regions linked to appetite and metabolism also have something to do with learning, incentives, emotions, and more,” he says.

"But there’s still a lot we don’t know about how the genes function at the molecular level,” says Sørensen. “We still need to find out how the genes interact with environmental influences -- for example what we eat, how we exercise, and what mental and social conditions we live under. It all seems to have a decisive effect on tendency to put on weight.”

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