

Your Ancestral Journey

The origin of our species lies in Africa: It's where we first evolved and where we've spent the majority of our time on Earth. We have since migrated to every corner of the globe, a journey that is written in our DNA.

With the sample you sent us, we ran a comprehensive analysis to identify thousands of genetic markers—breadcrumbs—in your DNA, which are passed down from generation to generation. By looking at the order in which these markers occurred over time, we can trace the journey of your ancestors out of Africa. Furthermore, with these markers we have created a human family tree. Everyone alive today falls on a particular branch of this family tree. We have examined your markers to determine which branch you belong to. The results of our analysis—your personal journey—are outlined below.

Your Genius Matches (Present - 120,000 Years Ago)

We determine your Genius Matches through the analysis of either mitochondrial or Y-chromosome DNA, two parts of the DNA which are inherited directly, without mixing, from one ancestor in any given generation. Furthermore, if you go back 150,000 years, all seven billion humans share one single, common maternal ancestor: A Mitochondrial Eve. Her male counterpart was Y-chromosome Adam. Actually, any two individual people that ever lived may share a match (an Eve or an Adam) at a more recent point in time. First maternal cousins, for example, share a match at the grandmother level. Although it's true that every two living people share a common ancestor, in reality we share multiple ancestors. Some of these common ancestors lived centuries ago, while others lived and migrated across the earth millennia ago. Here we estimate when in time you shared a direct female or direct male ancestor with a famous historical genius. Learn about your own Genius Matches below.

1 Match

12,000 - 0 Years Ago

Queen Victoria

1819-1901

Royal Genius

♀ MATERNAL MATCH



Victoria was the longest serving monarch of the British Empire, and oversaw some of the greatest advances scientifically, industrially, and across various aspects of society during an age of great advancement and development: The Victorian Era. Her tenure not only changed Great Britain, but had linguistic and societal impacts across the globe that are still lasting today.

7 Matches

25,000 - 12,000 Years Ago

Charles Darwin

1809-1882

Scientific Genius

♂ PATERNAL MATCH



Darwin was a 19th century English naturalist attributed as the first person to propose the idea of evolution by means of Natural Selection. He proposed that all living things evolved from ancestral beings that once lived in a more distant past. His message was that ultimately all living species share a common ancestor, or match, in evolutionary history.

Nicolas Copernicus

1473-1543

Mathematical Genius

 **PATERNAL AND MATERNAL
MATCH**



Copernicus was one of the greatest mathematicians and astronomers of all time. He established that the Sun, rather than the Earth, was the center of the Solar System. This concept set the foundation for the modern day understanding of our place in the universe. Copernicus could also speak multiple languages, and he dabbled in economics and politics as well.

Benjamin Franklin

1706-1790

Multi-faceted Genius

 **MATERNAL
MATCH**



Not only was Benjamin Franklin one of the founding fathers of the United States of America, but he was also a writer, publisher, physicist, naturalist, and economist, and his name is synonymous with wealth (a Benjamin is a \$100 bill). Franklin is also credited with the idea of harnessing the power of electricity, a concept that completely altered the world as we know it.

Marie Antoinette

1755-1783

Historical Genius

 **MATERNAL
MATCH**



Marie Antoinette is one of the most famous leaders, turned villains of recent history. To this day she is remembered for her staunch conservatism and displays of wealth. She is attributed with the infamous phrase, "let them eat cake," supposedly uttered in response to the poverty in France. She is ultimately remembered for her death by guillotine in the center of Paris.

King Tut

1341 BC to 1323 BC

Pharaoh Genius

 **PATERNAL
MATCH**



Not much is known about this Egyptian leader from the 14th century B.C. other than he was possibly as young as nine when he took power, and that he died by the age of eighteen. Tutankhamun (or King Tut) ruled Egypt during the height of the empire, during which time he rejected some of the radical religious beliefs held by his predecessors. Furthermore, Tut is thought to have been the son of siblings, physically weak, and also stricken with malaria. All of these conditions may have contributed to his early death.



Napoleon

1769-1821

Military Genius



Napoleon was a political and military leader that rose to power in the late 18th century during the French Revolution. Under his rule, France rose to the position of European super power. Napoleon was later captured, tried, and found guilty. He eventually died in confinement in St. Helena island in the South Atlantic. His military tactics are still studied today, while his liberal political leanings continue to influence Europe and the world.



Maria Theresa

1717-1780

Royal Genius



Maria Theresa was a queen among queens. Her titles continuously changed as the geography of continental Europe evolved as nations merged then split apart during the heart of the 18th century. Maria was at one time Holy Roman Empress, Queen of Bohemia, and Archduchess of Austria. She was mother to sixteen children, the most famous of which was her youngest daughter, Maria Antonia, also known as Marie Antoinette.



2 Matches

45,000 - 25,000 Years Ago

Abraham Lincoln

1809-1865

Political Genius



Most historians consider Lincoln the greatest of all U.S. Presidents. He was a gifted politician, and astute at bringing people together in mutual understanding and consensus. This 16th American President kept the young country from splintering during some of the darkest days in American history, the U.S. Civil War.



Sir Frances Drake

1540-1596

Ocean Genius



Sir Drake was a British sea captain, politician, and slaver of the 16th century. He led the second expedition to circumnavigate the world, and thus he was first to complete the voyage as ship captain. Ferdinand Magellan did not live to see his boat return home. Drake was also known to many as a mercenary and thief who brought piracy to the American Pacific.



10 Matches

65,000 - 45,000 Years Ago

Petrarch

1304-1374

Poetic Genius

MATERNAL
♀MATCH



Francesco Petrarca was an Italian scholar, poet, and humanist whose 14th century writings arguably ushered in the Renaissance movement across Italy, and eventually throughout Europe. Because of his drive to revisit the scholarly classics of the past and his ever inquisitive thirst for knowledge, he was regarded as one of the greatest scholars of his age.

Abraham Lincoln

1809-1865

Political Genius

MATERNAL
♀MATCH



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Genghis Khan

1162-1227

Military Genius

PATERNAL
♂MATCH



Founder and ruler of the Mongol Empire, which became the largest empire in history shortly after his death in the early 13th century. Khan was known as a ruthless ruler who grew his empire by absorbing tribes and customs from neighboring regions. Today he is considered one of the greatest military geniuses of all time.

Leo Tolstoy

1828-1910

Literary Genius

PATERNAL
♂MATCH



Often cited as one of the greatest authors of all time. This Russian writer has been an inspiration to countless authors, and War and Peace is lauded as a literary masterpiece. Today, Tolstoy is considered more than just a writer, he was also a moral and religious leader.

Thomas Jefferson

1743-1826

Political Genius

PATERNAL
♂MATCH



Jefferson was the third president of the United States and one of the founding fathers of the country. He was an architect, horticulturalist and an academic scholar, and often a strong advocate for religious freedom and tolerance. Jefferson, like many of his predecessors, was also a slave-owner. Under his leadership the U.S. nearly doubled in size, as he orchestrated the Louisiana Purchase of 1803.

Nikola Tesla

1856-1943

Engineering Genius



Although his work was historically overshadowed by that of colleague turned nemesis, Thomas Edison, Tesla is attributed with developing the idea of alternating current (AC) and the induction motor. His accomplishments, however, remained obscure until the late 1990's when historians began to uncover the genius of his work in the fields of electronics and magnetism.

Richard III

1452 - 1485

Royal Genius



"My kingdom for a horse!" The last Yorkist king of England, Richard III's death at the Battle of Bosworth effectively ended the Wars of the Roses. Infamous because of the disappearance of his young nephews - the Princes in the Tower - and through William Shakespeare's play 'Richard III,' his remains were lost for more than five centuries. In 2012, mitochondrial DNA helped identify his skeleton, found in an archeological excavation of a parking lot.

Jesse James

1847 - 1882

Outlaw Genius



Born in Missouri in 1847, Jesse Woodson James seemed destined to be a minister. Instead, by age 16, he and his brother Frank were robbing banks and trains, attacking Union troops and killing supporters of Abraham Lincoln as part of the Quantrill Raiders gang. In the decade following the Civil War, James's criminal career rose steeply, and he became a national figure. He was killed in 1882 by one of his own gang members, Robert Ford, who received a pardon in turn for the killing.

Alexander Hamilton

1755 - 1804

Political Genius



Before he was on Broadway or the \$10 bill, Alexander Hamilton was a delegate to the Constitutional Convention, an author of the Federalist papers, and the first US secretary of the treasury. Born in 1757 in the British West Indies, he became General George Washington's assistant in 1777. Hamilton convinced New Yorkers to ratify the U.S Constitution. He died of a gunshot wound sustained during a duel with Aaron Burr on July 12, 1804, in New York City.

Martin Luther

1483 - 1546

Theological Genius



A German monk who began the Protestant Reformation in the 16th century, Martin Luther was one of the most influential and controversial figures in Christian history. He called into question some of the basic tenets of Roman Catholicism, and his followers soon split from the Roman Catholic Church to begin the Protestant tradition. A prominent theologian, Luther's desire for people to feel closer to God led him to translate the Bible into the language of the people, radically changing the relationship between church leaders and their followers.

2 Matches

120,000 - 65,000 Years Ago

Napoleon

1769-1821

Military Genius

PATERNAL
♂MATCH



Napoleon was a political and military leader that rose to power in the late 18th century during the French Revolution. Under his rule, France rose to the position of European super power. Napoleon was later captured, tried, and found guilty. He eventually died in confinement in St. Helena island in the South Atlantic. His military tactics are still studied today, while his liberal political leanings continue to influence Europe and the world.

Ramses II / Ramesses the Great

1303 - 1213 BC

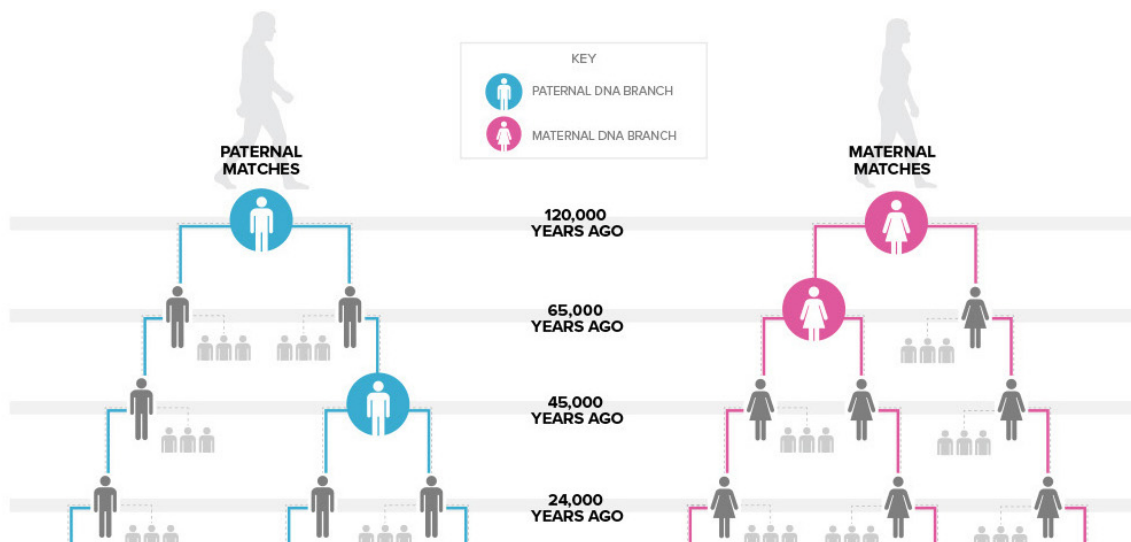
Royal Genius

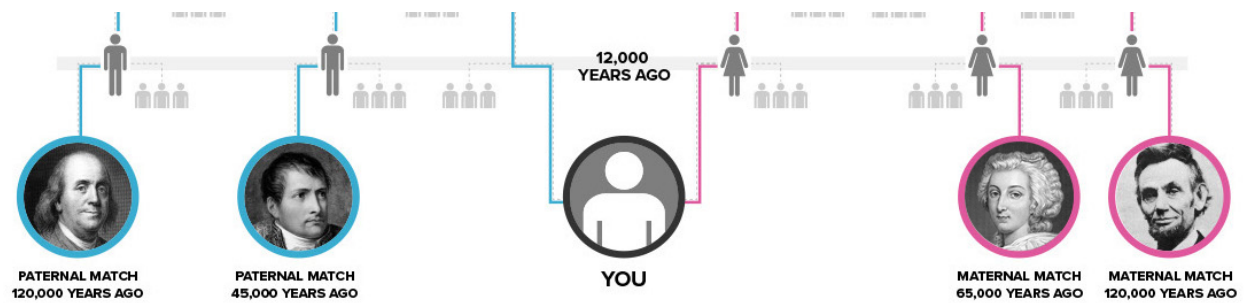
PATERNAL
♂MATCH



The third pharaoh of the 19th Dynasty in Egypt (1292-1186 BCE), Ramses II won a decisive victory over the Hittites at The Battle of Kadesh. He used this victory to enhance his reputation as a great warrior, resulting in the world's first known peace treaty in 1258 BCE. He lived to be 90, outliving most of his 200 wives and concubines, ninety-six sons and sixty daughters. His name and accomplishments are inscribed from one end of Egypt to the other.

The Science Behind Your Matches





The diagram above is illustrative and depicts both paternal and maternal branching to help you understand how the science behind matching works. In this example, the matches show when in ancient history your maternal and/or paternal line diverged or “branched” from that of a famous Genius (For example, Lincoln, 60,000 years ago). Male participants can get both paternal and maternal matches, whereas female participants can only get maternal matches.

Have a question?

-How did NG define Genius?

National Geographic is very liberal in its definition of genius. Since we are looking predominantly at historical figures, our definition of genius is that of “remarkable” or “historic” figure. But, you know, we are all truly geniuses in our own ways.

-Can my DNA tell me if I’m a genius?

Although there are genes associated with the ability to learn and intelligence, we are not currently analyzing those genes or DNA markers with Genographic.

-Why do I see men in my maternal matches?

Since we all have mothers, we all carry mitochondrial DNA, which is inherited strictly through the mother’s line. So, just like you and your brother have the same mother, you and your first male cousin have the same maternal-grandmother, and you and your male second cousin have the same maternal great-grandmother, you all share a direct maternal ancestor in the past, even if one or both of you are male. The same logic applies for your genius matches.

-Why do I see zero matches for some timeframes?

We compare your maternal and paternal DNA to a limited number of “geniuses,” so it’s quite likely that you don’t have a match that falls into one of our specifically designated time blocks. That is all.

-Why don’t I have any recent matches (12,000 – 0 years)?

In some cases your lineages may not have a match in the last 12,000 years. That doesn’t mean that you don’t share an ancestor with any of those people in that shorter time frame. It just means that you don’t share a direct maternal or direct paternal match within the last 12,000 years.

-My closest match is 45,000 years ago, what does that mean?

Although you likely shared common ancestors with many geniuses in more recent times, we only track your direct maternal (mother’s mother’s mother...) and direct paternal (father’s father’s father...) line for both you and the genius. In your case, your most recent genius match on one of those two lines was 45,000 years ago.

Your Regional Ancestry (500 Years to 10,000 Years Ago)

We are all more than the sum of our parts, but the results below offer some of the most fascinating and newest information possible with your Geno 2.0 Next Generation test. In this section, we display your affiliations with a set of twenty-two world regions. This information is determined from your entire genome, so we’re able to see both parents’ information, going back six generations, or more. Your percentages reflect both recent influences and ancient genetic patterns in your DNA due to how groups migrated to and from different regions, mixing for hundreds or even thousands of years. Your ancestors may have also

mixed with ancient, now extinct hominid cousins, like Neanderthals. If you or your parents have an admixed background, this pattern can get complicated very quickly! Use the reference population matches below to help understand your results.

What Your Results Mean

We are all more than just the sum of our parts, but the regional percentages below offer some of the most fascinating information in your Geno test. In this section, we display your affiliations based on a set of twenty-two world regions. This information is captured from points across your entire genome, so we're able to see both parents' information going back six generations or more. Your percentages reflect mostly recent influences, yet they may also show some ancient patterns in your DNA due to mixing of groups from different regions over hundreds, if not thousands, of years. If you have a very mixed background, the pattern can get complicated quickly. Use the reference population matches below to help understand your unique results.

Your First Reference Population: German

This reference population is based on people native to Germany. The Northeastern or dominant Central/Eastern European components likely reflect genetic remnants from early settlers in Europe, hunter-gatherer groups who arrived there more than 30,000 years ago. The Southern European component likely arrived later, with the spread of agriculture from the Fertile Crescent in the Middle East over the past 10,000 years. Most central European populations retain links to both the earliest European settlers and the later migrants from the south and east. The Northwestern European components likely reflect localized mixing in more recent times.

GERMAN	%	YOU	%
Northwestern Europe	53%	Northwestern Europe	49%
Eastern Europe	29%	Eastern Europe	28%
Jewish Diaspora	16%	Southwestern Europe	12%
Northeastern Europe	2%	West Mediterranean	7%
		Northern Africa	3%

Your Second Reference Population: French

This reference population is based on groups living in modern-day France. The two largest components are Western/Central and Southern European. The former is a composite of early continental hunter-gatherers, some of which may have interacted and mixed with Neanderthals, and more recent migrations from the Middle East. The Southern European component is associated with agriculturalists arriving from the Fertile Crescent to Europe in the past 8,000 years, introducing crops such as wheat and barley.

FRENCH	%	YOU	%
Northwestern Europe	53%	Northwestern Europe	49%
Southwestern Europe	27%	Eastern Europe	28%
West Mediterranean	9%	Southwestern Europe	12%
Eastern Europe	5%	West Mediterranean	7%

Jewish Diaspora

4%

Northern Africa

3%

Northern Africa

2%

Your Deep Ancestry (1,000 Years - 100,000 Years Ago)

Introduction to Your Story

We will now take you back through the stories of your distant ancestors and show how the movements of their descendants gave rise to your lineage.

Each segment on the map above represents the migratory path of successive groups that eventually coalesced to form your branch of the tree. We start with the marker for your oldest ancestor, and walk forward to more recent times, showing at each step the line of your ancestors who lived up to that point.

What is a marker? Each of us carries DNA that is a combination of genes passed from both our mother and father, giving us traits that range from eye color and height to athleticism and disease susceptibility. As part of this process, the Y-chromosome is passed directly from father to son, unchanged, from generation to generation down a purely male line. Mitochondrial DNA, on the other hand, is passed from mothers to their children, but only their daughters pass it on to the next generation. It traces a purely maternal line.

The DNA is passed on unchanged, unless a mutation—a random, naturally occurring, usually harmless change—occurs. The mutation, known as a marker, acts as a beacon; it can be mapped through generations because it will be passed down for thousands of years.

When geneticists identify such a marker, they try to figure out when it first occurred, and in which geographic region of the world. Each marker is essentially the beginning of a new lineage on the family tree of the human race. Tracking the lineages provides a picture of how small tribes of modern humans in Africa tens of thousands of years ago diversified and spread to populate the world.

By looking at the markers you carry, we can trace your lineage, ancestor by ancestor, to reveal the path they traveled as they moved out of Africa. Our story begins with your earliest ancestor. Who were they, where did they live, and what is their story? Click “Next” to begin.

Branch: L3

Age: 67,000 Years Ago

Location of Origin: East Africa

This woman's descendants would eventually account for both out-of-Africa maternal lineages, significant population migrations in Africa, and even take part in the Atlantic Slave Trade related dispersals from Africa.

The common direct maternal ancestor to all women alive today was born in East Africa around 180,000 years ago. Dubbed “Mitochondrial Eve” by the popular press, she represents the root of the human family tree. Eve gave rise to two descendant lineages known as L0 and L1'2'3'4'5'6, characterized by a different set of genetic mutations their members carry.

Current genetic data indicates that indigenous people belonging to these groups are found exclusively in Africa. This means that, because all humans have a common female ancestor, and because the genetic data shows that Africans are the oldest groups on the planet, we know our species originated there.

Eventually, L1'2'3'4'5'6 gave rise to L3 in East Africa. It is a similar story: an individual underwent a mutation to her mitochondrial DNA, which was passed onto her children. The children were successful, and their descendants ultimately broke away from L1'2'3'4'5'6, eventually separating into a new group called L3.

While L3 individuals are found all over Africa, L3 is important for its movements north. Your L3 ancestors were significant because they are the first modern humans to have left Africa, representing the deepest branches of the tree found outside of that continent.

From there, members of this group went in a few different directions. Many stayed on in Africa, dispersing to the west and south. Some L3 lineages are predominant in many Bantu-speaking groups who originated in west-central Africa, later dispersing throughout the continent and spreading this L3 lineage from Mali to South Africa. Today, L3 is also found in many African-Americans.

Other L3 individuals, your ancestors, kept moving northward, eventually leaving the African continent completely. These people gave rise to two important macro-haplogroups (M and N) that went on to populate the rest of the world.

Why would humans have first ventured out of the familiar African hunting grounds and into unexplored lands? It is likely that a fluctuation in climate may have provided the impetus for your ancestors' exodus out of Africa.

The African Ice Age was characterized by drought rather than by cold. Around 50,000 years ago the ice sheets of northern Europe began to melt, introducing a period of warmer temperatures and moister climate in Africa. Parts of the inhospitable Sahara briefly became habitable. As the drought-ridden desert changed to savanna, the animals your ancestors hunted expanded their range and began moving through the newly emerging green corridor of grasslands. Your nomadic ancestors followed the good weather and plentiful game northward across this Saharan Gateway, although the exact route they followed remains to be determined.

Point of Interest

The L branch is shared by all women alive today, both in Africa and around the world. The L3 branch is the major maternal branch from which all mitochondrial DNA lineages outside of Africa arose.

Branch: N

Age: About 60,000 Years Ago

Location of Origin: East Africa or Asia

Your next ancestor is the woman whose descendants formed haplogroup N. Haplogroup N comprises one of two groups that were created by the descendants of L3.

One of these two groups of individuals moved north rather than east and left the African continent across the Sinai Peninsula, in present-day Egypt. Also faced with the harsh desert conditions of the Sahara, these people likely followed the Nile basin, which would have proved a reliable water and food supply in spite of the surrounding desert and its frequent sandstorms.

Descendants of these migrants eventually formed haplogroup N. Early members of this group lived in the eastern Mediterranean region and western Asia, where they likely coexisted for a time with other hominids such as Neanderthals. Excavations in Israel's Kebara Cave (Mount Carmel) have unearthed Neanderthal skeletons as recent as 60,000 years old, indicating that there was both geographic and temporal overlap of these two hominids. This likely accounts for the presence of Neanderthal DNA in people living outside of Africa.

Some members bearing mutations specific to haplogroup N formed many groups of their own which went on to populate much of the rest of the globe. These descendants are found throughout Asia, Europe, India, and the Americas. However, because almost all of the mitochondrial lineages found in the Near East and Europe descend from N, it is considered a western Eurasian haplogroup.

After several thousand years in the Near East, members of your group began moving into unexplored nearby territories, following large herds of migrating game across vast plains. These groups broke into several directions and made their way into territories surrounding the Near East.

Today, haplogroup N individuals who headed west are prevalent in Turkey and the eastern Mediterranean, they are found further east in parts of Central Asia and the Indus Valley of Pakistan and India. And members of your haplogroup who headed north out of the Levant across the Caucasus Mountains have remained in southeastern Europe and the Balkans. Importantly, descendants of these people eventually went on to populate the rest of Europe, and today comprise the most frequent mitochondrial lineages found there.

Point of Interest

This line and its sister lineage are the only two founding lineages to expand out of Africa.

Notable People

Ann Curry of the Today Show belongs to this lineage.

Branch: R

Age: About 55,000 Years Ago

Location of Origin: West Asia

After several thousand years in the Near East, individuals belonging to a new group called haplogroup R began to move out and explore the surrounding areas. Some moved south, migrating back into northern Africa. Others went west across Anatolia (present-day Turkey) and north across the Caucasus Mountains of Georgia and southern Russia. Still others headed east into the Middle East, and on to Central Asia. All of these individuals had one thing in common: they shared a female ancestor from the N clan, a recent descendant of the migration out of Africa.

The story of haplogroup R is complicated, however, because these individuals can be found almost everywhere, and because their origin is quite ancient. In fact, the ancestor of haplogroup R lived relatively soon after humans moved out of Africa during the second wave, and her descendants undertook many of the same migrations as her own group, N.

Because the two groups lived side by side for thousands of years, it is likely that the migrations radiating out from the Near East comprised individuals from both of these groups. They simply moved together, bringing their N and R lineages to the same places around the same times. The tapestry of genetic lines became quickly entangled, and geneticists are currently working to unravel the different stories of haplogroups N and R, since they are found in many of the same far-reaching places.

Point of Interest

Descendants of this line dominate the European maternal landscape, making up 75 to 95 percent of the lineages there.

Branch: R0

Age: About 41,000 Years Ago

Location of Origin: West Asia

Some individuals moved across West Asia into Central Asia and then the Indus Valley. Others moved south, heading back into the African homeland from where their ancestors had recently departed.

Later, members of this lineage moved north across the Caucasus Mountains and west across Anatolia into Europe. These were Cro-Magnon. Their arrival in Europe heralded the end of the era of the Neanderthals.

Today, members of this lineage are present around the Red Sea and widely throughout the region. While this genetic lineage is common in Ethiopia and Somalia, individuals from this group are present at highest frequency in Arabia. Those living in East Africa are the likely result of more recent migrations back into the continent.

Branch: HV

Age: 22,350 ± 7,745 Years Ago

Location of Origin: West Asia

Descending from haplogroup R were a group of individuals who formed a western Eurasian lineage. The descendants of pre-HV live in high frequencies in the Anatolian-Caucasus region and Iran. While members of this group can also be found in the Indus Valley near the Pakistan-India border, their presence is considered the result of a subsequent migration eastward of individuals out of the Near East.

Individuals in haplogroup pre-HV can be found all around the Red Sea and widely throughout the Near East. While this genetic lineage is common in Ethiopia and Somalia, individuals from this group are found at highest frequency in Arabia. Because of their close genetic and geographic proximity to other western Eurasian clusters, members of this group living in eastern Africa are the likely result of more recent migrations back into the continent.

As we have seen from haplogroups N and R, descendants from these western Eurasian lineages used the Near East as a home base of sorts, radiating from that region to populate much of the rest of the world. Their descendants comprise all of the western Eurasian genetic lineages, and about half of the eastern Eurasian mtDNA gene pool. Some individuals moved across the Middle East into Central Asia and the Indus Valley near western India. Some moved south, heading back into the African homeland from where their ancestors had recently departed.

Haplogroup pre-HV is of particular importance because over the course of several thousand years, its descendants split off and formed their own group, called HV. This group—thanks in large part to a brutal cold spell that was about to set in—gave rise to the two most prevalent female lineages found in Western Europe.

While some descendants of these ancestral lineages moved out across Central Asia, the Indus Valley, and even back into Africa, your ancestors remained in the Near East. Descending from haplogroup pre-HV, they formed a new group, characterized by a unique set of mutations, called haplogroup HV.

Haplogroup HV is a west Eurasian haplogroup found throughout the Near East, including Anatolia (present-day Turkey) and the Caucasus Mountains of southern Russia and the republic of Georgia. It is also found in parts of East Africa, particularly in Ethiopia, where its presence there indicates recent Near Eastern gene flow, likely the result of the Arab slave trade over the last two millennia.

Much earlier, around 30,000 years ago, some members of HV moved north across the Caucasus Mountains and west across Anatolia, their lineages being carried into Europe for the first time by the Cro-Magnon. Their arrival in Europe heralded the end of the era of the Neanderthals, a hominid species that inhabited Europe and parts of western Asia from about 230,000 to 29,000 years ago. Better communication skills, weapons, and resourcefulness probably enabled them to outcompete Neanderthals for scarce resources. Importantly, some descendants of HV had already broken off and formed their own group, haplogroup H, and continued the push into Western Europe.

Today, members of this line are part of the populations of Europe, West Asia (including Anatolia), and the Caucasus Mountains of South Russia and the Republic of Georgia.

This lineage accounts for around 21 percent of maternal lineages in Armenia. It is about 8 percent of those in Turkey and about 5 percent of those in Croatia. Across much of Europe, this line is present at low frequencies of around 1 percent. This lineage accounts for about 7 percent of the population of both India in South Asia and the United Arab Emirates in West Asia.

Point of Interest

Some descendant branches that are now part of the populations of East Africa were introduced by the Arab slave trade of the last two millennia.

Branch: H

Age: About 28,000 Years Ago

Location of Origin: West Asia

This wave of migration into western Europe marked the appearance and spread of what archaeologists call the Aurignacian culture, a culture distinguished by significant innovations in methods of manufacturing tools, standardization of tools, and use of a broader set of tool types, such as end-scrapers for preparing animal skins and tools for woodworking.

Around 15,000 to 20,000 years ago, colder temperatures and a drier global climate locked much of the world's fresh water at the polar ice caps, making living conditions near impossible for much of the northern hemisphere. Early Europeans retreated to the warmer climates of the Iberian Peninsula, Italy, and the Balkans, where they waited out the cold spell. Their population sizes were drastically reduced, and much of the genetic diversity that had previously existed in Europe was lost.

Beginning about 15,000 years ago—after the ice sheets had begun their retreat—humans moved north again and recolonized western Europe. By far the most frequent mitochondrial lineage carried by these expanding groups was haplogroup H. Because of the population growth that quickly followed this expansion, your haplogroup now dominates the European female landscape.

Today haplogroup H comprises 40 to 60 percent of the gene pool of most European populations. In Rome and Athens, for example, the frequency of H is around 40 percent of the entire population, and it exhibits similar frequencies throughout western Europe. Moving eastward the frequencies of H gradually decreases, clearly illustrating the migratory path these settlers followed as they left the Iberian Peninsula after the ice sheets had receded. Haplogroup H is found at around 25 percent in Turkey and around 20 percent in the Caucasus Mountains.

While haplogroup H is considered the Western European lineage due to its high frequency there, it is also found much further east. Today it comprises around 20 percent of southwest Asian lineages, about 15 percent of people living in Central Asia, and around five percent in northern Asia.

Importantly, the age of haplogroup H lineages differs quite substantially between those seen in the West compared with those found in the East. In Europe its age is estimated at 10,000 to 15,000 years old, and while H made it into Europe substantially earlier (30,000 years ago), reduced population sizes resulting from the glacial maximum significantly reduced its diversity there, and thus its estimated age. In Central and East Asia, however, its age is estimated at around 30,000 years old, meaning your lineage made it into those areas during some of the earlier migrations out of the Near East.

Haplogroup H is a great example of the effect that population dynamics such as bottleneck events, founder effect, genetic drift, and rapid population growth, have on the genetic diversity of resulting populations.

Later migrations, such as those during the Neolithic Revolution and those triggered by the Bronze Age, brought additional groups containing different descendant branches of this line to Europe.

Point of Interest

The highest percentage of this line in Europe is in Ireland, where it makes up 61 percent of the population.

Notable People

French queen Marie Antoinette and Renaissance astronomer Nicholas Copernicus were members of this lineage.

Branch: H1

Age: 9,900 ± 800 Years Ago

Location of Origin: West Asia

From West Asia, this line spread north into Europe and west into West Africa. Descendants of some of those who traveled to Europe expanded out of a southern Europe refugia after the last glacial maximum to recolonize the continent.

Today, this line makes up about 10 percent of maternal lineages in Denmark and around 8 percent of maternal lineages in Norway and Sweden. It accounts for around 9 percent of maternal lineages throughout the British Isles and is 12 percent of maternal lineages in Northern Ireland. It is around 8 percent of the population in Portugal. It is between 4 and 5 percent of maternal lineages in Croatia. It is about 5 percent of the Armenian population and about 6 percent of the Lebanese population.

Note: This branch is not accompanied by a major movement on the map, and research on this branch is continuing.

Branch: H1b

Age: About 6,300 Years Old

Location of Origin: Central Asia or Anatolia

From West Asia, members of this lineage traveled to Central Asia before moving toward Anatolia and Europe.

Today, this lineage is rare in most population groups. It is present in Europe at frequencies between 1 and 2 percent. It is also part of some Jewish Diaspora population groups.

Note: This branch is not accompanied by a major movement on the map, and research on this branch is continuing.

Heatmap for H1b

This next step in your journey is a map showing the frequency of your haplogroup (or the closest haplogroup in your path that we have frequency information for) in indigenous populations from around the world, providing a more detailed look at where your more recent ancestors settled in their migratory journey. What do we mean by recent? It's difficult to say, as it could vary from a few hundred years ago to a few thousand years ago depending on how much scientists currently know about your particular haplogroup. As we test more individuals and receive more information worldwide, this information will grow and change.

The colors on the map represent the percentage frequency of your haplogroup in populations from different geographic regions—red indicates high concentrations and light yellow and grey indicate low concentrations. The geographic region with the highest frequency isn't necessarily the place where the haplogroup originated, although this is sometimes the case.

The map for H1b shows that it is found at low frequency throughout Europe, with locally higher frequencies in Baltic and Ukrainian populations.

Does this mean you're related to people in the areas highlighted on your map? Distantly, yes! We are all connected through our ancient ancestry. In order for us to learn more ancestry information about where haplogroups settled in more recent times, please choose to contribute your results to science (check the checkbox during Login or from the Account Settings tab of your Profile), and fill out your ancestry information in the Profile section of the site. Also be sure to tell your own story in the Our Story section.

Branch: P305

Age: More than 100,000 years old

Location of Origin: Africa

The common direct paternal ancestor of all men alive today was born in Africa between 300,000 and 150,000 years ago. Dubbed “Y-chromosome Adam” by the popular press, he was neither the first human male nor the only man alive in his time. He was, though, the only male whose Y-chromosome lineage is still around today. All men, including your direct paternal ancestors, trace their ancestry to one of this man’s descendants. The oldest Y-chromosome lineages in existence, belonging to the A00 branch of the tree, are found only in African populations.

Around 100,000 years ago the mutation named P305 occurred in the Y chromosome of a man in Africa. This is one of the oldest known mutations that is not shared by all men. Therefore, it marks one of the early splits in the human Y-chromosome tree, which itself marks one of the earliest branching points in modern human evolution. The man who first carried this mutation lived in Africa and is the ancestor to more than 99.9% of paternal lineages today. In fact, men who do not carry this mutation are so rare that its importance in human history was discovered only in the past two years.

As P305-bearing populations migrated around the globe, they picked up additional markers on their Y chromosomes. Today, there are no known P305-bearing individuals without these additional markers.

Branch: M42

Age: About 80,000 Years Ago

Location of Origin: East Africa

Around 80,000 years ago, the BT branch of the Y-chromosome tree was born, defined by many genetic markers, including M42. The common ancestor of most men living today, some of this man’s descendants would begin the journey out of Africa to the Middle East and India. Some small groups from this line would eventually reach the Americas, while other groups would settle in Europe, and some would remain near their ancestral homeland in Africa.

Individuals from this line whose ancestors stayed in Africa often practice cultural traditions that resemble those of the distant past. For example, they often live in traditional hunter-gatherer societies. These include the Mbuti and Biaka Pygmies of central Africa, as well as Tanzania’s Hadza.

Point of Interest

The M42 branch is shared by almost all men alive today, both in Africa and around the world.

Branch: M168

Age: About 70,000 years ago

Location of Origin: East Africa

When humans left Africa, they migrated across the globe in a web of paths that spread out like the branches of a tree, each limb of migration identifiable by a marker in our DNA. For male lineages, the M168 branch was one of the first to leave the African homeland.

The man who gave rise to the first genetic marker in your lineage probably lived in northeast Africa in the region of the Rift Valley, perhaps in present-day Ethiopia, Kenya, or Tanzania. Scientists put the most likely date for when he lived at around 70,000 years ago. His descendants became the only lineage to survive outside of Africa, making him the common ancestor of every non-African man living today.

Your nomadic ancestors would have followed the good weather and the animals they hunted, although the exact route they followed remains to be determined. In addition to a favorable change in climate, around this same time there was a great leap forward in modern humans' intellectual capacity. Many scientists believe that the emergence of language gave us a huge advantage over other early humanlike species. Improved tools and weapons, the ability to plan ahead and cooperate with one another, and an increased capacity to exploit resources in ways we hadn't been able to earlier allowed modern humans to rapidly migrate to new territories, exploit new resources, and replace other hominids such as the Neanderthals.

Point of Interest

This male branch is one of the first to leave the African homeland.

Branch: P143

Age: About 60,000 years old

Location of Origin: Southwest Asia

This mutation is one of the oldest thought to have occurred outside of Africa and therefore marks a pivotal moment in the evolution of modern humans. Moving along the coastline, members of this lineage were some of the earliest settlers in Asia, Southeast Asia, and Australia.

But why would man have first ventured out of the familiar African hunting grounds and into unexplored lands? The first migrants likely ventured across the Bab-al Mandeb strait, a narrow body of water at the southern end of the Red Sea, crossing into the Arabian Peninsula and soon after developing mutation P143—perhaps 60,000 years ago. These beachcombers would make their way rapidly to India and Southeast Asia, following the coastline in a gradual march eastward. By 50,000 years ago, they had reached Australia. These were the ancestors of some of today's Australian Aborigines.

It is also likely that a fluctuation in climate may have contributed to your ancestors' exodus out of Africa. The African ice age was characterized by drought rather than by cold. Around 50,000 years ago, though, the ice sheets of the Northern Hemisphere began to melt, introducing a short period of warmer temperatures and moister climate in Africa and the Middle East. Parts of the inhospitable Sahara briefly became habitable. As the drought-ridden desert changed to a savanna, the animals hunted by your ancestors expanded their range and began moving through the newly emerging green corridor of grasslands.

Branch: M89

Age: About 55,000 Years Old

Location of Origin: Southwest Asia

The next male ancestor in your ancestral lineage is the man who gave rise to M89, a marker found in 90 to 95 percent of all non-Africans. This man was likely born around 55,000 years ago in Middle East.

While many of the descendants of M89 remained in the Middle East, others continued to follow the great herds of wild game through what is now modern-day Iran, then north to the Caucasus and the steppes of Central Asia. These semiarid, grass-covered plains would eventually form an ancient "superhighway" stretching from France to Korea. A smaller group continued moving north from the Middle East to Anatolia and the Balkans, trading familiar grasslands for forests and high country.

Branch: M578

Age: About 50,000 Years Old

Location of Origin: Southwest Asia

After settling in Southwest Asia for several millennia, humans began to expand in various directions, including east and south around the Indian Ocean, but also north toward Anatolia and the Black and Caspian Seas. The first man to acquire mutation M578 was among those that stayed in Southwest Asia before moving on.

Fast-forwarding to about 40,000 years ago, the climate shifted once again and became colder and more arid. Drought hit Africa and the Middle East and the grasslands reverted to desert, and for the next 20,000 years, the Saharan Gateway was effectively closed. With the desert impassable, your ancestors had two options: remain in the Middle East, or move on. Retreat back to the home continent was not an option.

Branch: P128

Age: About 45,000 years ago

Location of Origin: South Asia

The next male ancestor in your ancestral lineage is the man who gave rise to P128, a marker found in more than half of all non-Africans alive today. This man was born around 45,000 years ago in south Central Asia and was likely part of the second wave of migrants to move east from Southwest Asia.

Some of the descendants of P128 migrated to the southeast and northeast, picking up additional markers on their Y chromosomes. This lineage is the parent of several major branches on the Y-chromosome tree: O, the most common lineage in East Asia; R, the major European and Central Asian Y-chromosome lineage; and Q, the major Y-chromosome lineage in the Americas. These descendant branches went on to settle the rest of Asia, the Americas, and Europe. Still many others traveled to Southeast Asia, and some descendants of P128 individuals moved across the waters south and east and are most commonly seen in Oceanian and Australian Aboriginal populations.

Branch: M526

Age: About 42,000 Years Old

Location of Origin: South or Southeast Asia

The man who first carried mutation M526 was part of the second wave of settlers that migrated around the Indian Ocean and settled in Southeast Asia. This mutation is shared by men from haplogroups M, N, O, P, Q, R, and S; these are groups common in East Asia, Southeast Asia, Oceania, and the Americas.

Branch: M45

Age: Around 35,000 Years Ago

Location of Origin: Central Asia or South Asia

This paternal ancestor traveled with groups to the open savannas between Central and South Asia during the Paleolithic. These big-game hunters were the parents to two of the most widespread male lineages in modern populations, one that is responsible for the majority of pre-Columbian lineages in the Americas (haplogroup Q)—among others from Asia and Europe—and one that spread farther north and west into Asia and produced the highest frequency lineages in European populations (haplogroup R).

Today, members of this lineage who do not belong to a descendant branch (haplogroups Q or R) are rare, and geneticists have found them most often in India. These populations include such diverse groups as the Saora (23 percent), the Bhumij (13 percent), and Muslims from Manipur (33 percent).

Point of Interest

Known as the Central Asian Clan, this branch gave rise to many distinct lineages that spent the next 30,000 years gradually populating much of the planet.

Branch: M207

Age: About 30,000 Years Ago

Location of Origin: Central Asia

M207 was born in Central Asia around 30,000 years ago. His descendants would go on to settle in Europe, South Asia and the Middle East over the following 20,000 years. Today, most western European men belong to one branch—R-M342—that descended from this lineage. While it appears to have been one of the earliest lineages to settle in Europe more than 25,000 years ago, more recent population expansions associated with the post-glacial repopulation of northern Europe after the end of the last ice age, as well as the spread of agriculture during the Neolithic, also contributed to its high frequency in Ireland, the UK, France and Spain.

One descendant lineage—R-L62—is common in Eastern Europe and India, and was likely spread in part through the migration of Indo-European steppe nomads over the past 5,000 years.

Branch: P231

Age: 25,000 – 30,000 Years Ago

Location of Origin: Central Asia

The Paleolithic ancestor who founded this lineage lived a nomadic lifestyle. His descendants include two major descendant branches that today account for most European men and many others from Central Asia, West Asia, and South Asia.

Branch: M343

Age: 17,000 – 22,000 Years Ago

Location of Origin: South Asia or West Asia

The first members of this lineage lived as hunter-gatherers on the open savannas that stretched from Korea to Central Europe. They took part in the advances in hunting technology that allowed for population growth and expansions.

When the Earth entered a cooling phase, most from this line sheltered in refugia to the southeast of Europe and in West Asia. It was from these refugia that their populations rapidly expanded when the ice once more receded. Some traveled west across Europe. Others moved back toward their distant ancestors' homelands in Africa, passing through the Levant region. Through these movements and the population boom triggered by the Neolithic Revolution, this lineage and its descendant lineages came to dominate Europe.

Today, it has a wide distribution. In Africa, geneticists have found this lineage in Northern Africa (6 percent) and central Sahel (23 percent). Its frequency in Europe is at times high and at other times moderate. It represents about 7 percent of Russian male lineages, about 13 percent of male lineages in the Balkans, about 21 percent of Eastern European male lineages, 55 to 58 percent of Western European lineages, and about 43 percent of Central European male lineages. In Asia, most men of this lineage are found in West Asia (6 percent) and South Asia (5 percent). However, trace frequencies of around half a percent from this lineage are present in East Asia.

Notable People

Russian Emperor Nicholas II belonged to this lineage.

Branch: M269

Age: 6,500 – 15,000 Years Ago

Location of Origin: West Asia

Groups containing this branch spread west toward Europe and east to Central Asia, then south into the Levant region. From the Levant and East Europe, your ancestors took part in the Neolithic Revolution. The population boom that resulted from the move from a hunter-gatherer lifestyle to settled agricultural communities helped push this line to dominance.

Today, this lineage accounts for the majority of the male population in Europe. In Wales, it is about 85 percent of male lineages. In Ireland, the frequency peaks along the eastern coast at over 90 percent. It is about 32 percent of the male population in Germany. Toward the southeast, it is 13 to 14 percent of the male populations in Greece and Turkey. It is 6 to 8 percent of male lineages in Iran and about 9 percent of male lineages in Iraq. It is about 5 percent of the male population in Kazakhstan.

Branch: P310

Age: To Be Determined

Location of Origin: West Asia

Members of this lineage have traveled to Central Asia, Europe, and the Levant region. One descendant branch has the highest frequency of any male line in Western Europe. However, rather than a single movement across Europe, this lineage's branches may represent many simultaneous and successive waves of migration.

Today, it is 48 to 52 percent of male lineages in Ireland. It is 45 percent of those in France. It is about 38 percent of the male population in Spain. It is about 8 percent of male lineages in Italy. It is about 5 percent of male lineages in Oman. It is 1 to 2 percent of the male population in Iraq and Lebanon. It is also 1 to 2 percent of the male population in Kazakhstan.

Note: This branch is not accompanied by a major movement on the map, and research on this branch is continuing.

Branch: P312

Age: 5,500 – 14,000 Years Ago

Location of Origin: West Asia

Born in West Asia, members of this lineage have traveled to Europe and North Africa.

Today, it is between 1 and 2 percent of the populations of Lebanon, Iraq, and Kazakhstan. It is about 16 percent of the population of France. It is between 15 and 17 percent of male lineages in Spain and Portugal.

Branch: L21

Age: 5,500 – 12,000 Years Ago

Location of Origin: West Asia

Today, members of this lineage are widely distributed across Europe and West Asia. They reach their highest frequency in Ireland where they and descendant branches contribute to between 35 and 38 percent of the male population. This line is 6 to 7 percent of male lineages in France. It is between 1 and 2 percent of male lineages in Germany. It is 2 to 4 percent of male lineages in Portugal and Spain. It is about 2 percent of the male population in Croatia. It is also present in some paternal lineages from the Ashkenazi Jewish population.

Note: This branch is not accompanied by a major movement on the map, and research on this branch is continuing.

Heatmap for L21

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The colors on the map represent the percentage frequency of your haplogroup in populations from different geographic regions—red indicates high concentrations, and light yellow and grey indicate low concentrations. The geographic region with the highest frequency isn't necessarily the place where the haplogroup originated, although this is sometimes the case.

The map of L21 shows a distribution that peaks in Ireland and Britain where it experienced successful expansions, perhaps as part of the post-glacial recolonization of northern Europe at the end of the last ice age. The frequency is lower in the rest of Western Europe.

Are you related to people in the areas highlighted on your map? Distantly, yes—we are all connected through our ancient ancestry.

In order for us to learn more ancestry information about where haplogroups settled in more recent times, please choose to contribute your results to science (check the checkbox during Login or from the Account Settings tab of your Profile), and fill out your ancestry information in the Profile section of the site. Also be sure to tell your own story in the Our Story section.

Your Hominin Ancestry (50,000 Years Ago and Older)

Your Hominin Ancestry

When our ancestors first migrated out of Africa around 60,000 years ago, they were not alone. At that time other species of hominin—our evolutionary cousins—walked the Eurasian landmass. One of these cousins was the Neanderthals. As our modern human ancestors migrated throughout Eurasia, they encountered these hominins and interbred, resulting in a small amount of Neanderthal DNA, for example, being introduced into the modern human gene pool.

Most non-Africans are about 1.1 percent Neanderthal. This percentage is calculated using a sophisticated analytical method that looks at parts of your DNA that you share with these hominin populations, as well as your complete regional ancestral components. The science around this calculation is new, and it is thanks to participation from citizens like you, that we continue to learn more and improve on this method. For this reason, your hominin result may change slightly over time as our accuracy and understanding improves.

NEANDERTHAL

*Out of a maximum of 5%

