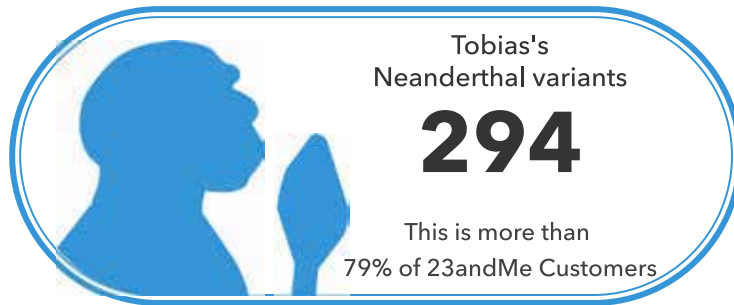




Neanderthal Ancestry

Neanderthals were ancient humans who interbred with modern humans before becoming extinct 40,000 years ago. This report tells you how much of your ancestry can be traced back to Neanderthals.

You have 294 Neanderthal variants.

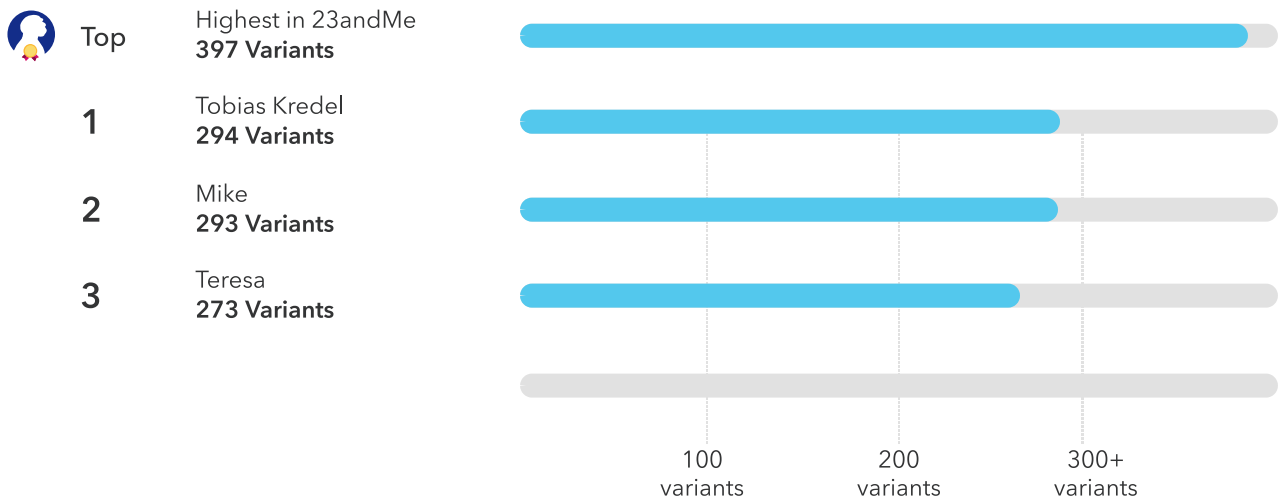


You have more Neanderthal variants than 79% of 23andMe customers. However, your Neanderthal ancestry accounts for less than 4% of your overall DNA.

How to interpret this result

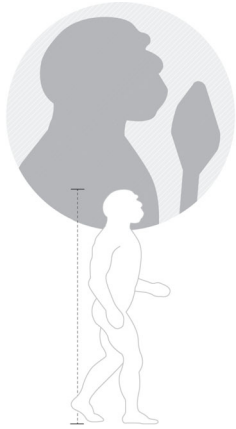
- This report tells you whether you have certain genetic variants of Neanderthal origin out of the 2872 Neanderthal variants we test.
- It also tells you whether you have any Neanderthal variants that are associated with traits in 23andMe customers.
- It can't tell you the precise portion of your genome that comes from Neanderthals or about genetic variants of Neanderthal origin not tested by 23andMe.
- For more information, see the Scientific Details section.

You are in 1st place out of your family and friends.



Some of your traits may be influenced by having Neanderthal variants.

Scientists at 23andMe identified associations between Neanderthal variants and certain physical traits. If you have certain Neanderthal variants, it means that some of your physical traits may trace back to your Neanderthal ancestors.



A Straight hair

You have 0 Neanderthal variants associated with having straighter hair.

B Less likely to sneeze after eating dark chocolate

You have 0 Neanderthal variants associated with a reduced tendency to sneeze after eating dark chocolate.

C Less back hair

You have 0 Neanderthal variants associated with having less back hair.

D Height

You have 0 Neanderthal variants associated with your height.

Introduction

For the past 150 years, scientists have found bones belonging to an extinct population of ancient humans. These ancient humans are known as Neanderthals and were named after the site where their bones were first identified (Neander Valley, Germany). Neanderthals and modern humans share a common ancestor as well as many morphological and social traits, but differed in key respects. Over the past decade, genome sequencing has shed more light on the Neanderthal and our complicated relationship with them.



600,000 Years Ago

Neanderthals and Modern Humans Share a Common Ancestor

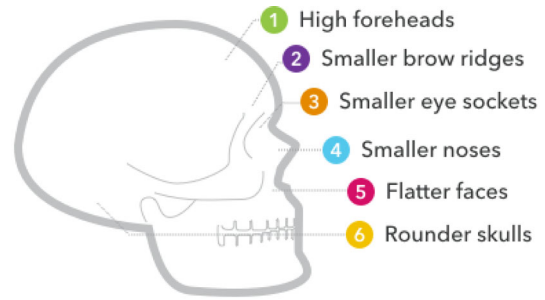
The common ancestor of modern humans and Neanderthals is thought to be an extinct hominin named *Homo heidelbergensis*. The species inhabited much of Africa, Europe and probably Asia from at least 700,000 years ago until about 200,000 years ago.



300,000 Years Ago - Africa

Modern Humans Evolve Within Africa

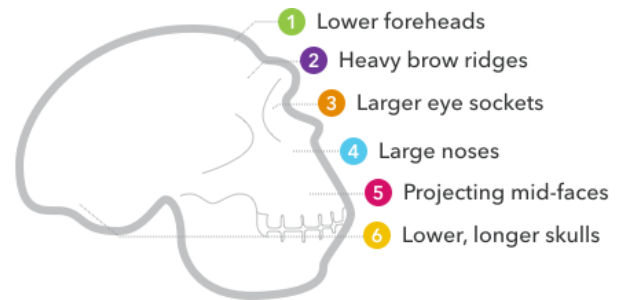
Homo heidelbergensis continued to evolve in Africa, eventually becoming anatomically-modern humans. The oldest remains that can be ascribed to anatomically-modern humans come from a site named Jebel Irhoud in Morocco that dates to 300,000 years ago.



200,000 Years Ago - Eurasia

Neanderthals Evolve Outside of Africa

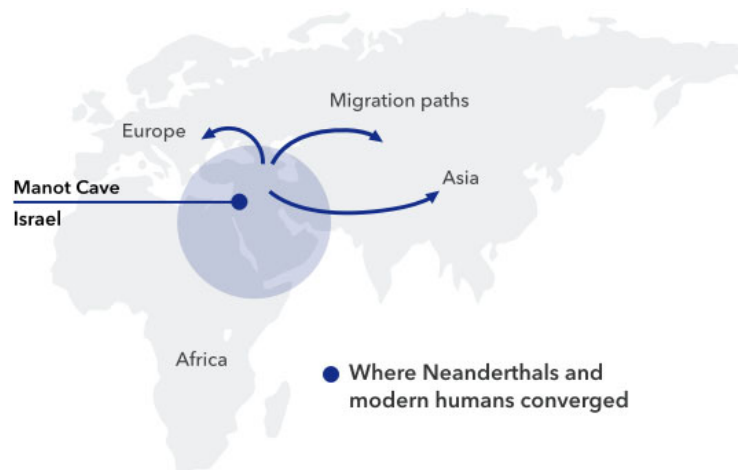
By about 200,000 years ago, the European branch of the *Homo heidelbergensis* population had evolved into what we refer to as Neanderthals. Contrary to the popular "caveman" stereotype, Neanderthals were a lot like modern humans and exhibited complex social behaviors. The most distinctive characteristics of Neanderthal remains are their wide, robust bodies, relatively short limbs, and projecting mid-faces.



60,000 Years Ago

Neanderthals and Modern Humans Converge

Around 60,000 years ago, modern humans started to explore beyond Africa, encountering and interbreeding with their Neanderthal neighbors. Skeletal remains found in the Manot Cave in Israel and elsewhere suggest that these two groups likely interbred in the Middle East or Europe. Their descendants radiated out across Europe, Asia, Australia and eventually the Americas.

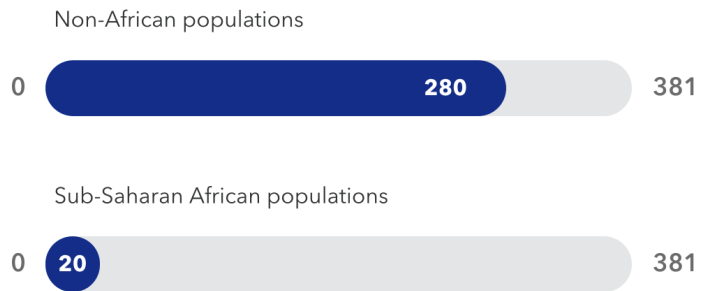


Today

African and Non-African Populations Differ in Their Neanderthal Ancestry

Neanderthal ancestry in present-day populations is largely derived from these ancient migrations and interbreeding events. Non-African populations have Neanderthal ancestry amounting to about 1-2% of their genomes. With few exceptions, Sub-Saharan African populations have virtually no Neanderthal ancestry. Average numbers from the 23andMe database are shown to illustrate this difference.

Average number of Neanderthal variants



Do more with your Neanderthal results.

- Join the discussion with other 23andMe customers interested in ancient DNA.
- See where your Neanderthal variants are in your genome.
- Contribute to research and help us understand more about how DNA relates to ancestry.

Scientific Details

What is so important about Neanderthals?

For many years, scientists were limited to scraping together clues from fragments of bones and other materials to discover who we are and where we come from. New techniques have allowed scientists to look even closer at DNA hidden within those bones. While the full picture of our past is still emerging, it is clear that as early as 50,000 years ago there were at least three different types of humans. Although only one of these groups (so-called "anatomically-modern humans") survived, we now know that they interbred with the other groups, including Neanderthals, along the way.

23andMe customers with Neanderthal variants have a direct Neanderthal ancestor—a grandparent to the 2,000th degree. What that means is still uncertain, but it's fascinating to think that we may have inherited some of our traits and behaviors from them.

Your Neanderthal Ancestry

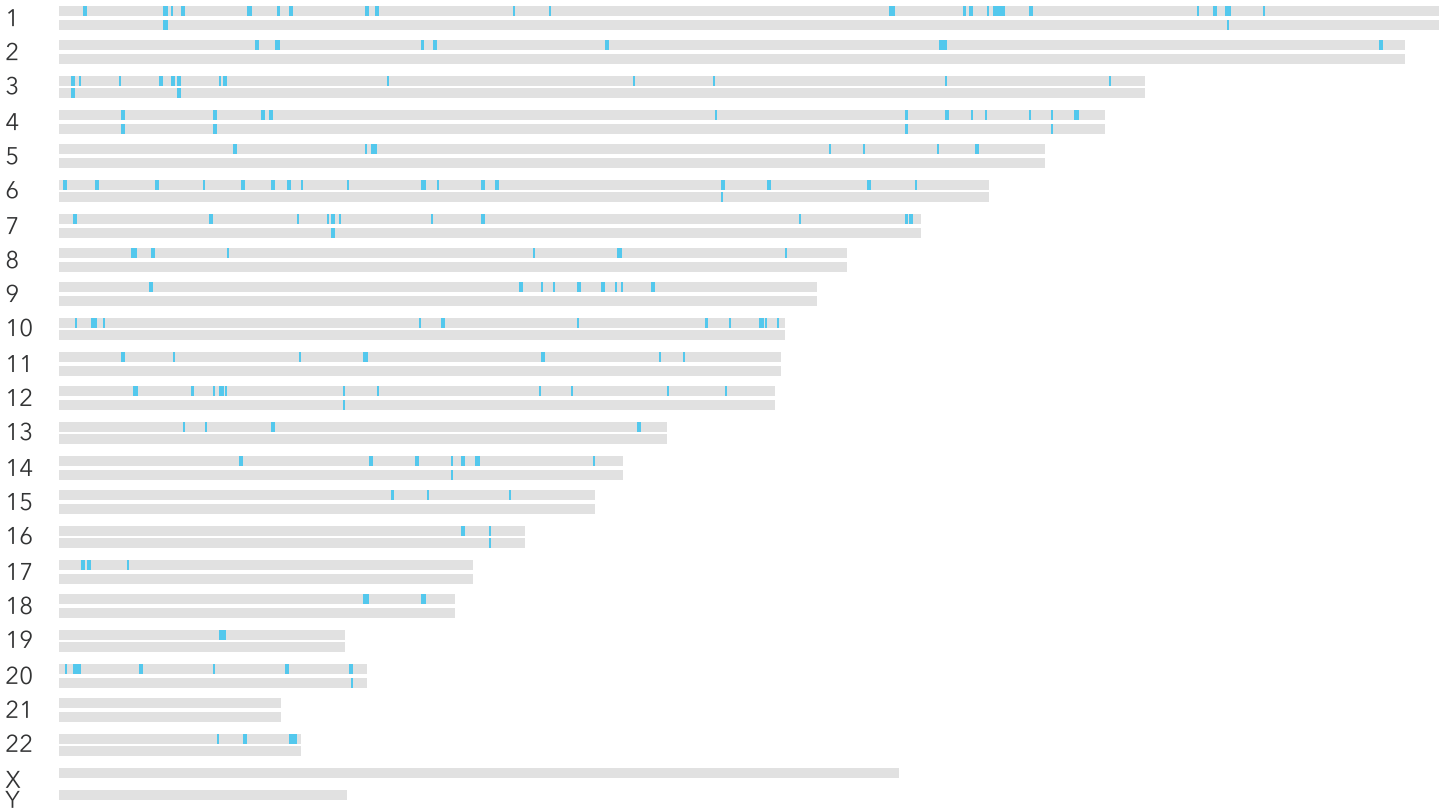
23andMe tests for Neanderthal ancestry at 1,436 markers scattered across the genome. At each of these markers you can have a genetic variant that evolved in Neanderthals and came back into the human lineage when the two groups interbred. Because you inherit variants from both of your parents, you can have 0, 1, or 2 copies of the Neanderthal variant at each marker. We report your total number of Neanderthal variant copies, which is therefore a number between 0 and 2,872. However, nobody has all 2,872 – the most we've ever seen in a 23andMe customer is less than 400.

Read our white paper for more details [https://permalinks.23andme.com/pdf/23-05_neanderthal_ancestry_inference.pdf]

1436 Markers tested for Neanderthal ancestry
 21 x 2 Markers where you have two Neanderthal variants
 252 Markers where you have one Neanderthal variant

294

Your Neanderthal Variant Total



You have zero variants associated with Neanderthal traits.


5 markers were tested.

Marker Tested	Gene	Marker ID (SNP)	Your Genotype*	Neanderthal Genotype
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rs4849721	Near the EN1 gene	rs4849721	G  G	
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Explanation: The variant tested is a change from a G to a T in a DNA sequence near the EN1 gene. Each copy of a T at this position is associated with **slightly less back hair** than average.

References: [7]

rs12458349	Near the PHLPP1 gene	rs12458349	T  T	
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Explanation: The variant tested is a change from a T to a G in a DNA sequence near the PHLPP1 gene. Each copy of a G at this position is associated with having **slightly straighter hair** than average.

References: [7]

rs7544462

MEAF6

rs7544462



Explanation: The variant tested is a change from an A to a C in a DNA sequence in the MEAF6 gene. Each copy of a C at this position is associated with being about **0.1 inches shorter** than average.

References: [7]

rs1877547

LPP

rs1877547



Explanation: The variant tested is a change from a G to an A in a DNA sequence in the LPP gene. Each copy of a A at this position is associated with being about **0.1 inches taller** than average.

References: [7]

rs11213819

Near the C11orf53 gene

rs11213819



Explanation: The variant tested is a change from a C to a T in a DNA sequence near the C11orf53 gene. Each copy of a T at this position is associated with **slightly lower odds of sneezing after eating dark chocolate**, compared to average.

References: [7]

* 23andMe always reports genotypes based on the 'positive' strand of the human genome reference sequence (build 37). Other sources sometimes report genotypes using the opposite strand. This test cannot distinguish which copy you received from which parent.

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12. Neanderthal Ancestry White Paper [https://permalinks.23andme.com/pdf/23-05_neanderthal_ancestry_inference.pdf]

Change Log

Your report may occasionally be updated based on new information. This Change Log describes updates and revisions to this report.

Date	Change
Nov. 15, 2018	Your genetic results were first available from 23andMe.
Oct. 21, 2015	Neanderthal Ancestry report created.

Tobias Kredel's Report, printed on 2019-06-28 UTC



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