23andMe

Thomas Thekkethala
Maternal Haplogroup

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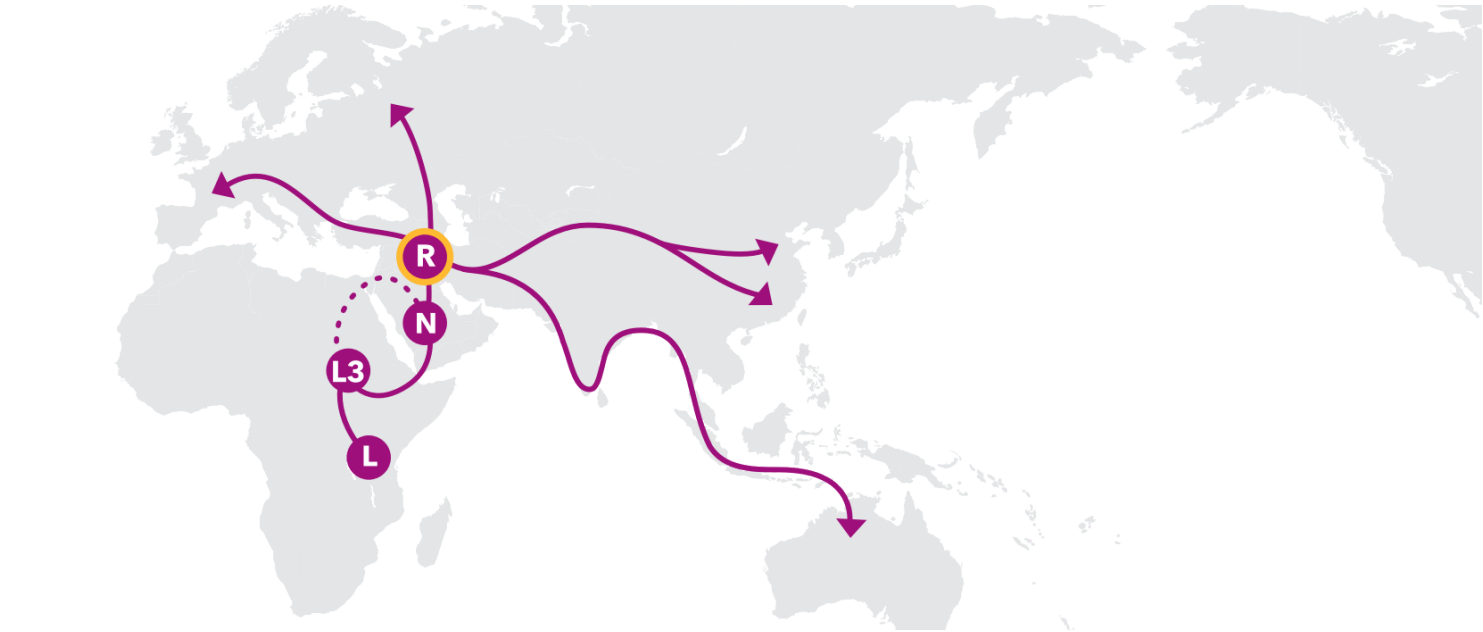
You descend from a long line of women that can be traced back to eastern Africa over 150,000 years ago. These are the women of your maternal line, and your maternal haplogroup sheds light on their story.

Thomas, your maternal haplogroup is R5a2b.

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.

59,000 Years Ago

Haplogroup N

Your story continues with haplogroup N, one of two branches that arose from L3 in southwestern Asia. Researchers have long debated whether they arrived there via the Sinai Peninsula, or made the hop across the Red Sea at the Bab-el-Mandeb. Though their exact routes are disputed, there is no doubt that the women of haplogroup N migrated across all of Eurasia, giving rise to new branches from Portugal to Polynesia.

57,000 Years Ago

Haplogroup R

One of those branches is haplogroup R, which traces back to a woman who lived soon after the migration out of Africa. She likely lived in southwest Asia, perhaps in the Arabian peninsula, and her descendants lived and migrated alongside members of haplogroup N. Along the way, R gave rise to a number of branches that are major haplogroups in their own right.

34,000 Years Ago

Origin and Migrations of Haplogroup R5

Your maternal line stems from R5, one of the earliest branches to arise from haplogroup R in India. R5 traces back to woman who likely lived among the inhabitants of present-day southern India shortly over 35,000 years ago. Later the haplogroup spread north, but it never expanded beyond the Indian subcontinent.

Today, about 2% of Indians across the country belong to R5, but it reaches but higher concentrations in certain states, including in Kerala (9%), Karnataka (6.4%), and Andhra Pradesh (4.1%).

R5a2b

8,500 Years Ago

Your maternal haplogroup, R5a2b, traces back to a woman who lived approximately 8,500 years ago.

That's nearly 340.0 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

R5a2b is relatively uncommon among 23andMe customers.

Today, you share your haplogroup with all the maternal-line descendants of the common ancestor of R5a2b, including other 23andMe customers.

1 in 9,700

23andMe customers share your haplogroup assignment.

Many of R's daughter branches are major haplogroups in their own right.

Members of haplogroup R, and the astounding works they've created, can be found on nearly every continent.

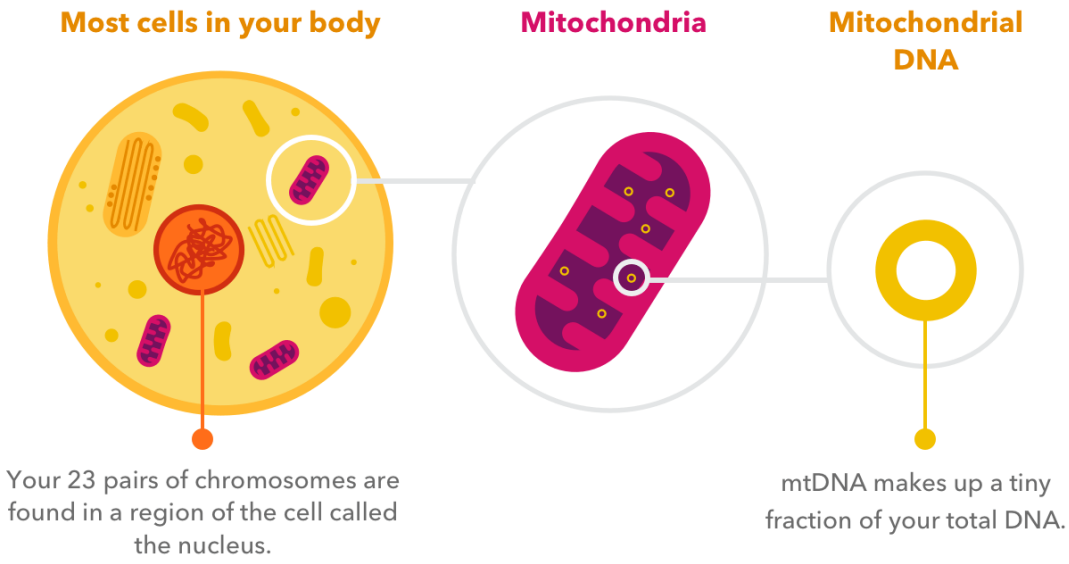
Most of Europe's most common haplogroups, including H, J, T, V and U, are offshoots of R. Some, like U, were involved in some of the earliest migrations to Europe, while others spread from the Middle East with the dawn of agriculture. These groups spread east as well, reaching Central Asia and India first with early farmers and then with Iron Age migrants. In East Asia, R gave rise to the dominant haplogroups F and B. Members of just one branch of B, B2, migrated from Siberia to the Americas after the peak of the Ice Age 18,000 years ago, where their descendants are found today. However, no other branches of R have been found in the indigenous people of 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.

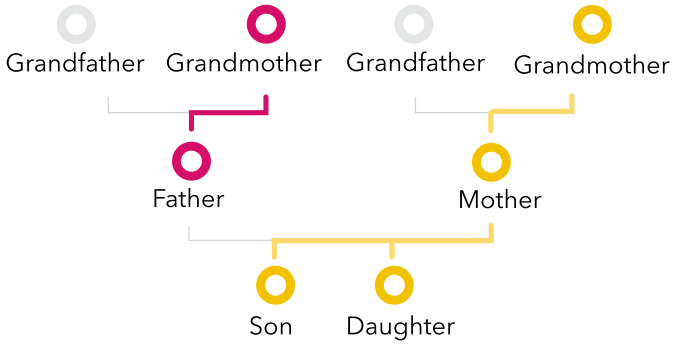


Maternal Inheritance

MtDNA is a powerful tool for tracing the history of maternal lines because of the way it is inherited: everyone has mtDNA, but only mothers pass it down to their children. So, you inherited a copy of your mother's mtDNA, who inherited it from her mother, who inherited it from hers, and so on through the generations along an unbroken line of women.

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

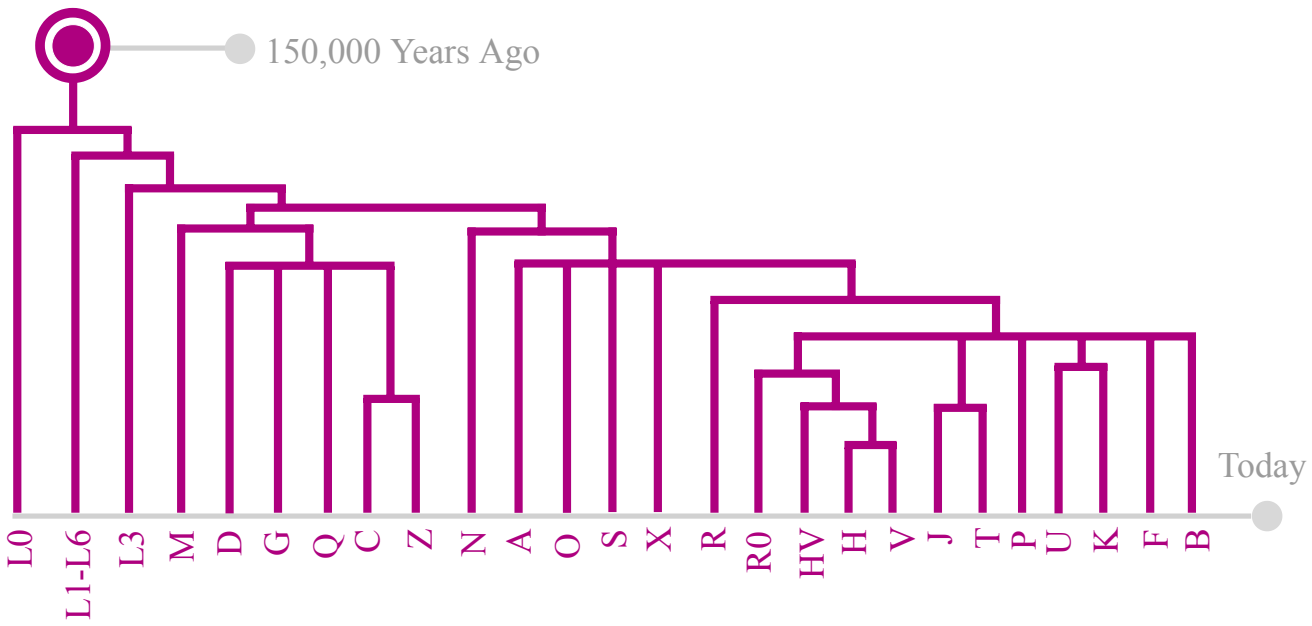


Maternal Haplogroup Tree

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.

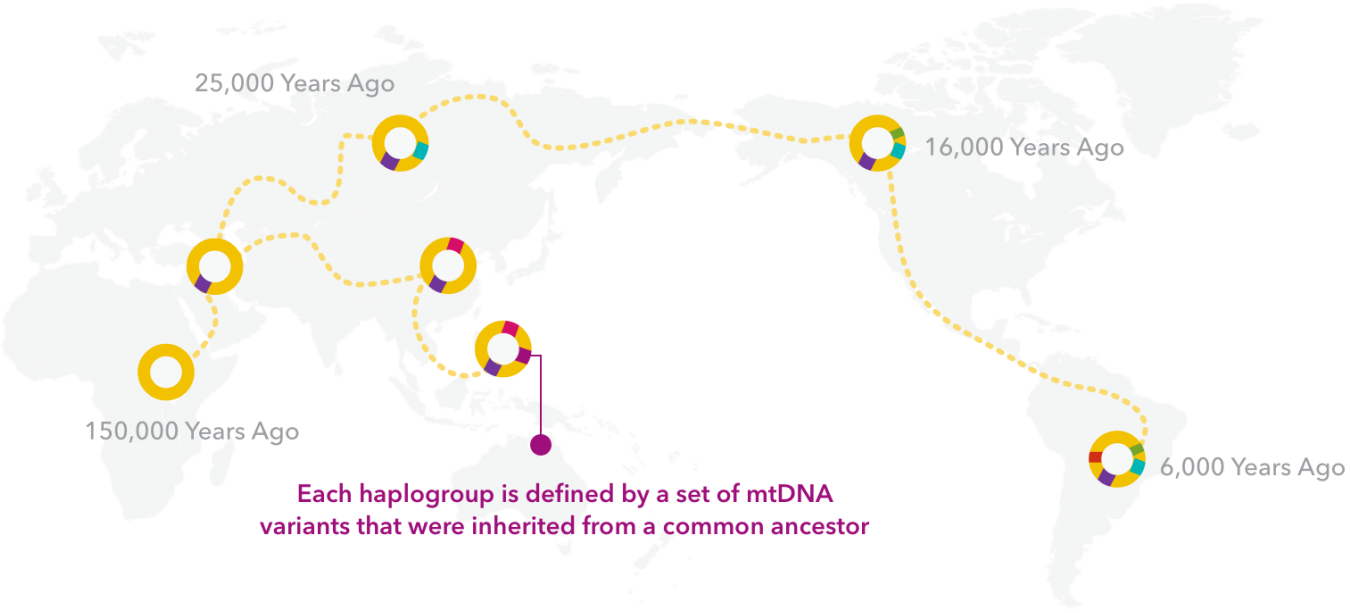
See your line in the tree of all maternal haplogroups.



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.
- Visit the Forums to meet other customers interested in discussing haplogroups.

Scientific Details

Your haplogroup is determined by your mitochondrial DNA.

Each generation, mothers 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.

Thomas Thekkethala's Report, printed on 2019-05-04 UTC