

5/2020

★ Thinness (Orthofer, 2020)

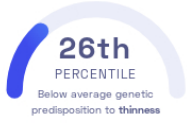
Michael Orthofer, et al.
Cell

Obesity Metabolism

STUDY SUMMARY

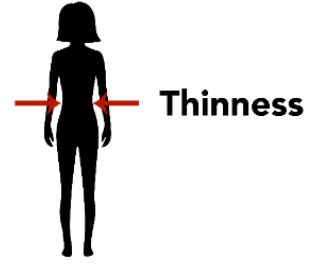
Discovery of 5 genetic variants associated with thinness.

YOUR RESULT



STUDY DESCRIPTION

Although diet and exercise are important for maintaining healthy body weight, individuals who eat similar foods and exercise similar amounts can differ in their weight. Most studies that look for genetic variants associated with the *body mass index* (BMI) compare obese individuals to healthy controls. This study instead looked for associations with thinness. The researchers compared the thinnest 1.9% of people (6th BMI percentile; 881 individuals) in the Estonian biobank with people that had an average body weight (30th - 50th BMI percentile; 3,173 individuals) and found 5 variants associated with thinness. One of the variants (rs568057364) is inside the ALK gene which is known to play a role in cancer. The researchers disrupted the ALK gene in mice and found that it resulted in resistance to diet-induced obesity.



This study examined genetic predisposition to thinness rather than obesity.

DID YOU KNOW?

Underweight people often have nutritional deficiencies because they don't consume enough food to receive all the vitamins and minerals their body needs. It's important to get enough micronutrients, even when limiting the intake of calories.

YOUR DETAILED RESULTS

To calculate your genetic predisposition to thinness we summed up the effects of genetic variants that were linked to thinness in the [study that this report is based on](#). These variants can be found in the table below. The variants highlighted in green have **positive effect sizes** and increase your genetic predisposition to thinness. The variants highlighted in blue have **negative effect sizes** and decrease your genetic predisposition to thinness. Variants that are not highlighted are not found in your genome and do not affect your genetic predisposition to thinness. By adding up the effect sizes of the highlighted variants **we calculated your polygenic score for thinness to be -0.36**. To determine whether your score is high or low, we compared it to the scores of 5,000 other Nebula Genomics users. We found that your polygenic score for thinness is in the **26th percentile**. This means that it is higher than the polygenic scores 26% of people. We consider this to be a **below average genetic predisposition to thinness**. However, please note that genetic predispositions do not account for important non-genetic factors like lifestyle. Furthermore, the genetics of most traits has not been fully understood yet and many associations between traits and genetic variants remain unknown. For additional explanations, click on the column titles in the table below and visit our [Nebula Library tutorial](#).

VARIANT	YOUR GENOTYPE	EFFECT SIZE	VARIANT FREQUENCY	SIGNIFICANCE
rs6574213_G	A / G	-0.36 (↓)	28%	2.60 x 10 ⁻⁸
rs79938778_T	C / C	-0.73 (-)	5%	8.00 x 10 ⁻⁷
rs61688635_A	T / T	-0.58 (-)	7%	1.40 x 10 ⁻⁶
rs568057364_CT	/	0.29 (-)	47%	1.40 x 10 ⁻⁶
rs4521442_C	T / T	0.28 (-)	35%	2.50 x 10 ⁻⁶