

## ☆ Subcortical brain volume (Satizabal, 2019).

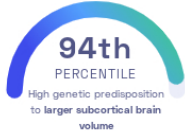
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Nature Genetics

Brain

### STUDY SUMMARY

Identification of 48 genetic loci, including 40 novel loci, associated with the brain's subcortical volume.

### YOUR RESULT



### STUDY DESCRIPTION

The brain is a complex organ made up of many regions that have different functions allowing us to talk, walk, think, breathe, and do nearly everything else required to live. One set of brain regions residing deep within the brain are called 'subcortical structures'. These structures, which include the amygdala, pituitary gland, brainstem, and others, play critical roles in learning, memory, and emotion. However, changes of subcortical structures are also linked with various cognitive and psychological disorders. This study aimed to better understand the genetic variants that are associated with the volume of subcortical brain structures and its relation to the development of neurological disorders. By examining the genomes of nearly 40,000 individuals of European ancestry, this study identified 48 genetic variants that correlate with the volume of various subcortical structures in the brain. These variants are near genes that have a diverse array of functions, ranging from controlling the information flow in our nervous system to neurodevelopment to inflammation.












### DID YOU KNOW?

A subcortical structure called the amygdala is the primary region involved in how we respond to feelings of stress, fear, and anxiety. During a "fight or flight" response, the amygdala overrides the more rational, logical parts of the brain. To help prevent the amygdala from taking control in times of stress or fear, be mindful and try to think rationally.

### YOUR DETAILED RESULTS

To calculate your genetic predisposition to larger subcortical brain volume we summed up the effects of genetic variants that were linked to larger subcortical brain 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 subcortical brain volume. The variants highlighted in blue have **negative effect sizes** and decrease your genetic predisposition to larger subcortical brain volume. Variants that are not highlighted are not found in your genome and do not affect your genetic predisposition to larger subcortical brain volume. By adding up the effect sizes of the highlighted variants **we calculated your polygenic score for larger subcortical brain volume to be 105.29**. 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 subcortical brain volume is in the **94th percentile**. This means that it is higher than the polygenic scores 94% of people. We consider this to be a **high genetic predisposition to larger subcortical brain 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	YOUR GENOTYPE	COMMENTS	EFFECT SIZE	VARIANT FREQUENCY	SIGNIFICANCE
rs945270_C	C / C	Putamen	15.03 (↑)	58%	5.02 x 10 <sup>-51</sup>
rs1111090_A	A / C	Brainstem	10.79 (↑)	52%	3.70 x 10 <sup>-27</sup>
rs10217661_A	G / G	Brainstem	9.78 (-)	39%	1.40 x 10 <sup>-22</sup>
rs62098013_A	G / G	Putamen	8.92 (-)	38%	4.59 x 10 <sup>-19</sup>
rs6087771_T	T / T	Putamen	8.69 (↑)	71%	3.75 x 10 <sup>-18</sup>
rs869640_A	A / C	Brainstem	-8.40 (↓)	72%	4.36 x 10 <sup>-17</sup>
rs35200015_A	G / G	Putamen	-8.19 (-)	19%	2.51 x 10 <sup>-16</sup>
rs2923447_T	G / T	Globus pallidus	8.11 (↑)	59%	4.88 x 10 <sup>-16</sup>
rs9398173_T	C / C	Brainstem	-7.95 (-)	33%	1.80 x 10 <sup>-15</sup>
rs1432054_A	G / A	Putamen	-7.94 (↓)	64%	2.10 x 10 <sup>-15</sup>
rs10792032_A	G / G	Brainstem	7.75 (-)	49%	9.08 x 10 <sup>-15</sup>
rs10129414_A	G / G	Globus pallidus	-7.53 (-)	44%	5.11 x 10 <sup>-14</sup>
rs3133370_T	T / T	Caudate nucleus	7.52 (↑)	67%	5.59 x 10 <sup>-14</sup>
rs6060983_T	T / T	Caudate nucleus	7.04 (↑)	70%	1.95 x 10 <sup>-12</sup>
rs4396983_A	G / A	Brainstem	-7.02 (↓)	44%	2.27 x 10 <sup>-12</sup>
rs9322194_T	C / C	Brainstem	6.91 (-)	34%	4.94 x 10 <sup>-12</sup>
rs7972561_A	T / A	Brainstem	6.90 (↑)	33%	5.05 x 10 <sup>-12</sup>
rs2206656_C	C / G	Brainstem	6.83 (↑)	61%	8.26 x 10 <sup>-12</sup>
rs12479469_A	G / G	Brainstem	-6.80 (-)	33%	1.08 x 10 <sup>-11</sup>
rs4784266_A	G / A	Brainstem	6.76 (↑)	40%	1.41 x 10 <sup>-11</sup>
rs196807_A	G / G	Globus pallidus	6.44 (-)	18%	1.17 x 10 <sup>-10</sup>
rs555925_T	G / G	Brainstem	6.37 (-)	41%	1.88 x 10 <sup>-10</sup>
rs7902527_A	G / G	Putamen	6.29 (-)	24%	3.13 x 10 <sup>-10</sup>
rs10439607_A	G / G	Globus pallidus	-6.28 (-)	30%	3.35 x 10 <sup>-10</sup>
rs7040561_A	A / A	Caudate nucleus	-6.26 (↓)	85%	3.84 x 10 <sup>-10</sup>
rs12600720_C	C / C	Thalamus	6.25 (↑)	69%	4.06 x 10 <sup>-10</sup>
rs1111293_T	T / T	Amygdala	6.25 (↑)	78%	4.16 x 10 <sup>-10</sup>
rs9818981_A	G / G	Nucleus accumbens	-6.23 (-)	9%	4.70 x 10 <sup>-10</sup>
rs12313279_A	A / G	Brainstem	6.21 (↑)	29%	5.39 x 10 <sup>-10</sup>
rs2817145_A	T / T	Caudate nucleus	6.20 (-)	19%	5.71 x 10 <sup>-10</sup>
rs148470213_T	T / T	Caudate nucleus	6.18 (↑)	54%	6.48 x 10 <sup>-10</sup>
rs13107325_T	C / C	Nucleus accumbens	6.15 (-)	6%	7.74 x 10 <sup>-10</sup>
rs9505301_A	A / A	Brainstem	-6.05 (↓)	89%	1.41 x 10 <sup>-9</sup>
rs11747514_T	G / T	Nucleus accumbens	-5.99 (↓)	22%	2.11 x 10 <sup>-9</sup>
rs11684404_T	T / T	Brainstem	-5.95 (↓)	66%	2.73 x 10 <sup>-9</sup>
rs2244479_T	C / T	Putamen	-5.92 (↓)	65%	3.17 x 10 <sup>-9</sup>
rs868202_T	T / T	Nucleus accumbens	5.90 (↑)	56%	3.55 x 10 <sup>-9</sup>

rs112178027_T 	C / T	Brainstem	-5.90 (↓)	17%	$3.67 \times 10^{-9}$
rs142461330_T 	T / T	Thalamus	-5.90 (↓)	92%	$3.69 \times 10^{-9}$
rs2410767_C 	C / C	Putamen	5.88 (↑)	78%	$3.99 \times 10^{-9}$
rs1987471_T 	T / G	Caudate nucleus	5.87 (↑)	63%	$4.40 \times 10^{-9}$
rs12445022_A 	A / A	Caudate nucleus	5.87 (↑)	33%	$4.45 \times 10^{-9}$
rs55989340_A 	A / A	Caudate nucleus	-5.86 (↓)	74%	$4.62 \times 10^{-9}$
rs4888010_A 	G / A	Caudate nucleus	5.86 (↑)	47%	$4.67 \times 10^{-9}$
rs4952211_T 	C / T	Globus pallidus	-5.86 (↓)	43%	$4.72 \times 10^{-9}$
rs1187162_T 	C / C	Putamen	5.84 (-)	42%	$5.14 \times 10^{-9}$
rs35305377_A 	G / G	Caudate nucleus	-5.84 (-)	56%	$5.36 \times 10^{-9}$
rs12567402_T 	C / T	Globus pallidus	5.81 (↑)	33%	$6.17 \times 10^{-9}$