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Nicotine dependence (Quach, 2020)

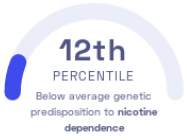
Bryan Quach, et al.
Nature Communications

Addiction | Behavior

STUDY SUMMARY

Discovery of 5 genomic regions associated with nicotine dependence.

YOUR RESULT



STUDY DESCRIPTION

Nicotine is a chemical commonly found in tobacco products such as cigarettes, cigars, and e-cigarettes (vapes). Many smokers become dependent on nicotine. Signs of dependence include mood swings, anxiety, and restlessness following attempts to quit. Nicotine dependence is a highly heritable trait, but very few associated genomic regions have been discovered to date. This study examined over 58,000 smokers of European and African ancestry and identified 5 regions of the genome linked to nicotine dependence. Two of these regions are newly discovered. One of them harbors a gene known as TENM2, which plays a role in the formation of connections between nerve cells in the brain. The study also found genetic correlations between nicotine dependence and alcohol dependence, as well as psychological conditions such as bipolar disorder, schizophrenia, and depression.

DID YOU KNOW?

Nicotine causes the release of dopamine in the brain, which is responsible for the "feel-good" emotions. However, over time the release of dopamine in the brain becomes dependent on nicotine consumption. This creates a link between smoking and depression. For example, a study in the United Kingdom found that adults with depression are twice as likely to be smokers than adults who don't suffer from depression.

YOUR DETAILED RESULTS

To calculate your genetic predisposition to nicotine dependence we summed up the effects of genetic variants that were linked to nicotine dependence 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 nicotine dependence. The variants highlighted in blue have **negative effects sizes** and decrease your genetic predisposition to nicotine dependence. Variants that are not highlighted are not found in your genome and do not affect your genetic predisposition to nicotine dependence. By adding up the effect sizes of the highlighted variants **we calculated your polygenic score for nicotine dependence to be -0.05**. 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 nicotine dependence is in the **12th percentile**. This means that it is higher than the polygenic scores 12% of people. We consider this to be a **below average genetic predisposition to nicotine dependence**. 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
rs16969968_A	G / G	0.06 (–)	37%	1.60×10^{-39}
rs151176846_T	T / T	-0.07 (↓)	92%	1.20×10^{-12}
rs13284520_A	A / C	0.03 (↑)	83%	1.10×10^{-8}
rs1862416_T NEW	T / T	0.04 (↑)	88%	1.50×10^{-8}
rs2714700_T NEW	T / C	-0.02 (↓)	47%	2.30×10^{-8}