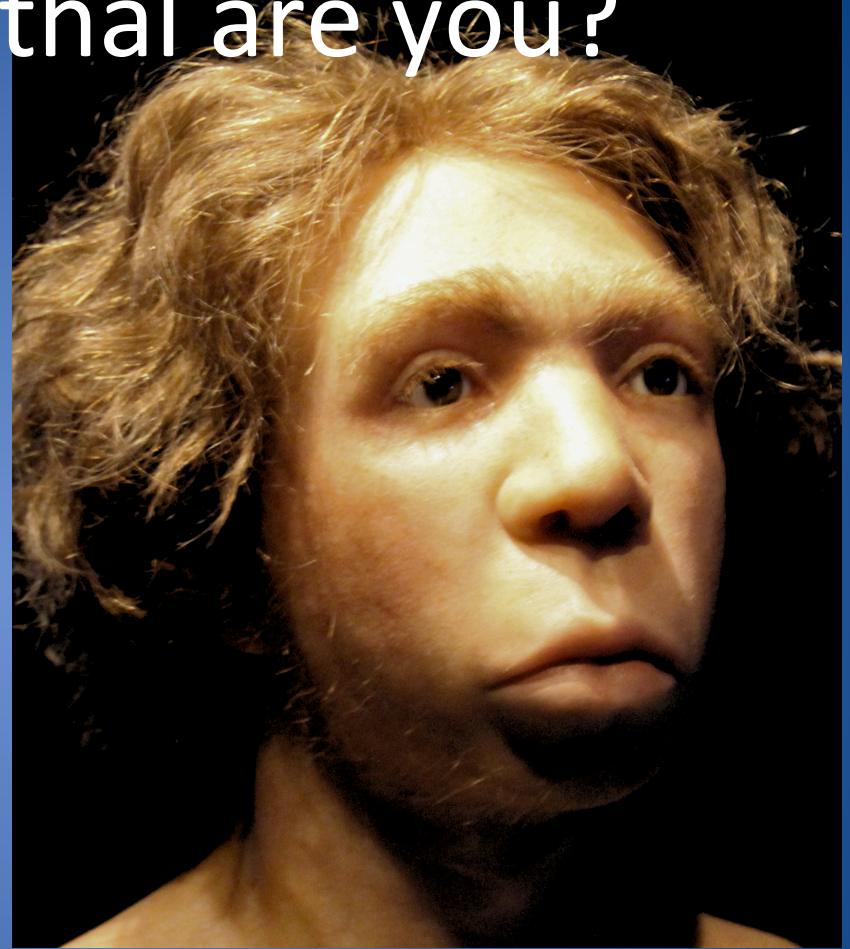


How Neanderthal are you?



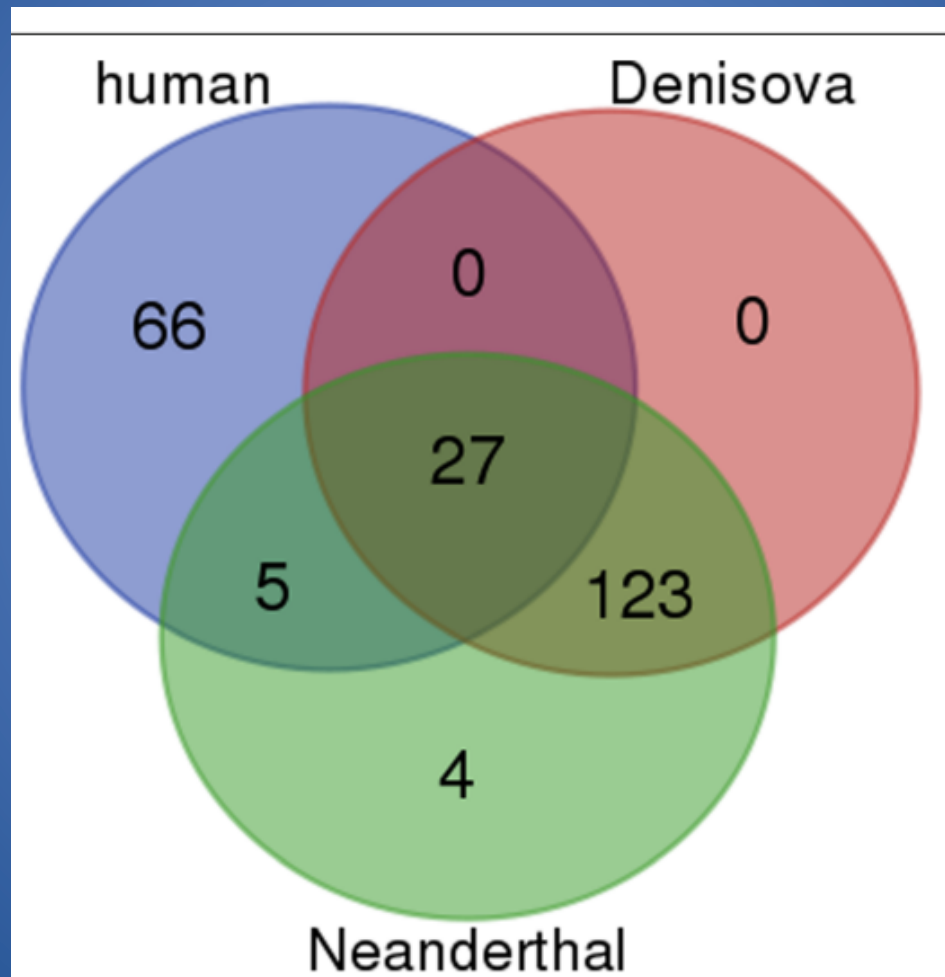
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Jill Callahan and Kathleen Nolan
ABLE Ottawa June 21, 2019

Create a Venn Diagram Like Below:



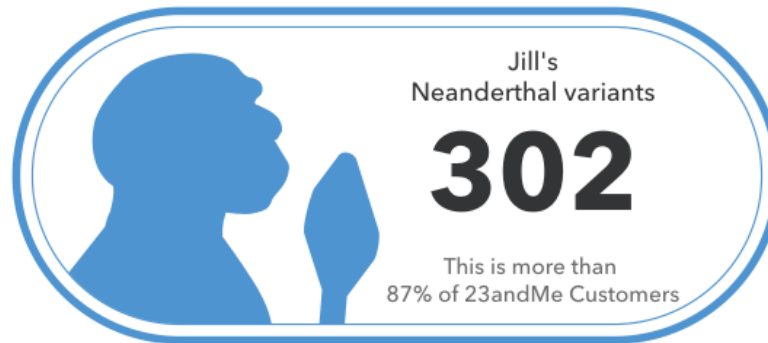
Jill Callahan, Saint Peter's University

302 Neanderthal Variants

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 302 Neanderthal variants.



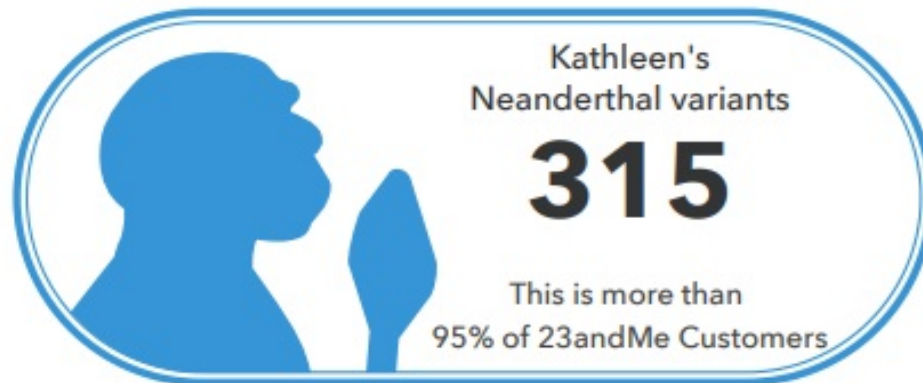
Kathy Nolan, Saint Francis College

315 Neanderthal Variants

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 315 Neanderthal variants.

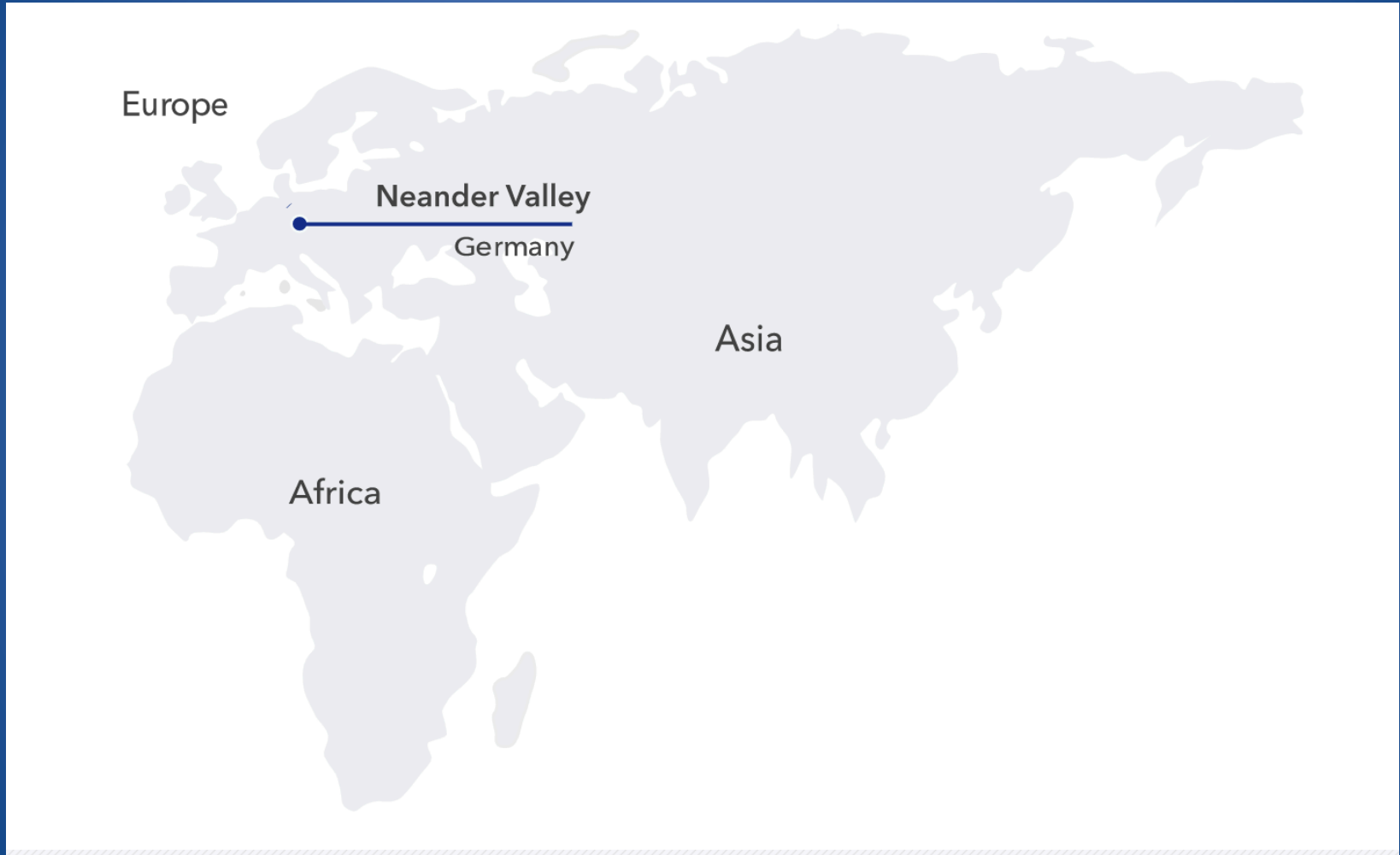


You have more Neanderthal variants than 95% of 23andMe customers.
However, your Neanderthal ancestry accounts for less than 4% of your overall DNA.

Neanderthal DNA in Humans

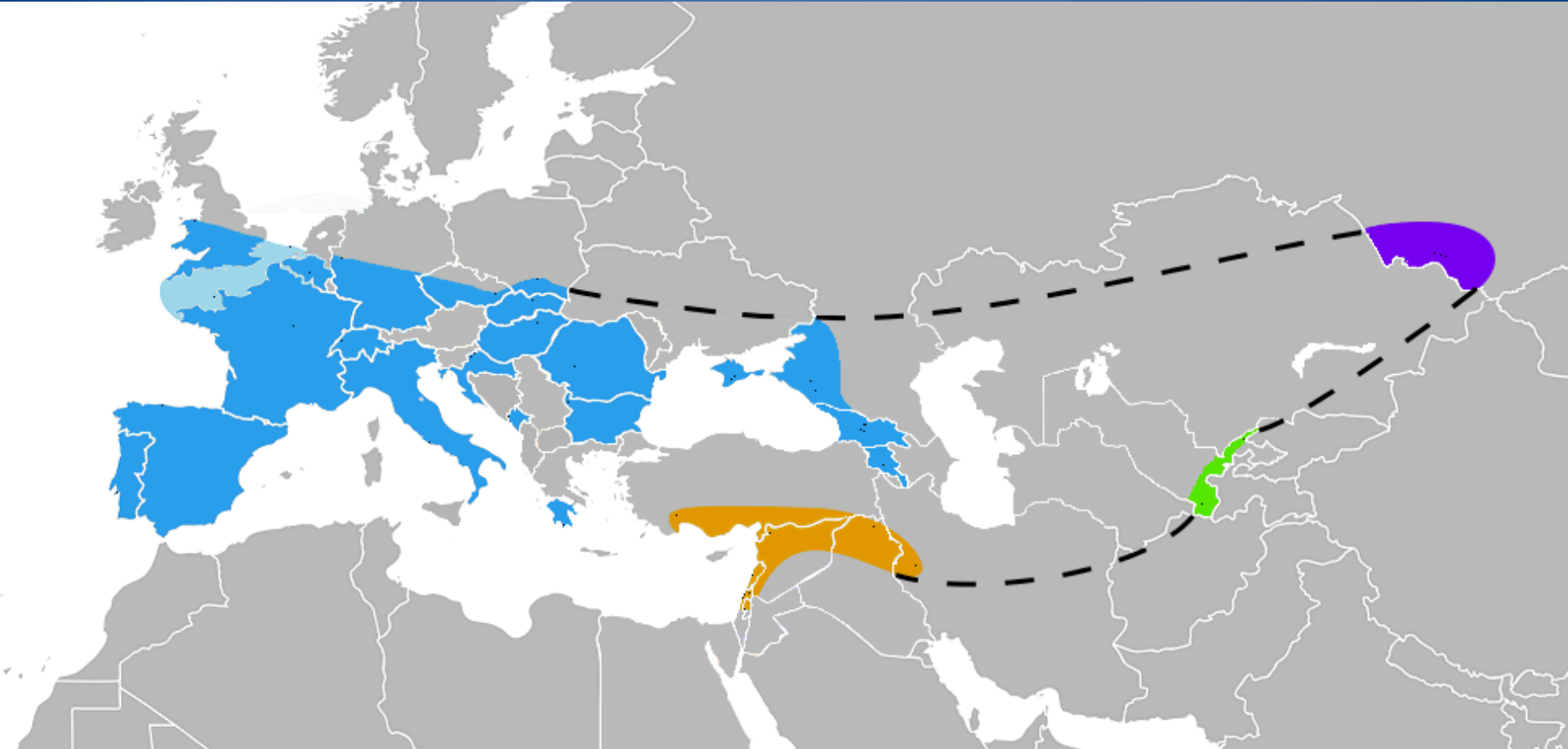
- Who were the Neanderthals?
- Where did they live?
- Estimated 1-4% of Modern Eurasian Human DNA
- Not found in Africa

Discovered in Neander Valley



<https://you.23andme.com/reports/neanderthal/>

Range of Neanderthal



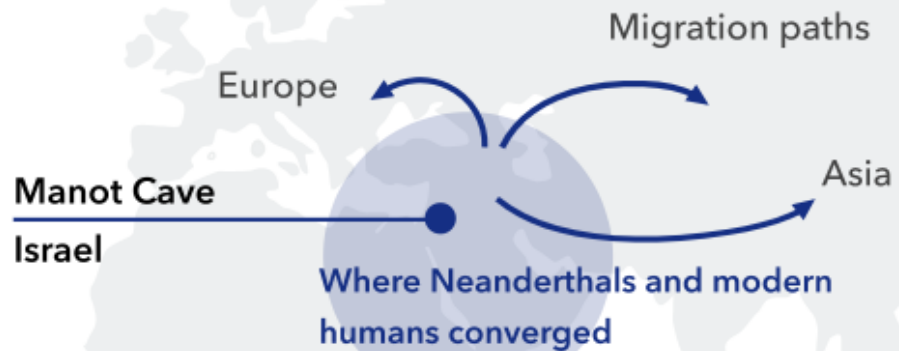
Known Neanderthal range in Europe (blue), Southwest Asia (orange), Uzbekistan (green), and the Altai mountains (violet), as inferred by their skeletal remains (not stone tools). For sources, please see [en:User:Nicolas_Perrault_III/List_of_Neanderthals](https://en.wikipedia.org/wiki/User:Nicolas_Perrault_III/List_of_Neanderthals)
Creative Commons Attribution-Share Alike 3.0 Unported license
[.wikimedia.org/wiki/File:Range_of_NeanderthalsAColoured.png](https://commons.wikimedia.org/wiki/File:Range_of_NeanderthalsAColoured.png)

Common ancestry



<https://you.23andme.com/reports/neanderthal/print/>

Convergence

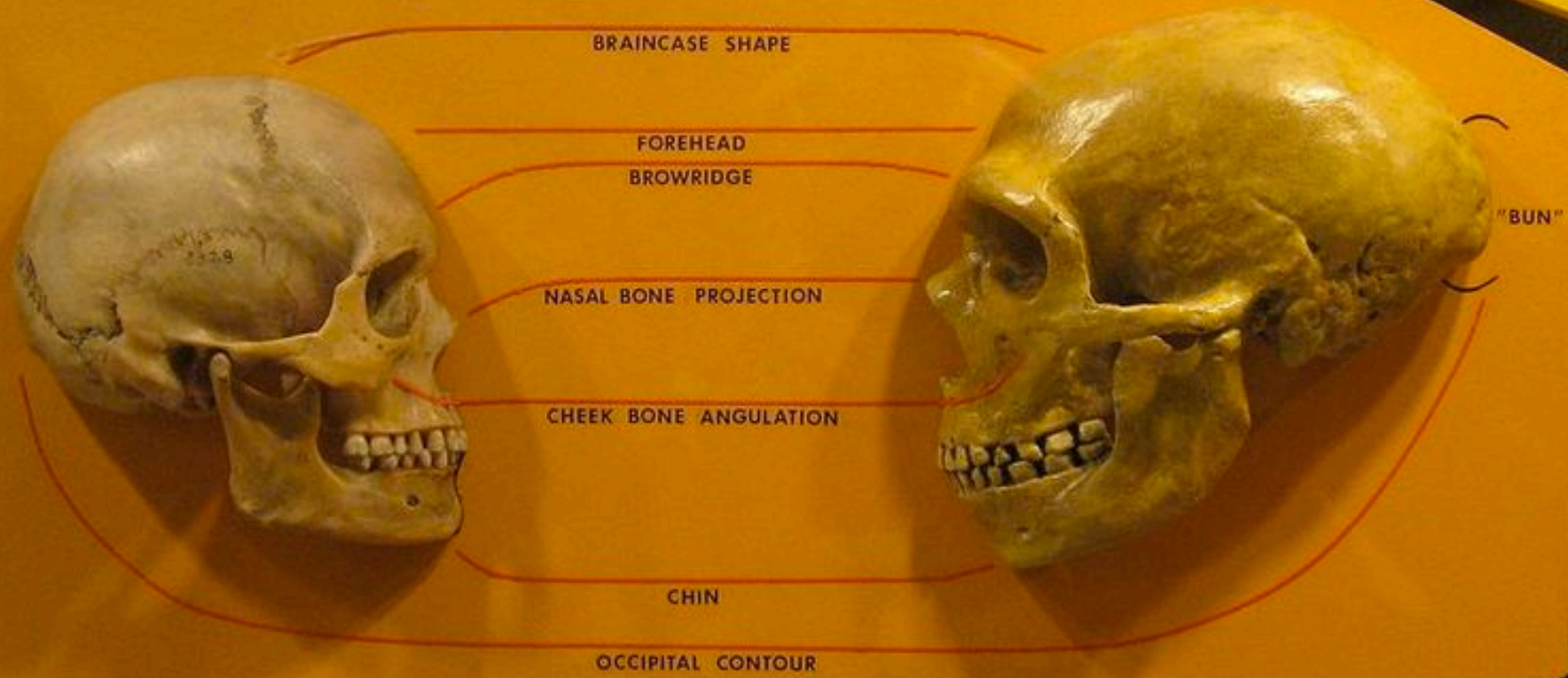


Neanderthal Traits



This file is licensed under the Creative Commons Attribution-Share Alike 3.0 Unported license.
English: Homo neanderthalensis. Skull discovered in 1908 at La Chapelle-aux-Saints (France).
Date October 2005
Source Own work
Author Luna04

Cranial features of Modern Man and Neanderthal compared



hairymuseummatt - <https://www.flickr.com/photos/hmnh/3033749380/>
comparison of Neanderthal and Modern human skulls from the Cleveland Museum of Natural History

CC BY-SA 2.0
File:Sapiens neanderthal comparison.jpg
Created: 14 November 2008

Neanderthal Bodies

Vs

Homo sapiens bodies

- Larger noses, heads, bones, muscles
 - Bulkier, stronger than humans
 - Efficient and well suited to cold environments
 - (Increase vasodilation)
 - Less agile
 - Short limbs, wide pelvises
- Earlier Growth development



Neanderthal Skeleton, AMNH

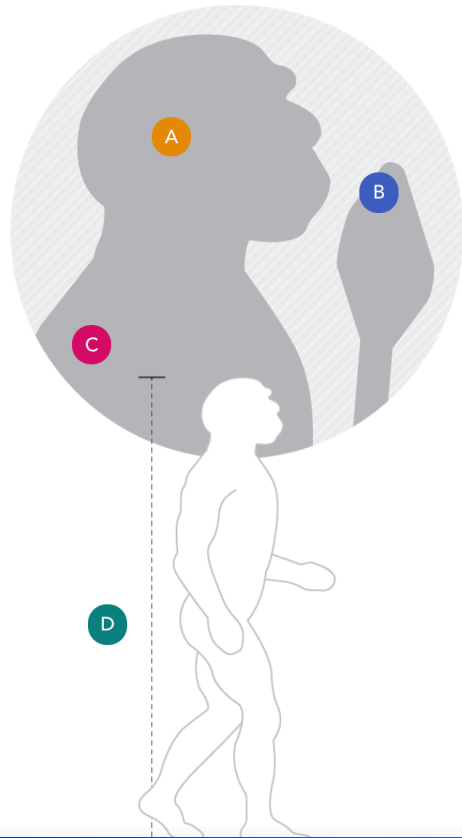
Date 22 March 2008, 13:42
Source Neanderthal Skeleton
Author Claire Houck from New York City, USA
Creative Commons Attribution-Share Alike 2.0 Generic license
<https://upload.wikimedia.org/wikipedia/commons/e/e8/Neanderthalensis.jpg>

H. sapiens/H. neanderthalis



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Unported license by Wapondaponda

Some other traits seen in Neanderthals



Variant(s) found

A Straight hair

You have 0 Neanderthal variants associated with having straighter hair.

0

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.

0

C Less back hair

You have 1 Neanderthal variant associated with having less back hair.

JC

D Height

You have 0 Neanderthal variants associated with your height.

0

<https://you.23andme.com/reports/neanderthal/print/>

Location of Neanderthal Ancestry Gene Variants 302/ 2872:

Markers tested for Neanderthal ancestry

1436

Markers where you have two Neanderthal variants

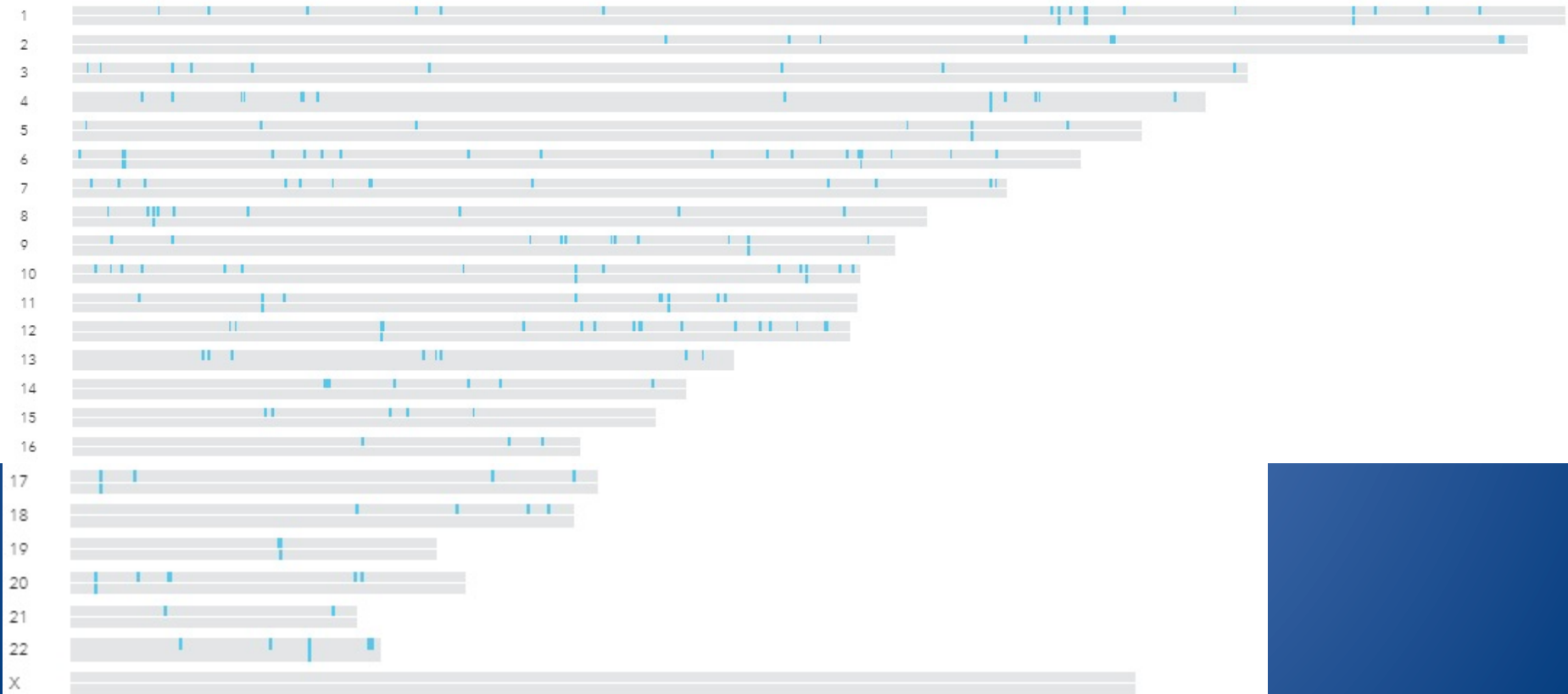
29 x 2

Markers where you have one Neanderthal variant

244

Your Neanderthal Variant Total

302



Neanderthal variant one copy+

You have one variant associated with Neanderthal traits.

Marker Tested

Your Genotype*

Additional Information

rs4849721

Gene: Near the EN1 gene

Trait: Less back hair

T

Neanderthal copy from one of your parents



G

Human copy from your other parent

^ Biological 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.

^ Typical vs. variant DNA sequence



Neanderthal variant

rs11213819

Gene: Near the C11orf53 gene

Trait: Less likely to sneeze after eating dark chocolate

C

Human copy from one of your parents



C

Human copy from your other parent

^ Biological 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.

^ Typical vs. variant DNA sequence



Other selected traits (Relative to general population)

1. Adaptation to Cold Climates	0%-----100%
2. Hair thickness	0%-----100%
3. Tendency to feeling down	0%-----100%
4. Height (Were you tall as a child? Growth rate)	0%-----100%
5. Prone to sunburn	0%-----100%
6. Night owl	0%-----100%
7. Back hair Reduced	0%-----100%
8. Smoking status	0%-----100%
9. Finger span/ hand width	small.....large
10. Sneeze after eating dark chocolate	Yes or No

Applications

- Evolution
- Genetics
- Bioinformatics
- Questions?



Photo by Kathy Nolan



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