

# 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.

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## 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: 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.



Photograph by Pere Fernandez, My Shot

## 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.



Photograph by Ali Talan, My Shot

## 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.



Photograph by Ciaran Clancy, My Shot

## 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.



Photograph by PCJones, Alamy

## Branch: M201

Age: About 17,000 Years Ago

Location of Origin: West Asia

This branch was born in West Asia before the beginning of the last glacial maximum. Most from this lineage are likely to have weathered out the ice and cold in West Asia. Then, as the ice melted, some members of this lineage who lived in the Fertile Crescent discovered farming. Their move from the hunter-gatherer lifestyle to farming communities led to population booms and rapid cultural changes. This was the Neolithic Revolution.

The population booms triggered by the Neolithic Revolution were responsible for the movement of this branch and its subtype into Turkey, the Caucasus Mountains, the Balkans, and the Mediterranean.

Today, it remains at low frequencies throughout these areas.