



Maternal Haplogroup

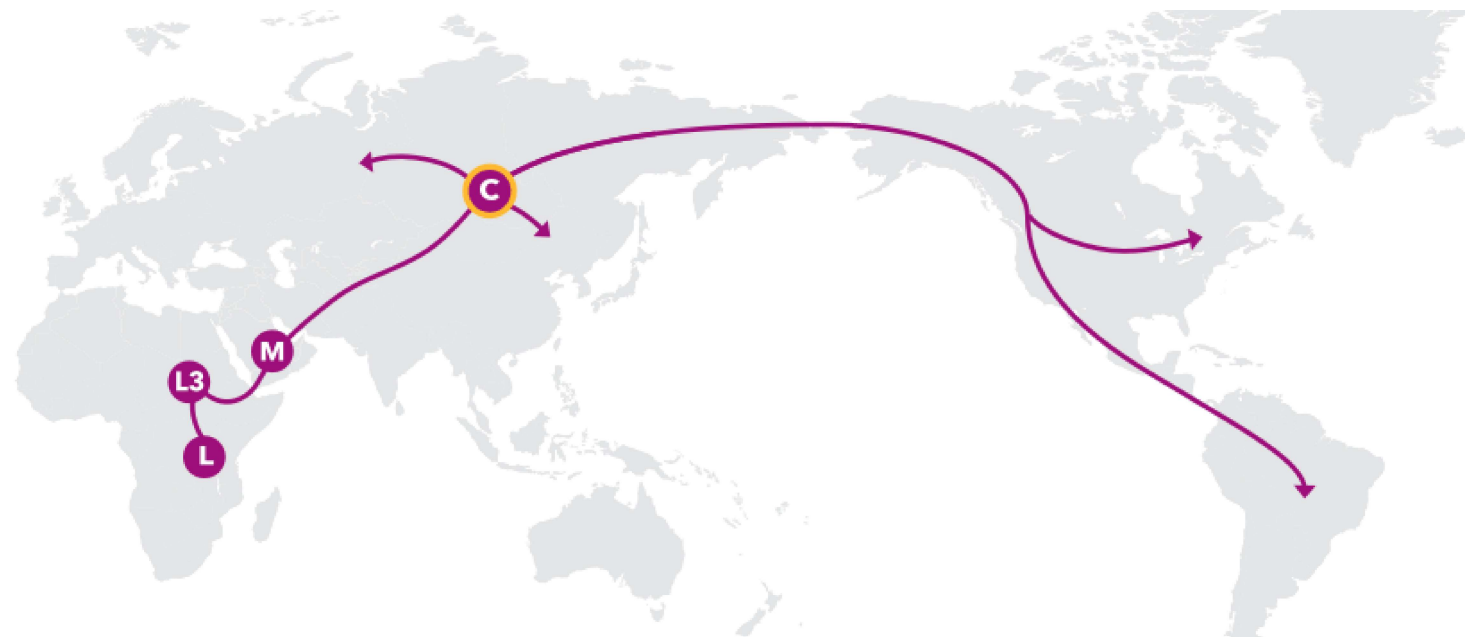
You descend from a long line of female ancestors that can be traced back to eastern Africa over 150,000 years ago. These are the people of your maternal line, and your maternal haplogroup sheds light on their story.



Miguel S, your maternal haplogroup is C1c.

As our ancestors ventured out of eastern Africa, they branched off in diverse groups that crossed and recrossed the globe over tens of thousands of years. Some of their migrations can be traced through haplogroups, families of lineages that descend from a common ancestor. Your maternal haplogroup can reveal the path followed by the women of your maternal line.

Migrations of Your Maternal Line



180,000 Years Ago

Haplogroup L

If every person living today could trace his or her maternal line back over thousands of generations, all of our lines would meet at a single woman who lived in eastern Africa between 150,000 and 200,000 years ago. Though she was one of perhaps thousands of women alive at the time, only the diverse branches of her haplogroup have survived to today. The story of your maternal line begins with her.

65,000 Years Ago

Haplogroup L3

Your branch of L is haplogroup L3, which arose from a woman who likely lived in eastern Africa between 60,000 and 70,000 years ago. While many of her descendants remained in Africa, one small group ventured east across the Red Sea, likely across the narrow Bab-el-Mandeb into the tip of the Arabian Peninsula.

50,000 Years Ago

Haplogroup M

Beyond Africa, your maternal-line story can be traced through haplogroup M. M is one of two branches that split from L3 soon after humans first expanded out of Africa. Over the 50,000 years since the branch's rise, members of haplogroup M have ventured far and wide in southern and eastern Asia, where many diverse branches split off, many of which are major haplogroups in their own right.

24,000 Years Ago

Haplogroup C

One of those branches is haplogroup C, which traces back to a woman who lived in Central Asia nearly 24,000 years ago. Today C is most common in Siberia and Central Asia, but members are also found in China and as far west as the Ural Mountains. Over 14,000 years ago, women who belonged to the branches C1b, C1c, C1d, and C4c migrated beyond the Eurasian continent, from Siberia to the Americas.

24,000 Years Ago

Origin and Migrations of Haplogroup C

The common ancestor of haplogroup C lived approximately 24,000 years ago in Asia. Today her descendants are most common among the isolated peoples of the frozen Siberian tundra and in Central Asia all the way across to the Ural Mountains. But, some also call the south home. Between 2 and 5% of people across northern China carry the lineage, as do up to 5% of Han populations and closer to 10% of Tibeto-Burman speakers across the south.

Scientists have identified several subgroups of C, each localized to a particular location. Sub-group C1 can be found among the Japanese, as well as the Nanai of Far Eastern China and the Buryat of central Russia and Mongolia. Based on where it's found today, haplogroup C1 probably arose in the Amur River region of the Russian Far East. C4 and its sub-lineages are more often found in northern Siberia. Haplogroup C5 is also common in Siberia, and is found at high levels among the Kettic speakers near the Yenisei River in Central Siberia.

Certain branches of C trace a different historic path. At the peak of the Ice Age, between about 20,000 and 15,000 years ago, so much water was locked up in massive ice sheets that global sea level dropped 300 feet and exposed an ice-free but frigid corridor hundreds of miles wide that linked Siberia and Alaska. A few hardy hunter-gatherers roamed back and forth across this bridge, and as the Ice Age ended they ventured south from the Arctic. Once in the Americas, the women bearing haplogroup C gave rise to new lineages, including the sub-groups C1b, C1c, and C1d. Today these three sub-branches, along with one additional branch, C4c, are widely dispersed throughout North and South America.

C1c

13,000 Years Ago

Your maternal haplogroup, C1c, traces back to a woman who lived approximately 13,000 years ago.

That's nearly 520 generations ago! What happened between then and now? As researchers and citizen scientists discover more about your haplogroup, new details may be added to the story of your maternal line.

Today

C1c is frequent among 23andMe customers.

Today, you share your haplogroup with all the maternal-line descendants of the common ancestor of C1c, including other 23andMe customers.

1 in 330

23andMe customers share your haplogroup assignment.

Flying Down the Coastal Highway



Cannon Beach, Oregon

Though the Ice Age was beginning to retreat when your C1c ancestors first entered North America, there were still massive barriers blocking their way. Glaciers and inhospitable climate covered much of the continent, blocking entry into the interior. Nonetheless, researchers have found evidence that a wave of American founders migrated over 13,000 kilometers to reach southern Chile in only 2,000 years, a blink of an eye in the story of human migration!

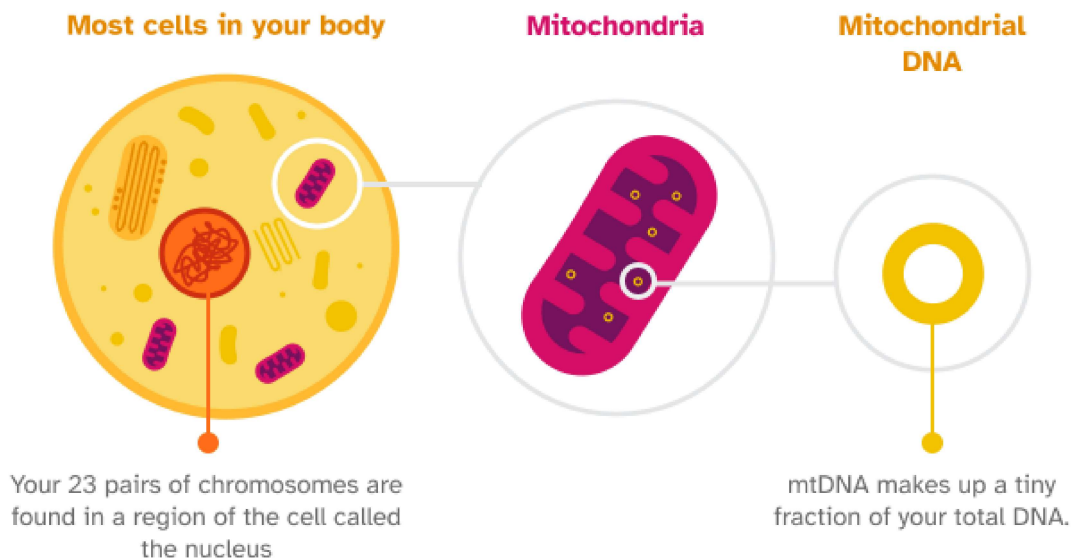
Their highway to the south was the coast of the Pacific, stocked with fish, diverse marine mammals, and other valuable resources in the rich kelp forests of the upper latitudes and in the abundant fresh-water rivers near the equator. Because of this rapid movement south, the C1c haplogroup and its diverse branches are found throughout North and South America.

The Genetics of Maternal Haplogroups

Mitochondrial DNA

Maternal haplogroups are determined by sets of genetic variants in a tiny, unusual loop of DNA called mitochondrial DNA (mtDNA). As the name suggests, mtDNA is found in the mitochondria, small but mighty structures inside our cells that turn fuel from the food we eat into energy.

Mitochondria evolved over billions of years from an independent bacterial cell that was engulfed by another cell. Instead of becoming lunch, the bacterium helped its new host use oxygen to produce energy. Over time it completely lost its independence and became an integrated part of the larger cell.

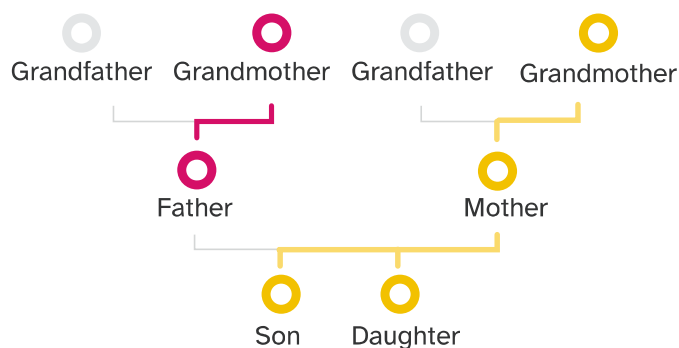


Maternal Haplogroup Tree

MtDNA is a powerful tool for tracing the history of maternal lines because of the way it is inherited: everyone has mtDNA, but only females pass it down to their children. So for example, an individual inherits a copy of their mother's mtDNA, who inherited it from their mother, who inherited it from theirs, and so on through the generations along an unbroken line of female ancestors.

The copies passed down are not always perfectly identical, however. Small typos in the mtDNA sequence occasionally occur, creating new genetic variants. Over many generations, these variants stack up in unique patterns that are carried by different maternal lines around the world.

Only mothers pass their mtDNA down to their children

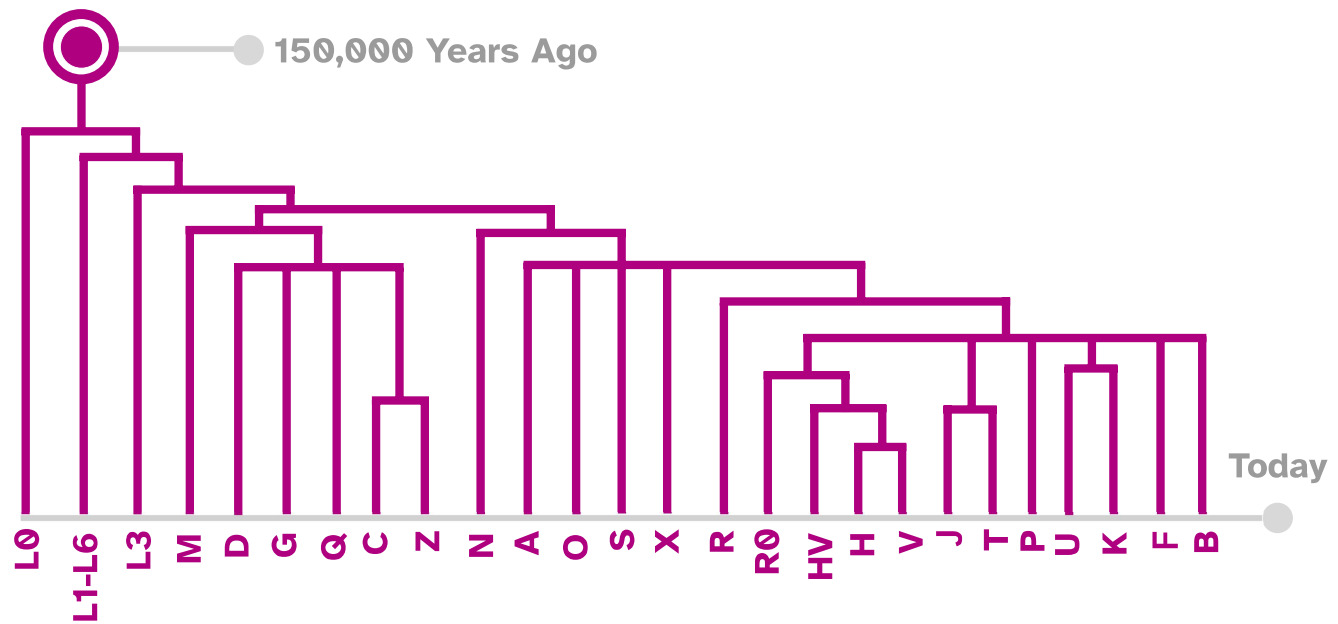


Maternal Haplogroup Tree

By comparing the mtDNA patterns from around the world, researchers identify families of maternal lines. All the lines within each family trace back to a single common ancestor, and share a set of mtDNA variants that they inherited from her.

In fact, when we look very far back in time, all the maternal lines around the world trace back to one woman! Along with her ancestors, she forms the root of a great tree that shows how all maternal lines are related. Each sub-family in this tree is called a "haplogroup" and named with a sequence of letters and numbers that reflect its location in the tree.

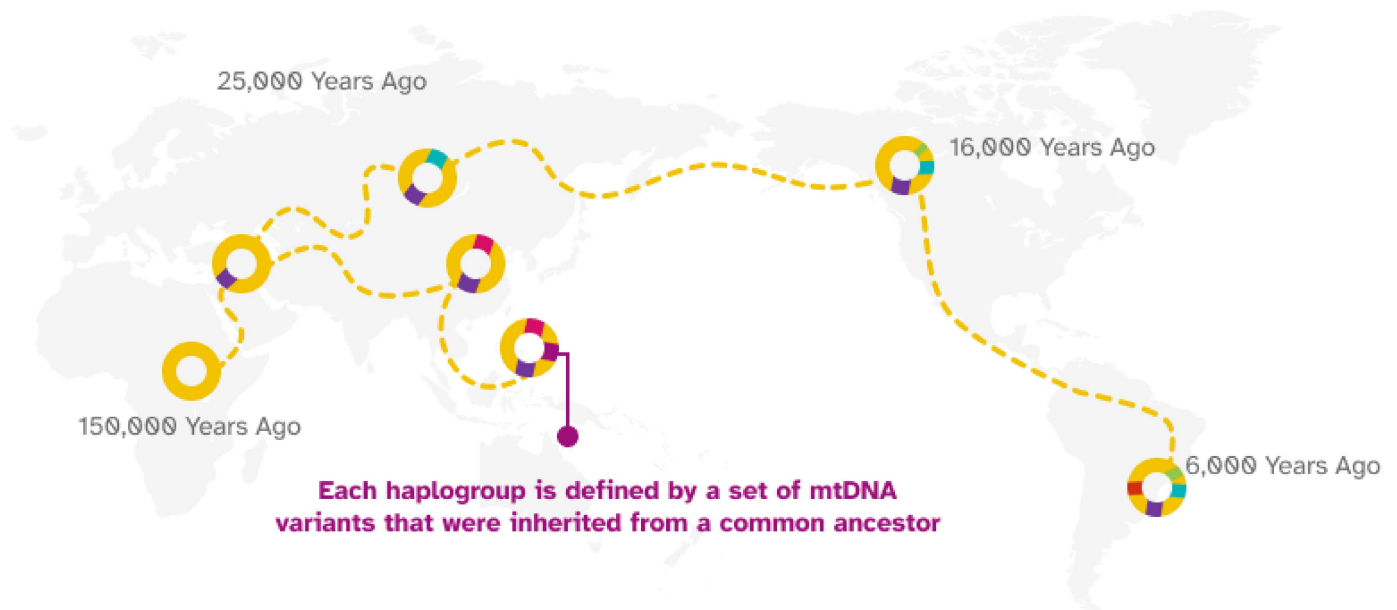
See your line in the tree of all maternal haplogroups.



Tracing Female Migrations

Next, geneticists study the relationships between haplogroups and compare them with the distribution of each group around the world. Because closely related haplogroups tend to share geographic roots, researchers can play a sophisticated version of connect-the-dots to estimate the origins and migration patterns of particular haplogroups.

Finally, combining this genetic evidence with data from other fields of study helps researchers place the story of each maternal line within the broader context of human history.



Do more with your Haplogroup results.

- Contribute to research and help us understand patterns of genetic variation around the world.
- Visit DNA Relatives to identify relatives that may be on your maternal line.

Scientific Details

Your haplogroup is determined by your mitochondrial DNA.

Each generation, females pass down copies of their mitochondrial DNA (mtDNA) to their children. While most of your genome exists in 23 pairs of chromosomes that exchange pieces between generations in a process called recombination, mtDNA is transmitted unshuffled. Because of this unusual pattern of inheritance, mtDNA contains rich information about maternal lineages.

A small number of DNA changes, called mutations, generally occur from one generation to the next. Because mtDNA does not recombine between generations, these mutations accumulate in patterns that uniquely mark individual lineages. Scientists can compare the sequence differences that result by constructing a tree. This tree shows how maternal lineages relate to one another, including the observation that they all share a most recent common ancestor approximately 150,000 to 200,000 years ago.

The term "haplogroup" refers to a family of lineages that share a common ancestor and, therefore, a particular set of mutations. We identify your haplogroup by determining which branches of the mtDNA tree correspond to your DNA. Because more closely related lineages tend to share geographic roots, your haplogroup can provide insight into the origins of some of your ancient maternal-line ancestors.

Maternal haplogroups are named with sequences of letters and numbers that reflect the structure of the tree and how the branches relate to one another.

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Change Log

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

Date	Change
May 8, 2017	The standalone Maternal Haplogroup report was created, featuring new design elements and content.
Oct. 21, 2015	Haplogroups report created.

Miguel S Alvarez's Report, printed on 2023-05-29 UTC



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