

★ Stroke volume (Pirruccello, et al)

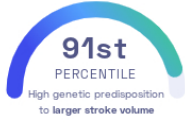
James Pirruccello, et al.
Nature Communications

Heart

STUDY SUMMARY

Identification of 12 genetic variants associated with the heart's stroke volume.

YOUR RESULT



STUDY DESCRIPTION

The human heart is a muscle that pumps blood throughout the body. It consists of 4 chambers: 2 atria (left and right) and 2 ventricles (left and right). Blood that has been enriched with oxygen in the lungs enters the left atrium and then flows into the left ventricle from where it's pumped to all other parts of the body. Stroke volume is a measurement of how much blood is pumped out of the left ventricle during each beat. The average stroke volume is 81mL for women and 96mL for men. Measurements of stroke volume can indicate if the heart is pumping enough blood to meet the body's demands. This genome-wide association study of over 36,000 individuals of European ancestry identified 12 genetic variants correlated with stroke volume including variants near genes that play a role in heart muscle contraction (MYH6) and formation of blood vessels (VEGFA). Together these variants explain ~ 34% of stroke volume heritability. The study also found a strong inverse relationship between the polygenic score for larger stroke volume and *hypothyroidism*.

DID YOU KNOW?

During exercise, the body needs an increased supply of blood to deliver oxygen to the muscles. Over time, exercise can lead to an increase in the heart's efficiency, pumping more blood with less work. Aerobic activities such as running and cycling are particularly effective at increasing stroke volume.

YOUR DETAILED RESULTS

To calculate your genetic predisposition to larger stroke volume we summed up the effects of genetic variants that were linked to larger stroke volume 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 larger stroke volume. The variants highlighted in blue have **negative effect sizes** and decrease your genetic predisposition to larger stroke volume. Variants that are not highlighted are not found in your genome and do not affect your genetic predisposition to larger stroke volume. By adding up the effect sizes of the highlighted variants **we calculated your polygenic score for larger stroke volume to be 0.20**. 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 larger stroke volume is in the **91st percentile**. This means that it is higher than the polygenic scores 91% of people. We consider this to be a **high genetic predisposition to larger stroke volume**. 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 ^⓪	YOUR GENOTYPE ^⓪	EFFECT SIZE ^⓪	VARIANT FREQUENCY ^⓪	SIGNIFICANCE ^⓪
rs72967533_T	T / C	-0.05 (↓)	62%	1.40×10^{-16}
rs11065979_C	C / T	0.05 (↑)	57%	3.90×10^{-14}
rs7673293_C	T / T	-0.05 (-)	27%	2.00×10^{-12}
rs11066188_G	G / A	0.04 (↑)	60%	2.70×10^{-12}
rs10400419_T	T / T	0.04 (↑)	45%	5.40×10^{-10}
rs888690_T	T / C	-0.04 (↓)	40%	1.20×10^{-9}
rs422068_T	T / T	0.04 (↑)	64%	1.40×10^{-9}
rs111721712_C	C / CT	0.04 (↑)	53%	3.40×10^{-9}
rs2891403_A	A / G	-0.04 (↓)	28%	3.80×10^{-9}
rs2146324_A	A / A	0.04 (↑)	26%	1.10×10^{-8}
rs143384_A	G / A	-0.04 (↓)	59%	3.60×10^{-8}