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**It really is in the genes! Skinny people have an 'overdose' of chromosomes that keep them thin**

By [Daily Mail Reporter](http://www.dailymail.co.uk/home/search.html?s=&authornamef=Daily+Mail+Reporter)  
**UPDATED:** 11:23, 1 September 2011

Those annoying people who claim that they can eat what they like but never put on weight may have had a second helping of a newly discovered 'skinny gene'.

While many genes have been identified as leading to obesity, this is the first time a genetic explanation for 'extreme thinness' has been unveiled.

According to a study published in the journal Nature, the genes in question are a group of 28 that form part of chromosome 16.

Last year the same research team found that people without these genes are 43 times more likely to be morbidly obese.

However, it has now been revealed that people in whom these particular genes are duplicated are more likely to be skinny.

It mean that fatness and thinness could be two sides of the same coin.

Researchers at Imperial College London and the University of Lausanne in Switzerland said around one in 2,000 people have the duplicated genes, making men 23 times more likely to be underweight, and women five times more likely.

Normally, each person has a copy of each chromosome from each parent, giving them two copies of each gene.

But sometimes sections of a chromosome can be duplicated or deleted, resulting in an abnormal 'dosage' of genes, the researchers explained in their study.

'This is the first genetic cause of extreme thinness that has been identified,' said Professor Philippe Froguel from Imperial's school of public health, who led the study.

'It's also the first example of a deletion and a duplication of one part of the genome having opposite effects.'

The discovery has important implications for diagnosis in children's health.

A non-specific condition in children known as 'failure to thrive' - where their rate of weight gain is significantly lower than normal - has been diagnosed in half of all children with the genetic duplication, the study showed.

It means 'failure to thrive' can be genetically driven.

'If a child is not eating, it's not necessarily the parents' fault,' said Prof Froguel.

He added that scientists still have much work to do to find out more about the genes in this region, but their discovery could eventually lead to new potential treatments for obesity and appetite disorders.

'If we can work out why gene duplication in this region causes thinness, it might throw up new potential treatments for obesity and appetite disorders,' he said.

'We now plan to sequence these genes and find out what they do, so we can get an idea of which ones are involved in regulating appetite.

Froguel's team examined the DNA of more than 95,000 people for their study for which being underweight was defined as having a body mass index (BMI) below 18.5 kg per metre squared.

The research also showed a quarter of people with the duplication had microcephaly, a condition in which the head and brain are abnormally small and which is linked to neurological defects and shorter life expectancy.

Genes are stretches of DNA that provide the coded instructions for making proteins.

They generally come in pairs and are housed in the chromosomes, the packaged bundles of DNA inherited from each parent.

However sometimes parts of either chromosome in a pair can be deleted or duplicated.

When this happens, there can be too many copies of a certain gene or too few.

As a result, a gene might be abnormally active or not active enough.

As regards the 'skinny gene', Prof Froguel said: 'The dogma is that we have two copies of each gene, but this isn't really true.

'The genome is full of holes where genes are lost, and in other places we have extra copies of genes.

In many cases, duplications and deletions have no effect, but occasionally they can lead to disease.

'So far, we have discovered a large number of genetic changes that lead to obesity.

'It seems that we have plenty of systems that increase appetite since eating is so important - you can suppress one and nothing happens.

'This is the first genetic cause of extreme thinness that has been identified.'

Duplications in the same region have also been linked to schizophrenia, while deletions are associated with autism.

Read more: [http://www.dailymail.co.uk/sciencetech/article-2032519/It-really-genes-Skinny-people-overdose-chromosomes-lead-underweight.html#ixzz2BRvyXtsm](http://www.dailymail.co.uk/sciencetech/article-2032519/It-really-genes-Skinny-people-overdose-chromosomes-lead-underweight.html" \l "ixzz2BRvyXtsm)   
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Metro (UK)

September 1, 2011 Thursday

Edition 1;

Ireland

**Being skinny in the genes**

**SECTION:** NEWS; Pg. 10

**LENGTH:** 66 words

BEING naturally overweight or skinny could be two sides of the same genetic coin, new research suggests. Scientists discovered that underweight people possess extra copies of certain genes. Professor Philippe Froguel, **Imperial College** London, said: 'If we can work out why gene duplication in this region causes **thinness,** it might throw up new potential treatments for obesity and appetite disorders.

**LOAD-DATE:** September 1, 2011

**LANGUAGE:** ENGLISH

**PUBLICATION-TYPE:** Newspaper

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2 of 2 DOCUMENTS

The Sun (England)

September 1, 2011 Thursday

Edition 1;

Ireland

**Skinny on being thin**

**SECTION:** NEWS; Pg. 15

**LENGTH:** 91 words

SCIENTISTS have found that skinny people have extra copies of certain genes.

The research suggests being naturally underweight or overweight could be two sides of the same genetic coin.

Missing identical genes have previously been linked to obesity.

**Imperial College** London Professor Philippe Froguel said: "If we can work out why gene duplication in this region causes **thinness,** it might throw up new potential treatments for obesity and appetite disorders."

The research team is now aiming to find out which genes are involved in regulating appetite.

**LOAD-DATE:** September 1, 2011

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